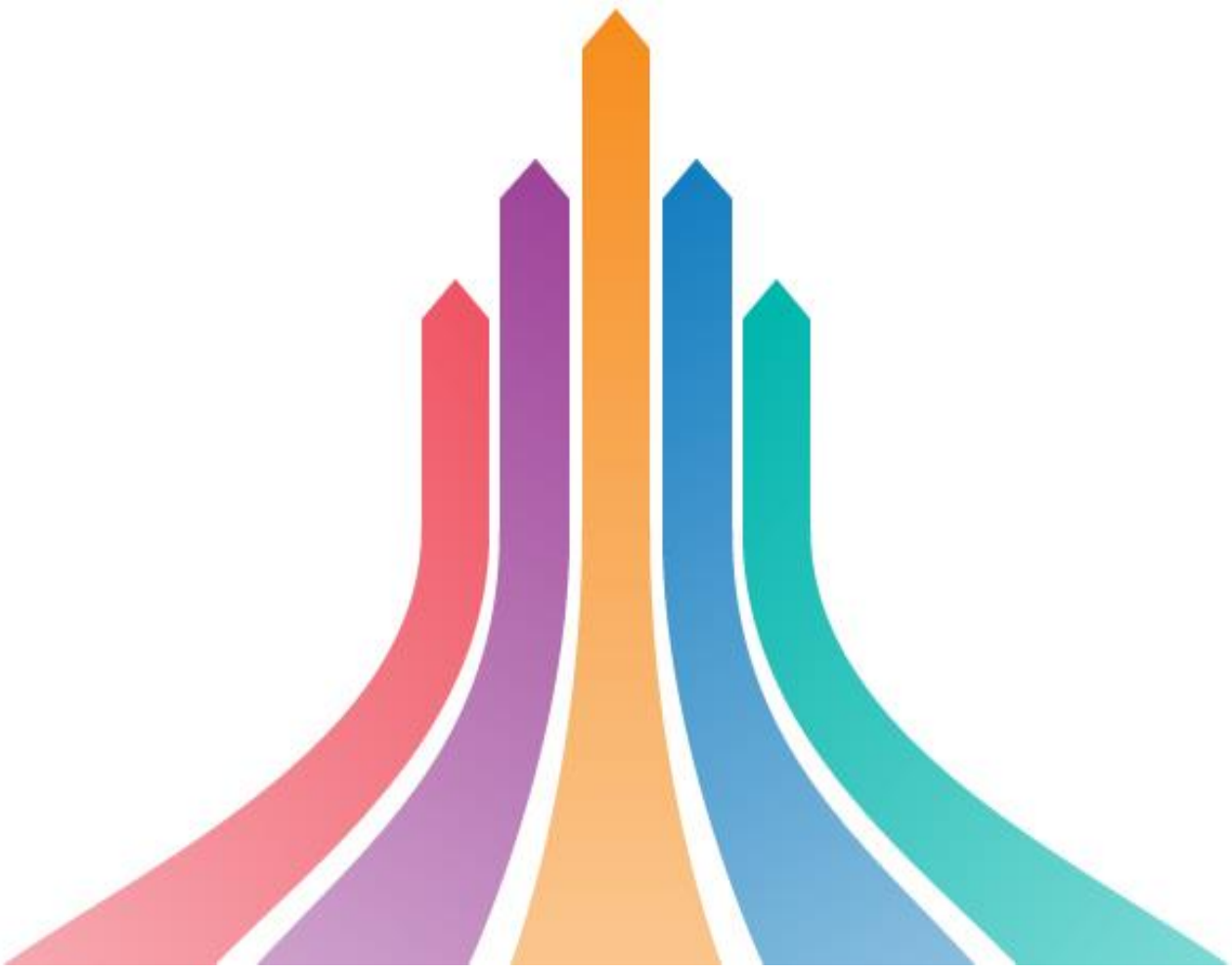
Illinois ACT Standards Crosswalk:

PreACT 9 Secure®, PreACT Secure®, and the ACT® Test

Linking ACT Assessments and Illinois Learning Standards to Drive Student Success



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Executive Summary

At the core of ACT's integrated system of college and career readiness tools are its secure assessments for Grades 9–12: PreACT® 9 Secure, PreACT® Secure, and the ACT® test. The system of ACT assessments is designed, using a deep evidence base, to measure student academic achievement, growth, and progress toward college readiness in English language arts (ELA)/literacy, mathematics, and science.

The alignment analysis presented in this guide shows how the three ACT assessments are linked to Illinois' Grades 9–12 Learning Standards in reading, writing, and language; mathematics; and science. After summarizing the alignment results (**Section III**), the guide offers a detailed view into the many points of linkage, indicating how the ACT assessments are fundamentally aligned with Illinois' rigorous academic standards (**Sections IV–VI**).

To help interpret the alignment, key design and content features of the ACT assessments are discussed in **Section II** of the guide. Tables show the ELA, mathematics, and science test reporting categories and the granular knowledge and skill targets in these categories that make up the ACT content framework. The overview of the tests also illustrates the strong vertical alignment of the content across the assessments, each of which reports scores and benchmarks linked to the same score scale.

Section VII, Educator Tips, contains ideas for educators for how the alignment information can be applied to inform curriculum development and effective communication about ACT products and scores.

Overall, the alignment analysis indicates that the three ACT assessments designed to assess student academic achievement in high school are well aligned to the Illinois Learning Standards in these grades. The vast majority of Illinois standards analyzed for alignment

across domains and strands were found to link directly with one or more items on the PreACT 9 Secure, the PreACT Secure, or the ACT.

Summary of Alignment

The following tables offer a high-level summary of the alignment analysis results. For the full list of standards that were not found to be assessed in whole or in part by the ACT tests, refer to **Section III** and to the comprehensive, standard-level data in the tables in **Sections IV–VI.**

ACT Alignment with Illinois Learning Standards

Illinois Content Area	ACT Test	Number of Standards Aligned
ELA & Literacy	Reading, English, Writing	118 of 129
Mathematics	Math	159 of 164
Science	Science	71 of 71

PreACT Secure Alignment with Illinois Learning Standards

Illinois Content Area	PreACT Secure Test	Number of Standards Aligned
ELA & Literacy	Reading, English	114 of 131
Mathematics	Math	159 of 164
Science	Science	71 of 71

PreACT 9 Secure Alignment with Illinois Learning Standards

Illinois Content Area	PreACT 9 Secure Test	Number of Standards Aligned
ELA & Literacy	Reading, English	114 of 131
Mathematics	Math	79 of 164*
Science	Science	71 of 71

* The PreACT 9 Secure math test is tailored to assess only those standards typically covered in Grade 9.

I. Introduction

This guide presents the result of an analysis conducted with the goal of identifying all points of content linkage between Illinois' grades 9–12 academic standards and the three academic assessments at the core of the ACT integrated system of college and career readiness measures:

PreACT 9 Secure measures student readiness by focusing on the standards and content most relevant at Grade 9. Data can be used to identify strengths and weaknesses and provide instructionally actionable information to students, families, and educators. PreACT 9 Secure includes multiple-choice items in English, mathematics, reading, and science subject tests.

PreACT Secure measures student readiness by focusing on the standards and content most relevant at Grade 10. Data can be used to identify strengths and weaknesses and provide instructionally actionable information to students, families, and educators. Scores provide insight into predictive performance on the ACT and into college and career readiness. PreACT Secure includes multiple-choice items in English, mathematics, reading, and science subject tests.

The ACT test measures what students need to know to be ready for entry-level college-credit courses, providing critical feedback with extensive score reporting. The test is available via national weekend test administrations (paper-and-pencil format) or through weekday school-based test administrations (online and paper-and-pencil formats). The ACT includes multiple-choice items in the areas of English, reading, mathematics, and science. The optional writing test assesses a student's ability to compose an effective argumentative essay.

PreACT 9 Secure, PreACT Secure, and the ACT test are integrated components in an assessment ecosystem designed to support multiple uses and interpretations. PreACT 9 Secure and PreACT Secure were developed using the same design philosophy and assessment domains that underpin the ACT, with adjustments made to the blueprints to reflect the knowledge and abilities of the testing population in Grades 9 and 10.

Using common item formats and reporting categories further strengthens the vertical alignment in our suite of high school assessments. PreACT 9 Secure and PreACT Secure score scales are linked to the ACT score scales, and direct interpretations of students' preparedness for the ACT and college and career can be made based on students' PreACT 9 Secure and PreACT Secure scores.

The analysis of alignment between the ACT assessments and the Illinois Learning Standards was conducted with the following sections of the Illinois K–12 standards in grades 9–12:

- Illinois Learning Standards-ELA, Grades 9–10, and 11–12
- Illinois Learning Standards-Mathematics, High School
- Illinois Learning Standards-Science, High School

ACT Assessments: Design Philosophy

Underlying the ACT assessments is the belief that students' preparation for college and the workplace is best assessed by measuring, as directly as possible, the skills learned in high school that are required for success in college-level courses. The required academic skills can be assessed most directly by reproducing, as faithfully as possible, the complexity of the work students do in the classroom. Therefore, ACT assessments are designed to determine how skillfully students solve problems, grasp implied meanings, draw inferences, evaluate ideas, and make judgments in subject areas important to success in college.

The ACT focuses on the general content areas of college and high school curricula and on the expectations for these curricula represented in state standards. The PreACT assessments are vertically aligned to the ACT test domain, with questions tailored to students in Grades 9–10. This alignment is reflected through their shared content framework, which allows for the same reporting structure to be used across assessments. The tests also report scores on a shared score scale, as discussed in the Overview sections below.

Although the PreACT and ACT assessments were not designed to measure any single state's set of educational standards, the assessments have several features that account for their strong alignment with rigorous academic standards across different states (eight states currently use the ACT with writing for federal accountability under ESSA). The ACT assessments require students to apply critical thinking skills when comprehending complex texts, analyze data displays showing the results of scientific experiments, produce effective argumentative writing, and solve sophisticated mathematics problems.

Specifically, a number of features of the PreACT and ACT assessments indicate a strong content alignment with the Illinois Learning Standards:

Reading, Writing, and Communicating

- The ACT and PreACT assessments measure mutually supportive reading, English language, and writing skills with rich passage-based tasks that report several scores directly linked with Illinois' clusters of reading and writing standards.
- Authentic literary and informational texts drawn from contemporary and historical U.S. and world literature sources. Every test includes a mixture of informational passages on engaging and diverse topics from the humanities, social sciences, and natural sciences. The ACT includes texts that require students to integrate information presented in mixed text and graphic formats.
- The ACT test, when administered with the writing component, includes a direct writing task that requires students to engage critically with other perspectives and develop their own thesis on a contemporary issue. The analytic scoring rubric links directly to expectations in Illinois' writing standards. Writing skills are also measured on the ACT and PreACT tests with essay-based analysis and revision tasks.

Mathematics

Items focus on what students can do with the mathematics they have learned, and they encompass not only mathematical content but also mathematical practices. Students receive a score for the Modeling reporting category.

- The test includes fair and authentic items set in real-world contexts where students can demonstrate mathematical practices to achieve viable and reasonable solutions to problems.
- A mix of items allows students to demonstrate mathematical fluency, conceptual understanding, mathematical modeling, and the ability to solve problems across a variety of mathematics topics, cognitive levels, and difficulty levels.
- Items emphasize quantitative reasoning and application over extensive computation or memorization of complex formulas.

Items are included that are best solved with and without a calculator, allowing students to choose their preferred solution path and to use tools with which they are comfortable.

Science

- Measuring student performance at the intersection of science content and science skills and practices is central to ACT's science tests and to Illinois' science framework.

- All questions on the ACT science tests are based on authentic scientific scenarios built around important scientific concepts and are designed to mirror the experiences of students and working scientists engaging in real-world science.
- The science knowledge, skills, and practices that are assessed on the ACT science tests are highly represented in the Illinois science standards and are contained primarily in two of the three dimensions that make up the Performance Expectations: Science and Engineering Practices and Cross-Cutting Concepts. All questions are based on science content from the third dimension of the standards, Disciplinary Core Ideas.

Alignment Methodology

The alignment analyses documented in this guide were performed by groups of senior ACT subject matter experts in English language arts/literacy and mathematics who have years of experience aligning assessments to state-level college and career readiness standards. These experts also design and develop annual forms of the PreACT and ACT assessments, and they have deep knowledge of the task models, test items, passages, and all aspects involved in constructing forms according to the test blueprint.

To conduct the alignment analyses for each subject area and assessment, groups of the subject matter experts worked individually and then reconciled results using the following procedure:

1. Illinois Learning Standards for the grade or grade band appropriate for each ACT assessment were reviewed, and global decisions were made about standards that would be included in the alignment (e.g., Speaking and Listening was excluded from ELA/literacy because of the test design).
2. Each Illinois Learning Standards statement was analyzed to determine if the expectation was assessed by one or more ACT assessment items on a recent PreACT 9 Secure, PreACT Secure, or ACT test form.
3. For standards judged to have a meaningful link, the reviewers determined which ACT reporting/content category includes the aligned item type. In many cases, multiple items from different ACT reporting/content categories were aligned.
4. Using deep knowledge of the ACT test content, the reviewers indicated which ACT content skill areas include the aligned items (skill areas are used in the ACT content framework to organize families of test items within a test reporting category).

5. The groups of subject matter experts from each subject area performed a reconciliation process to discuss and resolve discrepancies.
6. The final consensus was recorded in the alignment tables.

Interpreting Results

In addition to a summary of the alignment results, the full set of alignment tables is provided in **Sections IV–VI**. These tables provide the view of alignment from the state standards as a crosswalk to ACT content reporting categories and detailed skill areas. Tables are provided for ELA, mathematics, and science for each ACT assessment.

To interpret the alignment tables contained in the guide, it is helpful to review the ACT reporting category tables provided in the Content Descriptions in **Section II.** When an alignment linkage is indicated in the table, this means that one or more ACT, PreACT Secure, or PreACT 9 Secure items were identified in the designated test reporting category and skill area as requiring the knowledge or skill in the indicated standard. A student taking the test has a reasonable likelihood of encountering these items given the domain sampling design of the ACT blueprint. Students receive test scores in each score reporting category, and these scores reflect student learning of the knowledge and skills in the aligned state standards.

For example, in the following Illinois High School Mathematics standard, A.REI.3, ACT mathematics items in two skill areas were found that link to the standard. One of the skill areas is in the Algebra test reporting category, and the other skill area is in the Integrating Essential Skills test reporting category. Scores in these two reporting categories partly reflect student proficiency with the aligned standard.

Illinois Learning Standards, High School

Standard Number	Standard	The ACT Mathematics Reporting Categories and Skill Areas
A.REI.3	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	Algebra: Linear Expressions, Equations, and Inequalities Integrating Essential Skills: Writing and Solving Simple Equations and Inequalities

Alignment decisions inherently involve subjective judgments, and differences in opinion are common even among educational experts. ACT has attempted to provide the information in this guide through a process that is rigorous and transparent, in accordance with the professional standards to which the organization is committed. We believe that this information is an accurate indication of the links between the ACT system of assessments and Illinois Learning Standards.

II. Overview of the ACT Assessments

Examining the ACT assessments for alignment with state standards requires a basic understanding of the test design and content domains of the ACT tests. The following section provides a holistic overview of each assessment and then describes the content domains in detail, including test reporting categories and the granular knowledge/skills that are assessed in each domain.

Overview of the ACT Test

This overview briefly describes the purpose of the ACT test, who uses it and how, the test content, the types of scores students receive, and the benefits of the ACT.

Purpose. The primary purpose of the ACT is to measure a student's level of achievement in core academic areas taught in high school. Users apply the ACT test data, test scores, and interpretations for many different purposes:

- *College and career planning* – Students use their results to plan for further education and explore careers based on their own skills, interests, and aspirations.
- *Educational strategy* – High schools use ACT data in academic advising and counseling, evaluation studies, accreditation documentation, and public relations.
- *Educational measurement* – States use the ACT as part of their statewide assessments to measure students' educational achievement and to monitor educational improvement and achievement gaps over time.
- *Admission and placement* – Postsecondary institutions use ACT results for admission and course placement decisions.
- *Qualifications* – Many private, state, and national agencies that provide scholarships, loans, and other types of financial assistance to students tie such assistance to students' academic qualifications, which are partly measured by ACT test scores.

Subjects. The ACT contains subject tests in the following content areas:

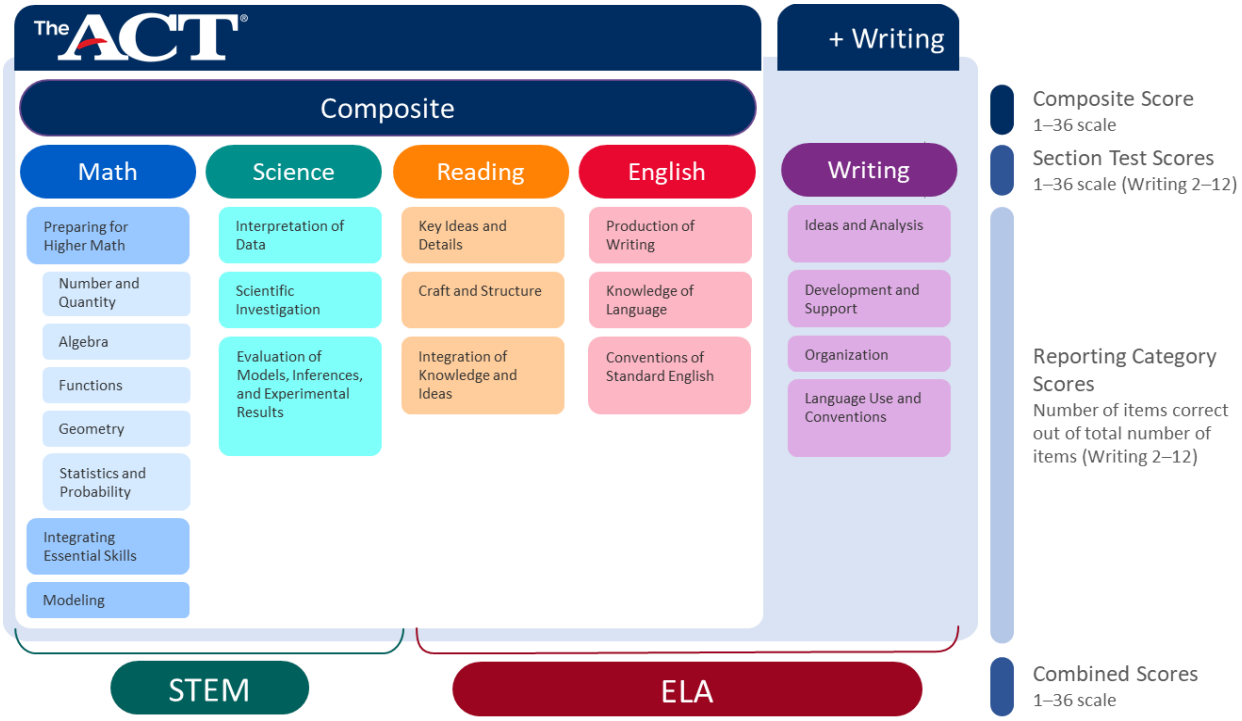
- English
- Reading
- Mathematics
- Science
- Writing (optional)

The English, reading, mathematics, and science tests consist of multiple-choice items and are administered together as a battery. Students who opt to take the writing test then complete a timed essay-writing task.

Scores. The ACT provides a variety of scores, as described below and as shown in the diagram that follows:

- *Composite and subject scores* – Students receive a Composite score; overall subject scores for English, mathematics, reading, science, and writing (optional); and scores in multiple reporting categories for each of the subject tests. Apart from the writing test, each subject test score is reported on a scale that ranges from 1 to 36. The writing score is reported on a 2–12 scale. The ACT 1–36 score scale is linked to PreACT Secure and PreACT 9 Secure scores using common-item IRT pre-equating procedures. Therefore, corresponding test scores can be compared directly between PreACT 9 Secure, PreACT Secure, and ACT (e.g., PreACT Secure English to ACT English).
- *Science, technology, engineering, and math (STEM) score* – Combines mathematics and science scores.
- *English language arts (ELA) score* – Combines English, reading, and writing scores (only reported for students who take the writing test).
- *ACT reporting category scores* – Provide granular information about student performance in a number of designated categories on each subject test.

Scores Reported on the ACT



THE ACT ENGLISH CONTENT DESCRIPTION

- *Item tally and time* – The ACT English test has 75 items and a 45-minute time limit.
- *Concept* – The test puts the student in the position of a writer who makes decisions to revise and edit a text.
- *Knowledge and skills tested* – The test measures knowledge areas and related skills reflected in the reporting categories for this test (further described in a table below):
    - **Production of Writing:** Students apply their understanding of the rhetorical purpose and focus of a piece of writing to develop a topic effectively. They use various strategies to achieve logical organization, topical unity, and cohesion.
    - **Knowledge of Language:** Students demonstrate effective language use by ensuring precision and concision in word choice and maintaining consistency in style and tone.
    - **Conventions of Standard English:** Students apply their understanding of the conventions of Standard English grammar, usage, and mechanics to revise and edit text.
- *Format and item types* – The test consists of five passages, each accompanied by a sequence of multiple-choice test items.

    - Different passage types are used to provide a variety of rhetorical situations.
    - Students must use the rich context of the passage to make editorial choices, demonstrating their understanding of writing strategies and conventions.
    - Passages are chosen not only for their appropriateness in assessing writing and language skills but also to reflect students' interests and experiences.
- *Knowledge and skills not tested* – Spelling and the rote recall of grammar rules are not tested.

English test blueprints. Four scores are reported for the ACT English test—a total test score based on all 75 items and the three reporting category scores. The reporting categories constitute a specific number of items and percentage of the test, as shown in the table below.

Reporting Category	Number of Items	Percentage of Test
Production of Writing	22–24	29–32%
Knowledge of Language	11–13	15–17%
Conventions of Standard English	39–41	52–55%

The ACT English Reporting Category Descriptions

Reporting Category	Skill Area	Description/Examples
Production of Writing	*Topic Development—Purpose and Focus:* Involves the ability to make content and stylistic choices that provide support for a text's rhetorical purpose.	Determine if a text's purpose is supported by organizational structure and content. Revise text to enhance the focus and cohesion.
	Organization, Unity, and Cohesion: Involves the ability to support a text's purpose by progressing from point to point logically and smoothly.	Order sentences and paragraphs and use transitions to enhance overall purpose, unity, and logical cohesion. Frame texts effectively with transitions, introductions, and conclusions.

Reporting Category	Skill Area	Description/Examples
Knowledge of Language	***Expressing Ideas Clearly:*** Involves the ability to be precise and concise by using vocabulary skillfully and by avoiding wordiness and redundancy.	Use general academic and domain-specific language precisely and eliminate redundancy and wordiness when the meaning of the sentence or paragraph must be considered.
	Style: Involves the ability to maintain stylistic consistency appropriate for the communication task and to use language purposefully.	Maintain a consistent style and tone and use words, phrases, and sentences purposefully, considering their effect on the whole text.
Conventions of Standard English	***Sentence Structure and Formation:*** Involves the ability to ensure the grammatical soundness of a variety of sentences.	Recognize and correct subtle structural errors in sophisticated sentence structure and complex contexts, including when the meaning of multiple sentences or paragraphs must be considered.
	Usage Conventions: Involves the knowledge of and ability to apply rules of standard English usage.	Recognize and correct usage errors in structurally sophisticated sentences, including when relevant elements are separated by intervening text.
	Punctuation Conventions: Involves the knowledge and ability to apply the rules of standard English punctuation.	Recognize and correct punctuation errors in sophisticated sentence structures and complex contexts, including using punctuation to reduce ambiguity of sentences and paragraphs.

THE ACT READING CONTENT DESCRIPTION

- *Item tally and time* – The ACT reading test is a 40-item, 35-minute test.
- *Concept* – The test measures a student's ability to read closely, reason about texts using evidence, and integrate information from multiple sources.

- *Knowledge and skills tested* – The test measures knowledge areas and related skills reflected in the reporting categories for this test (further described in a table below):
    - **Key Ideas and Details:** Students read texts closely to determine central ideas and themes; summarize information and ideas accurately; and read closely to understand relationships and draw logical inferences and conclusions, including understanding sequential, comparative, and cause-effect relationships.
    - **Craft and Structure:** Students determine word and phrase meanings, analyze an author's word choice rhetorically, analyze text structure, understand authorial purpose and perspective, and analyze characters' points of view. They interpret authorial decisions rhetorically and differentiate between various perspectives and sources of information.
    - **Integration of Knowledge and Ideas:** Students understand authors' claims, differentiate between facts and opinions, and use evidence to make connections between different texts that are related by topic. Some items will require students to analyze how authors construct arguments, evaluating reasoning and evidence from various sources.
- *Format and item types* – The test consists of four sections, each containing a passage or pair of passages accompanied by a sequence of multiple-choice test items.
    - Passages in the reading test include both literary narratives and informational texts from the humanities, natural sciences, and social sciences.
- *Knowledge and skills not tested* – Rote recall of facts from outside the passage or rules of formal logic are not tested. Nor does the test include items about vocabulary that can be answered without referring to the passage context.

Reading test blueprints. Four scores are reported for the ACT reading test—a total test score based on all 40 items and the three reporting category scores. Score reports also include an Understanding Complex Texts indicator score (below, proficient, or above). The reporting categories constitute a specific number of items and percentage of the test, as shown below. A table describing the reporting categories in detail follows.

Reporting Category	Number of Items	Percentage of Test
Key Ideas and Details	21–24	53–60%
Craft and Structure	10–12	25–30%
Integration of Knowledge and Ideas	6–9	15–23%

The ACT Reading Reporting Category Descriptions

Reporting Category	Skill Area	Description/Examples
Key Ideas and Details	***Close Reading:*** Involves the ability to attend carefully to what a text says and draw well-supported conclusions from a text.	Analyze challenging, complex, and highly complex texts to determine what the text says explicitly as well as draw conclusions based on textual support.
	Relationships: Involves the ability to identify and understand relationships between individuals, events, themes, and ideas in a text.	Identify and infer sequences, comparative relationships, and cause-effect relationships developed across a text.
	Central Ideas, Themes, Summaries: Involves the ability to synthesize information in a text in order to identify central ideas or themes, differentiate key ideas from ideas of lesser importance, and summarize text concisely.	Determine a central idea or theme of challenging, complex, and highly complex texts and summarize ideas and information developed across a text.
Craft and Structure	***Word Meanings and Word Choice:*** Involves the ability to determine the meaning of words and phrases, including academic and domain-specific words, multiple-meaning words, and figurative language, based on the context of a text.	Determine the meaning, including figurative, connotative, and technical meanings, of words and phrases as they are used in more challenging, complex, and highly complex texts.
	Text Structure: Involves the ability to analyze text rhetorically in order to understand how an author's choices create effects on the reader.	Analyze rhetorical devices and the structure of more challenging, complex, and highly complex texts.

Reporting Category	Skill Area	Description/Examples
	Purpose and Point of View: Involves the ability to understand and analyze a text's rhetorical situation, including the author's intent, perspective, and use of rhetorical techniques.	Analyze stated and implied purposes in texts; analyze point of view and narrative techniques in narrative texts; analyze rhetorical techniques as well as authorial bias.
Integration of Knowledge and Ideas	*Arguments:* Involves the ability to understand and analyze arguments in a text, including claims, counterclaims, and supporting evidence.	Analyze the use of persuasive elements and development of an argument in more challenging, complex, and highly complex texts, assessing whether the evidence provided is relevant, sound, and sufficient.
	Synthesis of Multiple Texts: Involves the ability to understand and analyze arguments in a text, including claims, counterclaims, and supporting evidence.	Analyze how different literary, thematic, and structural elements inform both shared and distinct ideas when comparing more challenging, complex, and highly complex texts, as well as synthesize information across texts to build new knowledge and insights.
	*Visual and Quantitative Information:** Involves the ability to understand and analyze visual information including tables, charts, graphs, and figures alongside text. * This skill area is not tested on the PreACT reading tests.	Analyze visual information to draw conclusions and determine how this information relates to more challenging, complex, and highly complex texts.

THE ACT WRITING CONTENT DESCRIPTION

- *Time* – The test is 40 minutes long.
- *Concept* – The test presents students with a single writing task that assesses their ability to compose an effective argumentative essay.

- *Knowledge and skills tested* – The test measures knowledge areas and related skills reflected in the reporting categories for this test (further described in a table below):
    - **Ideas and Analysis:** Students generate productive ideas and engage critically with multiple perspectives on the given issue. Proficient writers understand the issue they are invited to address, the purpose for writing, and the audience. They generate ideas that are relevant to the situation.
    - **Development and Support:** Students discuss ideas, offer rationale, and strengthen an argument. Proficient writers explain and explore their ideas, discuss implications, and illustrate through examples. They help the reader understand their thinking about the issue.
    - **Organization:** Students organize ideas with clarity and purpose; organizational choices are integral to effective writing. Proficient writers arrange their essay in a way that clearly shows the relationship among ideas, and they guide the reader through their discussion.
    - **Language Use and Conventions:** Students use written language to clearly convey ideas. Proficient writers use the conventions of grammar, syntax, word usage, and mechanics. They are also aware of their audience and adjust the style and tone of their writing to communicate effectively.
- *Format and question types* – Students respond to a prompt designed to elicit evidence of core thinking and writing competencies. This includes the ability to engage critically with a complex issue and multiple perspectives on it.
    - Each prompt begins by describing a contemporary issue that is relevant and accessible to students.
    - The prompt also offers three different viewpoints on the issue.
    - Students are asked to establish a perspective on the given issue and relate their perspective to at least one other.
    - Students may adopt one of the perspectives given in the prompt as their own, or they may introduce one that is completely different from those given.
- *Knowledge and skills not tested* – Students' scores will not be affected by the point of view they take on the issue.

Writing test scoring rubric. Student responses are scored with a four-domain analytic rubric. The domains of the analytic rubric used for scoring may be considered analogous to the reporting categories; the

scores reported on the test are directly based on the rubric domains. The number of points possible in each domain is shown below. A table describing the reporting categories in detail follows this.

Reporting Category (Rubric Domain)	Number of Points	Percentage of Test
Ideas and Analysis	2–12	25%
Development and Support	2–12	25%
Organization	2–12	25%
Language Use and Convention	2–12	25%

The ACT Writing Reporting Category Descriptions

Reporting Category (Rubric Domain)	Skill Area	Description/Examples
Ideas and Analysis	*Purpose:* Understanding the task and writing with purpose	1. Generate a clear thesis that identifies the writer's objective. 2. Engage with multiple perspectives on a complex issue.
	Critical Elements and Differing Perspectives: Analyzing critical elements of an issue and differing perspectives on it	1. Establish a context for analysis; convey an understanding of the circumstances in which the tension or problem exists. 2. Consider implications, complexities and tensions, and/or underlying values and assumptions.

Reporting Category (Rubric Domain)	Skill Area	Description/Examples
Development and Support	***Reasoning and Evidence:*** Building and strengthening the argument	1. Establish why the argument is worth considering. 2. Demonstrate reasoning, using examples as necessary, that reinforces the thesis and moves the writer and reader toward a deeper understanding of the issue. 3. Recognize factors that complicate or weaken the writer's position and address potential critiques related to those complications or weaknesses.
Organization	***Connecting Ideas:*** Grouping and sequencing related ideas	1. Group and sequence ideas logically. Use transitions to clarify relationships among ideas.
	Organizational Strategy: Employing an organizational strategy	1. Unify the argument; connect ideas throughout the essay to the thesis. 2. Rely on a logical progression of ideas that explains the argument and its purpose.

Reporting Category (Rubric Domain)	Skill Area	Description/Examples
Language Use and Conventions	***Enhanced Meaning:*** Using language to enhance meaning	1. Make word choices that strengthen the argument. 2. Make effective stylistic choices (voice, tone, diction) that make the argument compelling.
	Conventions of Written English: Applying the conventions of standard written English	1. Compose clear sentences with varied structures. 2. Produce writing relatively free of errors in grammar, usage, and mechanics.

THE ACT MATHEMATICS CONTENT DESCRIPTION

- *Item tally and time* – The ACT mathematics test has 60 items and a 60-minute time limit.
- *Concept* – The test measures the whole of a student's mathematical development of topics typically taught up to the beginning of Grade 12 in US schools. It focuses on the prerequisite knowledge and skills important for success in college mathematics courses and career training programs.
- *Knowledge and skills tested* – The test measures knowledge areas and related skills reflected in the reporting categories for this test (further described in a chart below):
    - **Preparing for Higher Mathematics:** Students apply the more recent mathematics they are learning. This reporting category is divided into the following five subcategories:
        - **Number and Quantity:** Students demonstrate knowledge of real and complex number systems. They understand and reason with numerical quantities in many forms, including integer and rational exponents, and vectors and matrices.
        - **Algebra:** Students solve, graph, and model multiple types of expressions. They employ many different

kinds of equations, including but not limited to linear, polynomial, radical, and exponential relationships. They find solutions to systems of equations, even when represented by simple matrices, and apply their knowledge to applications.
        - **Functions:** Students apply their knowledge of function definition, notation, representation, and application. Items may include but are not limited to linear, radical, piecewise, polynomial, and logarithmic functions. Students manipulate and translate functions, as well as find and apply important features of graphs.
        - **Geometry:** Students define and apply knowledge of shapes and solids, such as congruence and similarity relationships or surface area and volume measurements. They understand composition of objects and solve for missing values in triangles, circles, and other figures, including using trigonometric ratios and equations of conic sections.
        - **Statistics and Probability:** Students describe center and spread of distributions, apply and analyze data collection methods, understand and model relationships in bivariate data, and calculate probabilities.
    - **Integrating Essential Skills:** Students put together understandings and skills to solve problems of moderate to high complexity. Topics include rate and percentage; proportional reasoning; area, surface area, and volume; quantities and units; expressing numbers in diverse ways; using expressions to represent quantities and equations to capture relationships; rational exponents; the basics of functions; and function notation.
    - **Modeling:** Students use mathematics to represent, through a model, an analysis of an actual, empirical situation. The Modeling reporting category represents all items that involve producing, interpreting, understanding, evaluating, and improving models. Each modeling item is also counted in the other appropriate reporting categories above. Thus, the Modeling reporting category is an overall measure of how well a student uses modeling skills across mathematical topics.

- *Format and item type* – All test items are multiple-choice. Most test items are self-contained. Some may belong to a set of several items (for example, each about the same graph or chart). The items measure the following reporting categories:
    - Preparing for Higher Mathematics
    - Integrating Essential Skills
    - Modeling
- *Knowledge and skills not tested* – Knowledge of basic formulas and computational skills are assumed as background for the problems but recall of complex formulas and extensive computation are not required. A calculator is encouraged but not required.
- *Calculator policy* – Students are encouraged to bring a calculator they are familiar with and can use fluently. Most four-function, scientific, or graphing calculators are permitted. Built-in computer algebra systems are not allowed, and neither are certain calculator programs or features. Please refer to the ACT website for a full description of the calculator policy.

Mathematics test blueprints. Nine scores are reported for the ACT mathematics test—a total test score based on all 60 items and eight reporting category scores, which include the subcategories for Preparing for Higher Mathematics. The reporting categories constitute a specific number of items and percentage of the test, as shown in the table below.

Reporting Category	Number of Items	Percentage of Test
Preparing for Higher Mathematics	34–36	57–60%
Number and Quantity	5–7	8–12%
Algebra	7–9	12–15%
Functions	7–9	12–15%
Geometry	7–9	12–15%
Statistics and Probability	5–7	8–12%
Integrating Essential Skills	24–26	40–43%
Modeling	≥ 12	≥ 20%

In addition, the overall mathematics test score, along with the science score, is used to determine the STEM score.

The ACT Mathematics Reporting Category Descriptions

Reporting Category	Skill Area	Description/Examples
Preparing for Higher Mathematics: Number and Quantity	Rational and Irrational Numbers	Use and apply the properties of rational and irrational numbers.
	Properties of Exponents	Use and apply the properties of exponents.
	Vectors and Matrices	Model situations, perform operations, and solve problems involving vectors and matrices.
	Complex Numbers	Perform operations and solve equations involving complex numbers.
	Quantities and Units	Reason quantitatively and use units to solve problems.
Preparing for Higher Mathematics: Algebra	Linear Expressions, Equations, and Inequalities	Model situations, solve problems, and perform operations involving linear expressions, equations, and inequalities.
	Quadratic Expressions, Equations, and Inequalities	Model situations, solve problems, and perform operations involving quadratic expressions, equations, and inequalities.
	Rational and Radical Expressions and Equations	Model situations, solve problems, and perform operations involving rational and radical expressions and equations.
	Polynomial Expressions and Equations	Model situations, solve problems, and perform operations involving polynomial expressions and equations.

Reporting Category	Skill Area	Description/Examples
	Systems of Equations and Inequalities	Write, solve, and graph systems of equations and inequalities.
Preparing for Higher Mathematics: Functions	Properties of Functions	Evaluate and create functions. Describe their properties. Convert between different representations of functions.
	Function Composition and Inverse Functions	Compose functions, find inverse functions, and find the domain and range of a function composition.
	Sequences and Series	Model situations, perform operations, and solve problems involving sequences and series.
	Trigonometric Functions	Model situations, perform operations, and solve problems using trigonometric functions.
	Exponential and Logarithmic Functions	Model situations, perform operations, and solve problems involving exponential and logarithmic functions.
Preparing for Higher Mathematics: Geometry	Transformations	Model situations, perform operations, and solve problems involving transformations and their properties in a plane.
	Proof, Reasoning, and Constructions	Construct geometric figures and use logical arguments to prove theorems.
	Similarity, Right Triangles, and Trigonometry	Define trigonometric ratios in terms of right triangles. Apply trigonometric ratios to general triangles.

Reporting Category	Skill Area	Description/Examples
	Coordinate Geometry	Model situations, perform operations, and solve problems in the coordinate plane.
	Conic Sections	Model situations, perform operations, and solve problems involving conic sections.
	Properties of Circles	Model situations, perform operations, and solve problems involving properties of circles.
	Geometric Measurement and Modeling	Apply geometric concepts in modeling situations.
Preparing for Higher Mathematics: Statistics and Probability	Interpret Data on a Single Variable	Summarize, represent, and interpret data on a single count or measurement variable.
	Interpret Data on Two Variables	Summarize, represent, and interpret data on two counts or two quantitative variables.
	Making Inferences from Experiments and Surveys	Interpret and evaluate random processes underlying statistical experiments.
	Rules of Probability	Use rules of probability to compute probabilities and expected values.
	Counting, Permutations, and Combinations	Use counting principles, combinations, and permutations to compute probabilities of compound events and solve problems.
Integrating Essential Skills	Properties of Real Numbers	Interpret and apply the properties of real numbers to aid problem solving.

Reporting Category	Skill Area	Description/Examples
	Computation and Problem-Solving with Real Numbers	Use all types of real numbers to compute and answer questions.
	Ratio, Proportion, and Percent	Use ratios, proportions, and percents in problem-solving situations.
	Writing Algebraic Expressions	Write algebraic expressions to represent situations including linear and polynomial expressions.
	Writing and Solving Simple Equations and Inequalities	Write equations in one or two variables with linear relationships and use these equations to answer questions.
	Perimeter, Circumference, and Area	Calculate perimeter, circumference, and area of polygons and circles.
	Surface Area and Volume	Calculate surface area and volume of solids including prisms, cylinders, cones, and spheres.
	Measurement Units and Unit Conversion	Model situations, perform operations, and solve problems involving measurement units.
	Properties of Lines, Angles, and Shapes	Use the properties of lines, angles, two-dimensional shapes, and three-dimensional shapes to describe situations and to solve problems.
	Pythagorean Theorem	Use the Pythagorean theorem to solve problems and to find distances.

Reporting Category	Skill Area	Description/Examples
	Scatterplots and Association	Construct and interpret scatterplots and use linear models.
	Data Summary and Displays	Describe measures of center, spread, and shape for a data set. Display data in displays such as line plots, dot plots, histograms, and box plots.
	Basic Probability	Compute probabilities for simple events and for compound events where the sample space can be listed.
Modeling	Producing	Produce a model for a given real-world or mathematical context.
	Interpreting	Take information from a model and interpret the information in terms of the situation.
	Understanding	Show understanding by determining conditions under which a model works or does not work.
	Evaluating	Choose the best model for a situation or decide if a model is good enough for a given situation.
	Improving	Change a model or change assumptions of a model by iterating.

- *Item tally and time* – The ACT science test is a 40-item, 35-minute test.
- *Concept* – The test measures science and engineering knowledge, practices, and skills that are highly correlated with college success. The correlations are based on both decades of empirical research and the responses of post-secondary educators on the ACT National Curriculum Survey.
- *Knowledge and skills tested* – The test measures knowledge areas and related skills reflected in the reporting categories for this test (further described in a table below):
    - **Interpretation of Data:** Students locate, translate, infer, extend from and evaluate data and information in scientific graphs, tables, and diagrams of varying complexity. This reporting category is divided into the following three subcategories:
        - Locating and Understanding
        - Inferring and Translating
        - Extending and Re-evaluating
    - **Scientific Investigation:** Students understand the tools, procedures, and designs of scientific experiments and compare, extend, and modify those experiments. This reporting category is divided into the following three subcategories:
        - Locating and Comparing
        - Designing and Implementing
        - Extending and Improving
    - **Evaluating Models, Inferences, and Experimental Results:** Students evaluate the validity of scientific claims based on evidence and formulate conclusions and predictions based on that information using a claim, evidence, or a reasoning model of scientific argument. This reporting category is divided into the following three subcategories:
        - Inferences and Results – Evaluating and Extending
        - Models – Understanding and Comparing
        - Models – Evaluating and Extending
- *Format and item type* – Science and engineering knowledge, skills, and practices are applied to rich scientific passages that are written in one of three formats: Data Representation, Research Summaries, or Conflicting Viewpoints. Each passage is accompanied by multiple-choice items. Interaction with each passage format requires students to engage in scientific sense-making around the following:

- Experimental procedures and phenomena (Research Summaries)
- Data presentations (Data Representation)
- Scientific models and explanations (Conflicting Viewpoints)

Science test blueprints. Four scores are reported for the ACT science test—a total test score based on all 40 items and the three reporting category scores. The reporting categories constitute a specific number of items and percentage of the test, as shown below. A table describing the reporting categories in detail follows this.

Reporting Category	Number of Items	Percentage of Test
Interpretation of Data	16–20	40–50%
Scientific Investigation	8–12	20–30%
Evaluation of Models, Inferences, and Experimental Results	10–14	25–35%

In addition, the overall science test score is combined with the overall mathematics score to determine the STEM score.

Topics from all major disciplines (biology, chemistry, physics, and Earth and space science) are used on the test to elicit evidence of how students apply science practices. Some items will require specific content knowledge to successfully complete the task; however, these tasks always involve the use of a science practice as well. Consequently, no science scores are reported in relation to the major science disciplines.

The ACT Science Reporting Category Descriptions

Reporting Category	Skill Area	Description/Examples
Interpretation of Data	Locating and Understanding	Locate one or more pieces of data and understand features of graphics and tables, such as units, legends, and axes.
	Inferring and Translating	Use data from one or more graphs and/or tables to identify trends, make inferences and comparisons, or translate into other graphic formats.
	Extending and Re-evaluating	Make predictions based on trends in data.
Scientific Investigation	Locating and Comparing	Locate, compare, and contrast information about one or more scientific investigations or experiments.
	Designing and Implementing	Understand and evaluate aspects of experimental design such as methods, tools, variables, and controls.
	Extending and Implementing	Make predictions about future experiments or experimental conditions and determine additional methods to improve or evaluate investigations.
Evaluation of Models, Inferences, and Experimental Results	Inferences and Results: Evaluating and Extending	Evaluate and formulate hypotheses, predictions, and conclusions based on experimental results and other scientific data and knowledge.

Reporting Category	Skill Area	Description/Examples
	Models: Understanding and Comparing	Locate and compare information within a theoretical model or across competing models. (Note: These skills are only used with conflicting viewpoints passages.)
	Models: Evaluating and Extending	Evaluate and formulate predictions and hypotheses based on the examination of competing theoretical models. (Note: These skills are only used with conflicting viewpoints passages.

Overview of PreACT Secure

This overview briefly describes the purpose of PreACT Secure, who uses the test and how, the test content, and the types of scores students receive, as well as benefits of PreACT Secure.

Purpose. The primary purpose of PreACT Secure is to measure a student's level of achievement in core academic areas taught in high school and is intended to be taken in grade 10. Users apply test data, test scores, and interpretations for many different purposes:

- College and career planning – Students and educators use results to monitor progress toward college and career readiness.
- Preparation and prediction – Performance on PreACT Secure is used to predict performance on the ACT and ACT WorkKeys Tests.
- Educational measurement – Test results help to identify academic gaps and areas for improvement.

Subjects. PreACT Secure contains subject tests in the following content areas:

- English
- Reading
- Mathematics
- Science

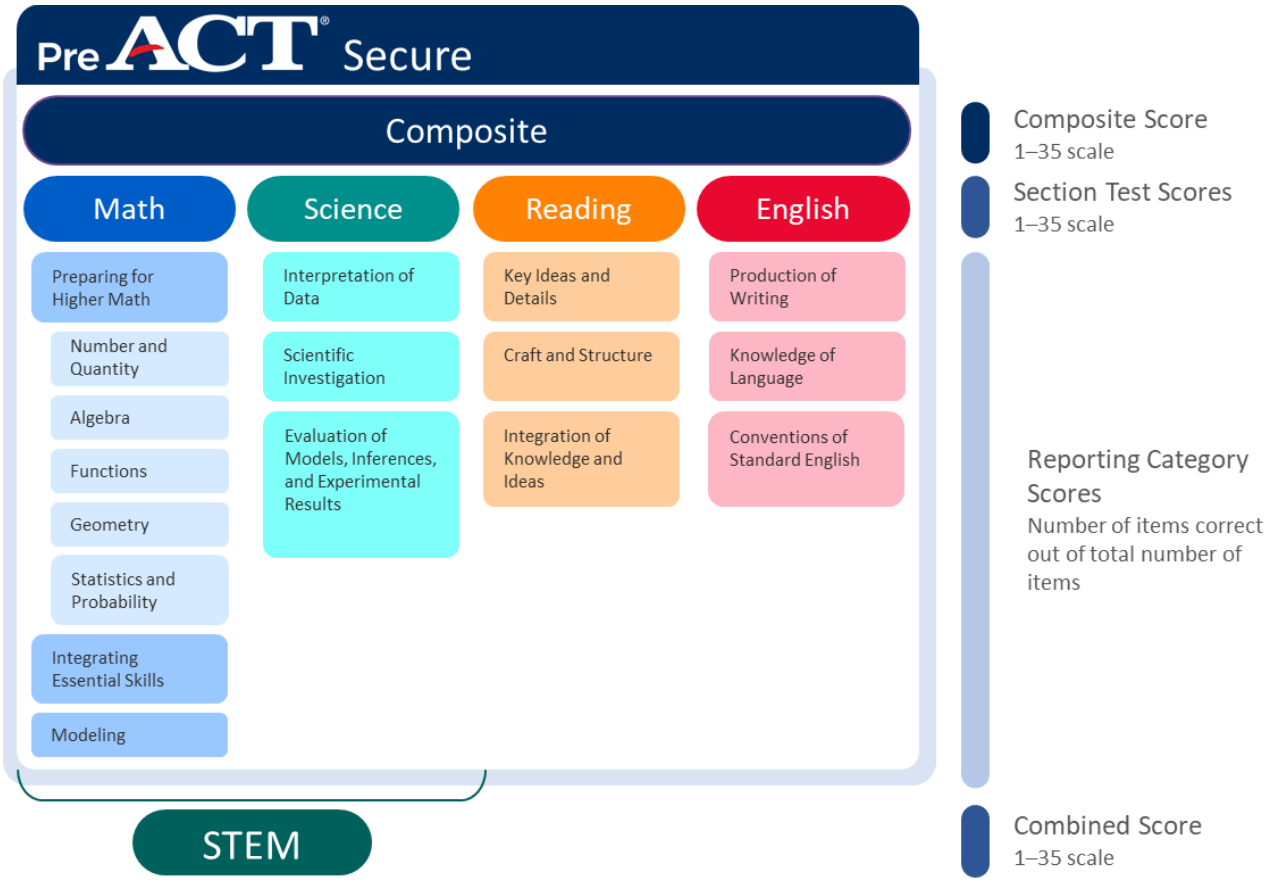
The English, reading, mathematics, and science tests consist of multiple-choice items and are administered together as a battery.

Scores. PreACT Secure provides a variety of scores, as shown in the table on the next page and described below:

- *Composite and subject scores* – Students receive a Composite score; overall subject scores for English, mathematics, reading, and science; and scores in multiple reporting categories for each of the subject tests. Each subject test score is reported on a scale that ranges from 1 to 35. The PreACT Secure score scale is linked to the ACT and PreACT 9 Secure scores using common-item IRT pre-equating procedures. Therefore, corresponding test scores can be compared directly between the PreACT 9 Secure, PreACT Secure, and ACT (e.g., PreACT Secure English to ACT English).
- *Science, technology, engineering, and math (STEM) score* – Combines mathematics and science scores.

- *PreACT Secure reporting category scores* – Provide granular information about student performance in a number of designated categories on each subject test.

Scores Reported on PreACT Secure



PREACT SECURE ENGLISH CONTENT DESCRIPTION

- *Item tally and time* – The PreACT Secure English test has 48 items (36 scored items and 12 field-test items) and a 35-minute time limit.
- *Concept* – The test puts the student in the position of a writer who makes decisions to revise and edit a text.
- *Knowledge and skills tested* – The test measures knowledge areas and related skills reflected in the reporting categories for this test (further described in a table below):
    - **Production of Writing:** Students apply their understanding of the rhetorical purpose and focus of a

piece of writing to develop a topic effectively. They use various strategies to achieve logical organization, topical unity, and cohesion.
    - **Knowledge of Language:** Students demonstrate effective language use by ensuring precision and concision in word choice and maintaining consistency in style and tone.
    - **Conventions of Standard English:** Students apply their understanding of the conventions of standard English grammar, usage, and mechanics to revise and edit text.
- *Format and item types* – The PreACT Secure English test consists of four passages (three scored passages and one field-test passage), each accompanied by a sequence of multiple-choice test items.
    - Different text types are used to provide a variety of rhetorical situations.
    - Students must use the rich context of the text to make editorial choices, demonstrating their understanding of writing strategies and conventions.
    - Texts are chosen not only for their appropriateness in assessing writing and language skills but also to reflect students' interests and experiences.
- *Knowledge and skills not tested* – Spelling and the rote recall of grammar rules are not tested.

PreACT Secure English test blueprints. Four scores are reported for the PreACT Secure test—a total test score based on all 36 scored items and the three reporting category scores. The reporting categories constitute a specific number of items and percentage of the test, as shown in the table below.

Reporting Category	Number of Items	Percentage of Test
Production of Writing	10–12	28–33%
Knowledge of Language	5–7	14–19%
Conventions of Standard English	18–20	50–56%

PreACT Secure English Reporting Category Descriptions

Reporting Category	Skill Area	Description/Examples
Production of Writing	***Topic Development—Purpose and Focus:*** Involves the ability to make content and stylistic choices that provide support for a text's rhetorical purpose.	Determine if a text's purpose is supported by organizational structure and content. Revise text to enhance focus and cohesion.
	Organization, Unity, and Cohesion: Involves the ability to support a text's purpose by progressing from point to point logically and smoothly.	Order sentences and paragraphs and use transitions to enhance overall purpose, unity, and logical cohesion. Frame texts effectively with transitions, introductions, and conclusions.
Knowledge of Language	***Expressing Ideas Clearly:*** Involves the ability to be precise and concise by using vocabulary skillfully and by avoiding wordiness and redundancy.	Use general academic and domain-specific language precisely and eliminate redundancy and wordiness when the meaning of the sentence or paragraph must be considered.
	Style: Involves the ability to maintain stylistic consistency appropriate for the communication task and to use language purposefully.	Maintain a consistent style and tone and use words, phrases, and sentences purposefully, considering their effect on the whole text.
Conventions of Standard English	***Sentence Structure and Formation:*** Involves the ability to ensure the grammatical soundness of a variety of sentences.	Recognize and correct subtle structural errors in sophisticated sentence structure and complex contexts, including when the meaning of multiple sentences or paragraphs must be considered.
	Usage Conventions: Involves the knowledge of and ability to apply rules of standard English usage.	Recognize and correct usage errors in structurally sophisticated sentences, including when relevant elements are separated by intervening text.

Reporting Category	Skill Area	Description/Examples
	Punctuation Conventions: Involves the knowledge and ability to apply the rules of standard English punctuation.	Recognize and correct punctuation errors in sophisticated sentence structures and complex contexts, including using punctuation to reduce ambiguity of sentences and paragraphs.

PREACT SECURE READING CONTENT DESCRIPTION

- *Item tally and time* – The PreACT Secure reading test has 33 items (25 scored items and 8 field-test items) and a 40-minute time limit.
- *Concept* – The test measures a student's ability to read closely, reason about texts using evidence, and integrate information from multiple sources.
- *Knowledge and skills tested* – The test measures knowledge areas and related skills reflected in the reporting categories for this test (further described in a table below):
    - **Key Ideas and Details:** Students read texts closely to determine central ideas and themes; summarize information and ideas accurately; and read closely to understand relationships and draw logical inferences and conclusions, including understanding sequential, comparative, and cause-effect relationships.
    - **Craft and Structure:** Students determine word and phrase meanings, analyze an author's word choice rhetorically, analyze text structure, understand authorial purpose and perspective, and analyze characters' points of view. Students interpret authorial decisions rhetorically and differentiate between various perspectives and sources of information.
    - **Integration of Knowledge and Ideas:** Students understand authors' claims, differentiate between facts and opinions, and use evidence to make connections between different texts that are related by topic. Some items will require students to analyze how authors construct arguments, evaluating reasoning and evidence from various sources.
- *Format and item types* – The PreACT Secure reading test consists of four sections (three scored sections and one field-test section), each containing a passage or pair of passages accompanied by a sequence of multiple-choice test items.

    - Passages in the reading test may include both literary narratives and informational texts from the humanities, natural sciences, and social sciences.
- *Knowledge and skills not tested* – Rote recall of facts from outside the passage or rules of formal logic are not tested. The test also does not include items about vocabulary that can be answered without referring to the passage context.

Reading test blueprints. Four scores are reported for the PreACT Secure reading test—a total test score based on all 25 scored items and the three reporting category scores. The reporting categories constitute a specific number of items and percentage of the test, as shown in the table below.

Reporting Category	Number of Items	Percentage of Test
Key Ideas and Details	13–15	52–60%
Craft and Structure	7–9	28–36%
Integration of Knowledge and Ideas	3–4	12–16%

PreACT Secure Reading Reporting Category Descriptions

Reporting Category	Skill Area	Description/Examples
Key Ideas and Details	***Close Reading:*** Involves the ability to attend carefully to what a text says and draw well-supported conclusions from a text.	Analyze challenging, complex, and highly complex texts to determine what the text says explicitly as well as draw conclusions based on textual support.
	Relationships: Involves the ability to identify and understand relationships between individuals, events, themes, and ideas in a text.	Identify and infer sequences, comparative relationships, and cause-effect relationships developed across a text.
	Central Ideas, Themes, Summaries: Involves the ability to synthesize information in a text in order to identify central ideas or themes, differentiate key ideas from ideas of lesser importance, and summarize text concisely.	Determine a central idea or theme of challenging, complex, and highly complex texts and summarize ideas and information developed across a text.

Reporting Category	Skill Area	Description/Examples
Craft and Structure	*Word Meanings and Word Choice:* Involves the ability to determine the meaning of words and phrases, including academic and domain-specific words, multiple-meaning words, and figurative language, based on the context of a text.	Determine the meaning, including figurative, connotative, and technical meanings, of words and phrases as they are used in more challenging, complex, and highly complex texts.
	Text Structure: Involves the ability to analyze text rhetorically in order to understand how an author's choices create effects on the reader.	Analyze rhetorical devices and the structure of more challenging, complex, and highly complex texts.
	Purpose and Point of View: Involves the ability to understand and analyze a text's rhetorical situation, including the author's intent, perspective, and use of rhetorical techniques.	Analyze stated and implied purposes in texts; analyze point of view and narrative techniques in narrative texts; analyze rhetorical techniques as well as authorial bias.
Integration of Knowledge and Ideas	*Arguments:* Involves the ability to understand and analyze arguments in a text, including claims, counterclaims, and supporting evidence.	Analyze the use of persuasive elements and development of an argument in more challenging, complex, and highly complex texts, assessing whether the evidence provided is relevant, sound, and sufficient.
	Synthesis of Multiple Texts: Involves the ability to make connections between, and integrate knowledge across, two or more texts.	Analyze how different literary, thematic, and structural elements inform both shared and distinct ideas when comparing more challenging, complex, and highly complex texts, as well as synthesize information across texts to build new knowledge and insights.

PREACT SECURE MATHEMATICS CONTENT DESCRIPTION

- *Item tally and time* – The PreACT Secure mathematics test has 38 items (33 scored items and 5 field-test items) and a 45-minute time limit.
- *Concept* – The test measures the whole of a student's mathematical development of topics typically taught up to the beginning of Grade 12 in US schools, with emphasis placed on topics typically taught from Grade 8 through the first 2 years of high school. It focuses on the prerequisite knowledge and skills important for success in college mathematics courses and career training programs.
- *Knowledge and skills tested* – The test measures knowledge areas and related skills reflected in the reporting categories for this test (further described in a table below):
    - **Preparing for Higher Mathematics:** Students apply the more recent mathematics they are learning. This reporting category is divided into the following five subcategories:
        - **Number and Quantity:** Students demonstrate knowledge of real and complex number systems. They understand and reason with numerical quantities in many forms, including integer and rational exponents and vectors and matrices.
        - **Algebra:** Students manipulate algebraic expressions. They solve, graph, and create equations and inequalities of different types, including but not limited to linear, polynomial, radical, and exponential. They find solutions to systems of equations and extend their knowledge to applications.
        - **Functions:** Students apply their knowledge of function definition, notation, representation, and application. Function types include but are not limited to linear, radical, piecewise, polynomial, and logarithmic. Students manipulate and translate functions, as well as find and apply important features of graphs.
        - **Geometry:** Students define and apply knowledge of shapes and solids, such as congruence and similarity relationships or surface area and volume measurements. They understand composition of objects and solve for missing values in triangles, circles, and other figures, including using trigonometric ratios and equations of circles.

        - **Statistics and Probability:** Students describe center and spread of distributions, apply and analyze data collection methods, understand and model relationships in bivariate data, and calculate probabilities.
    - **Integrating Essential Skills:** Students put together understandings and skills to solve problems of moderate to high complexity. Topics include rate and percentage; proportional reasoning; area, surface area, and volume; quantities and units; expressing numbers in diverse ways; using expressions to represent quantities and equations to capture relationships; rational exponents; the basics of functions; and function notation.
    - **Modeling:** Students use mathematics to represent, through a model, an analysis of an actual, empirical situation. The Modeling reporting category represents all items that involve producing, interpreting, understanding, evaluating, and improving models. Each modeling item is also counted in the other appropriate reporting categories above. Thus, the Modeling reporting category is an overall measure of how well a student uses modeling skills across mathematical topics.
- *Format and item type* – All test items are multiple choice. Most test items are self-contained. Some may belong to a set of several items (for example, each about the same graph or chart). The items measure the following reporting categories:
    - Preparing for Higher Mathematics
    - Integrating Essential Skills
    - Modeling
- *Knowledge and skills not tested* – Knowledge of basic formulas and computational skills are assumed as background for the problems, but recall of complex formulas and extensive computation are not required. A calculator is encouraged but not required.

PreACT Secure Mathematics test blueprints. Nine scores are reported—a total test score based on the 33 scored items and eight reporting category scores, which include the subcategories for Preparing for Higher Mathematics. The reporting categories constitute a specific number of scored items and percentage of the test, as shown in the table below.

Reporting Category	Number of Items	Percentage of Test
Preparing for Higher Mathematics	21	64%
Number and Quantity	3–5	9–15%
Algebra	4–6	12–18%
Functions	4–6	12–18%
Geometry	3–5	9–15%
Statistics and Probability	3–5	9–15%
Integrating Essential Skills	12	36%
Modeling*	≥8	≥24%

* Items for Modeling are included in the item counts in Preparing for Higher Mathematics and Integrating Essential Skills.

In addition, the overall mathematics test score, and the overall science score, are used to determine the STEM score.

PreACT Secure Mathematics Reporting Category Descriptions

Reporting Category	Skill Area	Description/Examples
Preparing for Higher Mathematics: Number and Quantity	Rational and Irrational Numbers	Use and apply the properties of rational and irrational numbers.
	Properties of Exponents	Use and apply the properties of exponents. Understand the relationship between rational exponents and radicals.
	Vectors and Matrices	Model situations, solve problems, and perform operations involving vectors and matrices.
	Complex Numbers	Perform operations and solve equations involving complex numbers.
	Quantities and Units	Reason quantitatively and use units to solve problems.

Reporting Category	Skill Area	Description/Examples
Preparing for Higher Mathematics: Algebra	Linear Expressions, Equations, and Inequalities	Model situations, solve problems, and perform operations involving linear expressions, equations, and inequalities.
	Quadratic Expressions, Equations, and Inequalities	Model situations, solve problems, and perform operations involving quadratic expressions, equations, and inequalities.
	Rational and Radical Expressions and Equations	Model situations, solve problems, and perform operations involving rational and radical expressions and equations.
	Polynomial Expressions and Equations	Model situations, solve problems, and perform operations involving polynomial expressions and equations.
	Systems of Equations and Inequalities	Solve, graph, and model situations with systems of equations and inequalities.
	Representation of Expressions and Equations	Rewrite expressions and equations in equivalent forms.
Preparing for Higher Mathematics: Functions	Properties of Functions	Evaluate, create, and describe the properties of functions. Convert between different representations of functions.
	Function Composition, Transformation, and Inverse Functions	Compose and transform functions, find inverse functions, and state the domain and range of a function composition.
	Sequences and Series	Model situations, solve problems, and perform operations involving sequences and series.

Reporting Category	Skill Area	Description/Examples
	Trigonometric Functions	Model situations, solve problems, and perform operations using trigonometric functions and identities.
	Exponential and Logarithmic Functions	Model situations, solve problems, and perform operations involving exponential and logarithmic functions.
Preparing for Higher Mathematics: Geometry	Transformations	Model situations, solve problems, and perform operations involving transformations of geometric figures in a plane.
	Proof, Reasoning, and Constructions	Use logical arguments to prove theorems about geometric figures, and construct various geometric figures.
	Similarity, Right Triangles, and Trigonometry	Use properties of similarity and congruence to solve problems. Define trigonometric ratios in terms of right triangles, and apply these ratios to general triangles.
	Coordinate Geometry	Model situations and solve problems with geometric figures in the coordinate plane.
	Conic Sections	Model situations and solve problems involving conic sections.
	Properties of Circles	Solve problems using properties and features of circles, including inscribed angles, central angles, radii, chords, secants, and tangents.

Reporting Category	Skill Area	Description/Examples
	Geometric Measurement and Modeling	Model situations and solve problems involving solids such as pyramids, cones, and spheres.
	Pythagorean Theorem	Use the Pythagorean Theorem to solve problems.
Preparing for Higher Mathematics: Statistics and Probability	Univariate Data Analysis	Solve problems involving the comparison and interpretation of the center, shape, and spread of univariate datasets, including normally distributed datasets.
	Bivariate Data Analysis	Summarize, represent, and interpret datasets with two categorical or two quantitative variables. Determine whether an association exists between two variables.
	Introduction to Formal Inferential Statistics	Use sample data and margin of error to estimate population parameters. Use simulation or other methods to reject or fail to reject claims about population parameters.
	Rules of Probability	Use rules of probability to compute probabilities and expected values.
	Counting, Permutations, and Combinations	Use counting principles, combinations, and permutations to compute probabilities of compound events and solve problems.
	Scatterplots	Analyze scatterplots and, where appropriate, draw informal lines of best fit and represent them symbolically.

Reporting Category	Skill Area	Description/Examples
Integrating Essential Skills	Properties of Integers and Rational Numbers	Use and apply the properties of integers and rational numbers.
	Computation and Problem-Solving with Integers and Rational Numbers	Evaluate expressions and solve problems involving integers and rational numbers.
	Ratio, Proportion, and Percent	Use ratios, proportions, and percents in problem-solving situations.
	Writing Algebraic Expressions	Model situations and perform operations with linear and polynomial expressions.
	Writing and Solving Simple Equations and Inequalities	Write one- and two-variable linear equations, and use these equations to answer questions.
	Perimeter, Circumference, and Area	Calculate the perimeter, circumference, and area of polygons and circles.
	Surface Area and Volume of Prisms	Calculate the surface area and volume of prisms.
	Measurement Units and Unit Conversion	Model situations, solve problems, and perform operations involving measurement units and scale models.
	Properties of Lines, Angles, and Shapes	Use the properties of lines, angles, two-dimensional shapes, and three-dimensional shapes to describe situations and solve problems.
	The Coordinate Plane	Solve problems involving the graphing of points and polygons in the coordinate plane.

Reporting Category	Skill Area	Description/Examples
	Informal Inferential Statistics	Estimate a population parameter with sample data.
	Data Summaries and Displays	Describe the distribution of a quantitative dataset by its shape and measures of center and spread. Present data in displays such as line plots, histograms, box plots, and bar charts.
	Basic Probability	Compute probabilities for simple events and for compound events where the sample space can be listed.
Modeling	Producing	Produce a model for a given real-world or mathematical context.
	Interpreting	Interpret the parameters of a model in terms of the situation.
	Understanding	Show understanding by determining the conditions under which a model works or does not work.
	Evaluating	Choose the best model for a situation or decide if a model is appropriate for a given situation.
	Improving	Improve a model by adjusting its parameters.

- *Item tally and time* – The PreACT Secure science test has 36 items (30 scored items and 6 field-test items) and a 35-minute time limit.
- *Concept* – The test measures science and engineering knowledge, practices, and skills that are highly correlated with college success. The correlations are based on both decades of empirical research and the responses of post-secondary educators on the ACT National Curriculum Survey.
- *Knowledge and skills tested* – The test measures knowledge areas and related skills reflected in the reporting categories for this test (further described in a table below):
    - **Interpretation of Data:** Students locate, translate, infer, and extend from and evaluate data and information in scientific graphs, tables, and diagrams of varying complexity. This reporting category is divided into the following three subcategories:
        - Locating and Understanding
        - Inferring and Translating
        - Extending and Re-evaluating
    - **Scientific Investigation:** Students understand the tools, procedures, and designs of scientific experiments and compare, extend, and modify those experiments. This reporting category is divided into the following three subcategories:
        - Locating and Comparing
        - Designing and Implementing
        - Extending and Improving
    - **Evaluating Models, Inferences, and Experimental Results:** Students evaluate the validity of scientific claims based on evidence and formulate conclusions and predictions based on that information using a claim, evidence, or reasoning model of scientific argument. This reporting category is divided into the following three subcategories:
        - Inferences and Results – Evaluating and Extending
        - Models – Understanding and Comparing
        - Models – Evaluating and Extending
- *Format and item type* – Science and engineering knowledge, skills, and practices are applied to rich scientific passages that are written in one of three formats: Data Representation, Research Summaries, or Conflicting Viewpoints. Each passage is accompanied by a set of multiple-choice items. Interaction with each passage format requires students to engage in scientific sense-making around the following:

- Experimental procedures and phenomena (Research Summaries)
- Data presentations (Data Representation)
- Scientific models and explanations (Conflicting Viewpoints)

PreACT Secure Science test blueprints. Four scores are reported—a total test score based on all 30 items and the three reporting category scores. The reporting categories constitute a specific number of items and percentage of the test, as shown below. A table describing the reporting categories in detail follows this.

Reporting Category	Number of Items	Percentage of Test
Interpretation of Data	6–12	20–40%
Scientific Investigation	5–12	17–40%
Evaluation of Models, Inferences, and Experimental Results	6–12	20–40%

In addition, the overall science test score is combined with the overall mathematics score to determine the STEM score.

Topics from all major disciplines (biology, chemistry, physics, and earth and space science) are used on the test to elicit evidence of how students apply science practices. Some items require specific content knowledge to successfully complete the task; however, these involve the use of a science practice as well. Consequently, no science scores are reported in relation to the major science disciplines.

PreACT Secure Science Reporting Category Descriptions

Reporting Category	Skill Area	Description/Examples
Interpretation of Data	Locating and Understanding	Locate one or more pieces of data and understand features of graphics and tables, such as units, legends, and axes.
	Inferring and Translating	Use data from one or more graphs and/or tables to identify trends, make inferences and comparisons, or translate into other graphic formats.

Reporting Category	Skill Area	Description/Examples
	Extending and Re-evaluating	Make predictions based on trends in data.
Scientific Investigation	Locating and Comparing	Locate, compare, and contrast information about one or more scientific investigations or experiments.
	Designing and Implementing	Understand and evaluate aspects of experimental design such as methods, tools, variables, and controls.
	Extending and Implementing	Make predictions about future experiments or experimental conditions and determine additional methods to improve or evaluate investigations.
Evaluation of Models, Inferences, and Experimental Results	Inferences and Results: Evaluating and Extending	Evaluate and formulate hypotheses, predictions, and conclusions based on experimental results and other scientific data and knowledge.
	Models: Understanding and Comparing	Locate and compare information within a theoretical model or across competing models. (Note: These skills are only used with conflicting viewpoints passages.)
	Models: Evaluating and Extending	Evaluate and formulate predictions and hypotheses based on the examination of competing theoretical models. (Note: These skills are only used with conflicting viewpoints passages.)

Overview of PreACT 9 Secure

This overview briefly describes the purpose of PreACT 9 Secure, who uses the test and how, the test content, and the types of scores students receive, as well as benefits of the test.

Purpose. PreACT 9 Secure measures a student's level of achievement in core academic areas taught in grade 9. Users apply test data, test scores, and interpretations for four primary purposes:

- Student readiness on an empirically derived college and career readiness trajectory.
- Instructionally actionable information to students, families, and educators.
- Identify areas of student strength and weakness in content areas at a variety of levels (student, classroom, school).
- Scores are strong predictors of ACT English, reading, mathematics, science, STEM, and Composite scores.

Subjects. PreACT 9 Secure contains subject tests in the following content areas:

- English
- Reading
- Mathematics
- Science

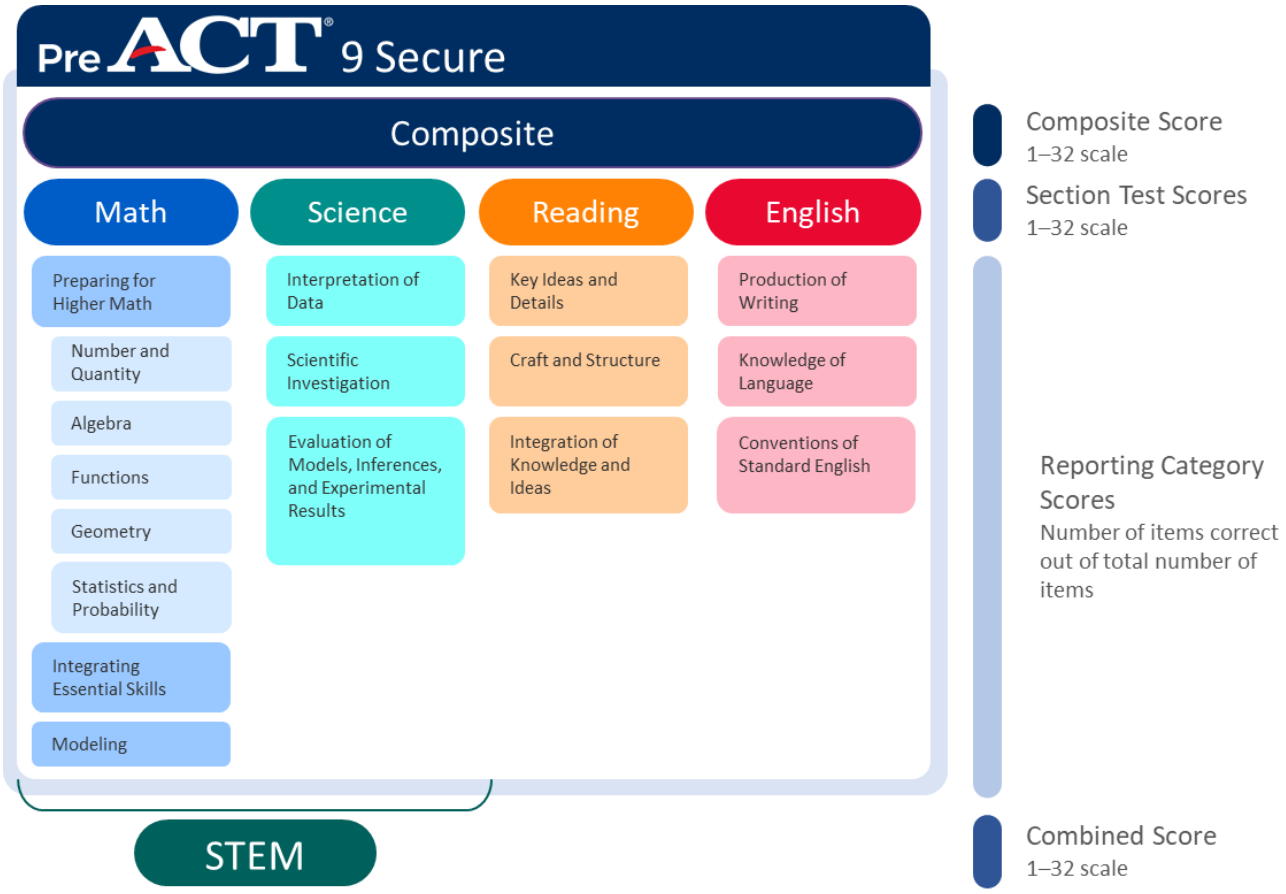
The English, reading, mathematics, and science tests consist of multiple-choice questions and are administered together as a battery.

Scores. PreACT 9 Secure provides a variety of scores, as shown in the table on the next page and described below:

- *Composite and subject scores* – Students receive a Composite score; overall subject scores for English, mathematics, reading, and science; and scores in multiple reporting categories for each of the subject tests. Each subject test score is reported on a scale that ranges from 1 to 32. The PreACT 9 Secure score scale is linked to PreACT and ACT scores using common-item IRT pre-equating procedures. Therefore, corresponding test scores can be compared directly between the PreACT 9 Secure, PreACT Secure, and ACT (e.g., PreACT 9 Secure English to PreACT Secure English).
- *Science, technology, engineering, and math (STEM) score* – Combines mathematics and science scores.

- *PreACT 9 Secure reporting category scores* – Provide granular information about student performance in designated categories on each subject test.

Scores Reported on PreACT 9 Secure



PREACT 9 SECURE ENGLISH CONTENT DESCRIPTION

- *Item tally and time* – The PreACT 9 Secure English test has 44 items (including 11 field-test items that do not contribute to score points) and a 35-minute time limit.
- *Concept* – The test puts the student in the position of a writer who makes decisions to revise and edit a text.
- *Knowledge and skills tested* – The test measures knowledge areas and related skills reflected in the reporting categories for this test (further described in a table below):
    - **Production of Writing:** Students apply their understanding of the rhetorical purpose and focus of a piece of writing to develop a topic effectively. They use

various strategies to achieve logical organization, topical unity, and cohesion.
    - **Knowledge of Language:** Students demonstrate effective language use by ensuring precision and concision in word choice and maintaining consistency in style and tone.
    - **Conventions of Standard English:** Students apply their understanding of the conventions of standard English grammar, usage, and mechanics to revise and edit text.
- *Format and item types* – The test consists of four short passages (3 scored, and 1 field-test passage), each accompanied by a sequence of multiple-choice items.
    - Different text types are used to provide a variety of rhetorical situations.
    - Students must use the rich context of the text to make editorial choices, demonstrating their understanding of writing strategies and conventions.
    - Texts are chosen not only for their appropriateness in assessing writing and language skills but also to reflect students' interests and experiences.
- *Knowledge and skills not tested* – Spelling and the rote recall of grammar rules are not tested.

PreACT 9 Secure English test blueprints. Four scores are reported for the PreACT 9 Secure English test—a total test score based on all 33 scored items and the three reporting category scores. The reporting categories constitute a specific number of items and percentage of the test, as shown below. A table describing the reporting categories in detail follows this.

Reporting Category	Number of Items	Percentage of Test
Production of Writing	9–11	28–34%
Knowledge of Language	4–6	13–19%
Conventions of Standard English	16–18	50–56%

PreACT 9 Secure Reporting Category Descriptions

Reporting Category	Skill Area	Description/Examples
Production of Writing	***Topic Development—Purpose and Focus:*** Involves the ability to make content and stylistic choices that provide support for a text's rhetorical purpose.	Determine if a text's purpose is supported by organizational structure and content. Revise text to enhance the focus and cohesion.
	Organization, Unity, and Cohesion: Involves the ability to support a text's purpose by progressing from point to point logically and smoothly.	Order sentences and paragraphs and use transitions to enhance overall purpose, unity, and logical cohesion. Frame texts effectively with transitions, introductions, and conclusions.
Knowledge of Language	***Expressing Ideas Clearly:*** Involves the ability to be precise and concise by using vocabulary skillfully and by avoiding wordiness and redundancy.	Use general academic and domain-specific language precisely and eliminate redundancy and wordiness when the meaning of the sentence or paragraph must be considered.
	Style: Involves the ability to maintain stylistic consistency appropriate for the communication task and to use language purposefully.	Maintain a consistent style and tone and use words, phrases, and sentences purposefully, considering their effect on the whole text.
Conventions of Standard English	***Sentence Structure and Formation:*** Involves the ability to ensure the grammatical soundness of a variety of sentences.	Recognize and correct subtle structural errors in sophisticated sentence structure and complex contexts, including when the meaning of multiple sentences or paragraphs must be considered.
	Usage Conventions: Involves the knowledge of and ability to apply rules of standard English usage.	Recognize and correct usage errors in structurally sophisticated sentences, including when relevant elements are separated by intervening text.

Reporting Category	Skill Area	Description/Examples
	Punctuation Conventions: Involves the knowledge and ability to apply the rules of standard English punctuation.	Recognize and correct punctuation errors in sophisticated sentence structures and complex contexts, including using punctuation to reduce ambiguity of sentences and paragraphs.

PREACT 9 SECURE READING CONTENT DESCRIPTION

- *Item tally and time* – The PreACT 9 Secure reading test has 33 items (25 scored items and 8 field-test items) and a 40-minute time limit.
- *Concept* – The test measures a student's ability to read closely, reason about texts using evidence, and integrate information from multiple sources.
- *Knowledge and skills tested* – The test measures knowledge areas and related skills reflected in the reporting categories for this test (further described in a table below):
    - **Key Ideas and Details:** Students read texts closely to determine central ideas and themes; summarize information and ideas accurately; and read closely to understand relationships and draw logical inferences and conclusions, including understanding sequential, comparative, and cause-effect relationships.
    - **Craft and Structure:** Students determine word and phrase meanings, analyze an author's word choice rhetorically, analyze text structure, understand authorial purpose and perspective, and analyze characters' points of view. They interpret authorial decisions rhetorically and differentiate between various perspectives and sources of information.
    - **Integration of Knowledge and Ideas:** Students understand authors' claims, differentiate between facts and opinions, and use evidence to make connections between different texts that are related by topic. Some items will require students to analyze how authors construct arguments, evaluating reasoning and evidence from various sources.
- *Format and item types* – The test consists of three scored sections and one field test section, each containing a passage or pair of passages accompanied by a sequence of multiple-choice test items.

    - Passages in the reading test include both literary narratives and informational texts from the humanities, natural sciences, and social sciences.
- *Knowledge and skills not tested* – Rote recall of facts from outside the passage or rules of formal logic are not tested. The test also does not include items about vocabulary that can be answered without referring to the passage context.

PreACT 9 Secure Reading test blueprints. Four scores are reported for the PreACT 9 Secure reading test—a total test score based on all 25 scored items, and the three reporting category scores. The reporting categories constitute a specific number of items and percentage of the test, as shown below.

Reporting Category	Number of Items	Percentage of Test
Key Ideas and Details	13–15	50–60%
Craft and Structure	7–9	30–35%
Integration of Knowledge and Ideas	3–4	10–15%

PreACT 9 Secure Reporting Category Descriptions

Reporting Category	Skill Area	Description/Examples
Key Ideas and Details	***Close Reading:*** Involves the ability to attend carefully to what a text says and draw well-supported conclusions from a text.	Analyze challenging and complex texts to determine what the text says explicitly as well as draw conclusions based on textual support.
	Relationships: Involves the ability to identify and understand relationships between individuals, events, themes, and ideas in a text.	Identify and infer sequences, comparative relationships, and cause-effect relationships developed across a text.
	Central Ideas, Themes, Summaries: Involves the ability to synthesize information in a text in order to identify central ideas or themes, differentiate key ideas from ideas of lesser importance, and summarize text concisely.	Determine a central idea or theme of challenging, complex, and highly complex texts and summarize ideas and information developed across a text.

Craft and Structure	***Word Meanings and Word Choice:*** Involves the ability to determine the meaning of words and phrases, including academic and domain-specific words, multiple-meaning words, and figurative language, based on the context of a text.	Determine the meaning, including figurative, connotative, and technical meanings, of words and phrases as they are used in more challenging and complex texts.
	Text Structure: Involves the ability to analyze text rhetorically in order to understand how an author's choices create effects on the reader.	Analyze rhetorical devices and the structure of more challenging and complex texts.
	Purpose and Point of View: Involves the ability to understand and analyze a text's rhetorical situation, including the author's intent, perspective, and use of rhetorical techniques.	Analyze stated and implied purposes in texts; analyze point of view and narrative techniques in narrative texts; analyze rhetorical techniques as well as authorial bias.
Integration of Knowledge and Ideas	***Arguments:*** Involves the ability to understand and analyze arguments in a text, including claims, counterclaims, and supporting evidence.	Analyze the use of persuasive elements and development of an argument in more challenging and complex texts, assessing whether the evidence provided is relevant, sound, and sufficient.
	Synthesis of Multiple Texts: Involves the ability to make connections between, and integrate knowledge across, two or more texts.	Analyze how different literary, thematic, and structural elements inform both shared and distinct ideas when comparing more challenging and complex texts, as well as synthesize information across texts to build new knowledge and insights.

PREACT 9 SECURE MATHEMATICS CONTENT DESCRIPTION

- *Item tally and time* – The PreACT 9 Secure mathematics test has 35 items (30 scored items and 5 field-test items) and a 45-minute time limit.
- *Concept* – PreACT 9 Secure focuses mainly on topics found in grade 9 math courses. PreACT 9 Secure places more emphasis on algebra and function topics and less emphasis on geometry topics as compared to the ACT and PreACT Secure.
- *Knowledge and skills tested* – The test measures knowledge areas and related skills reflected in the reporting categories for this test (further described in a table below):
    - **Preparing for Higher Mathematics:** This reporting category is divided into the following five subcategories:
        - **Number and Quantity:** Students demonstrate knowledge of the real number system and reason with numerical quantities in different forms, including expressions with rational exponents and radicals.
        - **Algebra:** Students evaluate, solve, graph, model with, and interpret parameters of expressions, equations, and systems of equations. PreACT 9 Secure focuses on elementary types of expressions and equations, such as linear, quadratic, and exponential.
        - **Functions:** Students demonstrate knowledge of functions: their definition and notation, their various representations, and their applications. They manipulate and translate functions and interpret important features of their graphs. PreACT 9 Secure focuses on elementary function types, such as linear, quadratic, simple piecewise, and exponential.
        - **Geometry: S**tudents apply their knowledge about various geometric objects to solve problems involving area, volume, slope, coordinate geometry, and transformations.
    - **Statistics and Probability:** Students describe the center and spread of distributions, understand and model relationships in bivariate data, and work with sample spaces.
    - **Integrating Essential Skills:** Students encounter questions that focus on the synthesis and application of a variety of skills to solve more complex problems. The questions address concepts such as rates and percentages, proportional relationships, perimeter and area, mean and

median, and expressing numbers in different ways. Students are also asked to solve non-routine problems that require a combination of skills, apply skills in varied contexts, and demonstrate fluency with fundamental mathematical skills.
    - **Modeling:** All questions from across the test that involve producing, interpreting, understanding, evaluating, and improving models are captured by this reporting category. Each question is also counted in other appropriate reporting categories above. This category is an overall measure of how well students use modeling skills across mathematical topics.
- *Format and item type* – All test items are multiple choice. Most test items are self-contained. Some may belong to a set of several questions (for example, each about the same graph or chart). The items measure the following reporting categories:
    - Preparing for Higher Mathematics
    - Integrating Essential Skills
    - Modeling
- *Knowledge and skills not tested* – Knowledge of basic formulas and computational skills are assumed as background for the problems, but recall of complex formulas and extensive computation are not required. A calculator is encouraged but not required.

PreACT 9 Secure Mathematics test blueprints. Nine scores are reported for the PreACT 9 Secure mathematics test—a total test score based on the 30 scored items, and eight reporting category scores, which include the subcategories for Preparing for Higher Mathematics. The reporting categories constitute a specific number of scored items and percentage of the test, as shown below. Note that items for Modeling are included in the item counts in Preparing for Higher Mathematics and Integrating Essential Skills.

Reporting Category	Number of Items	Percentage of Test
Preparing for Higher Mathematics	24	80%
Number and Quantity	3–4	10%–13%
Algebra	6–8	20%–27%
Functions	6–8	20%–27%
Geometry	3–4	10%–13%
Statistics and Probability	3–4	10%–13%
Integrating Essential Skills	6	20%
Modeling*	≥7	≥23%

* Items for Modeling are included in the item counts in Preparing for Higher Mathematics and Integrating Essential Skills.

In addition, the overall mathematics test score and the overall science score are used to determine the STEM score.

PreACT 9 Secure Reporting Category Descriptions

Reporting Category	Skill Area	Description
Preparing for Higher Mathematics: Number and Quantity	Rational and Irrational Numbers	Use and apply the properties of rational and irrational numbers.
	Properties of Exponents	Use and apply the properties of integer and rational exponents. Understand the relationship between rational exponents and radicals.
	Quantities and Units	Reason quantitatively and use units to solve problems.
Preparing for Higher Mathematics: Algebra	Linear Expressions, Equations, and Inequalities	Model situations, solve problems, and perform operations involving linear expressions, equations, and inequalities.
	Quadratic Expressions, Equations, and Inequalities	Model situations, solve problems, and perform operations involving quadratic expressions, equations, and inequalities.

Reporting Category	Skill Area	Description
	Rational and Radical Expressions and Equations	Model situations, solve problems, and perform operations involving simple rational and radical expressions and equations.
	Polynomial Expressions and Equations	Model situations, solve problems, and perform operations involving polynomial expressions and equations.
	Systems of Equations and Inequalities	Solve, graph, and model situations with systems of equations and inequalities.
	Representation of Expressions and Equations	Rewrite expressions and equations in equivalent forms.
Preparing for Higher Mathematics: Functions	Properties of Functions	Evaluate, create, and describe the properties of functions. Convert between different representations of functions.
	Function Transformation and Inverses	Transform functions, and find the inverse of simple functions.
	Sequences	Model situations, solve problems, and perform operations involving sequences.
	Exponential Functions	Model situations, solve problems, and perform operations involving exponential functions.
Preparing for Higher Mathematics: Geometry	Transformations	Model situations, solve problems, and perform operations involving transformations of geometric figures in a plane.

Reporting Category	Skill Area	Description
	Proof, Reasoning, and Constructions	Use logical arguments to prove theorems about geometric figures, and construct various geometric figures.
	Similarity	Use properties of similarity and congruence to solve problems.
	Coordinate Geometry	Model situations and solve problems with geometric figures in the coordinate plane.
	Geometric Measurement and Modeling	Model situations and solve problems involving the volume of solids such as pyramids, cones, and spheres.
	Pythagorean Theorem	Use the Pythagorean Theorem to solve problems.
Preparing for Higher Mathematics: Statistics and Probability	Univariate Data Analysis	Solve problems involving the comparison and interpretation of the center, shape, and spread of univariate datasets.
	Bivariate Data Analysis	Summarize, represent, and interpret datasets with two categorical or two quantitative variables. Determine whether an association exists between two variables.
	Counting and Probability	Use counting principles to solve problems, including computing probabilities of compound events.
	Scatterplots	Analyze scatterplots and, where appropriate, draw informal lines of best fit and represent them symbolically.

Reporting Category	Skill Area	Description
Integrating Essential Skills	Properties of Integers and Rational Numbers	Use and apply the properties of integers and rational numbers.
	Computation and Problem Solving with Integers and Rational Numbers	Evaluate expressions and solve problems involving integers and rational numbers.
	Ratio, Proportion, and Percent	Use ratios, proportions, and percentages in problem-solving situations.
	Writing Algebraic Expressions	Model situations and perform operations with linear and polynomial expressions.
	Writing and Solving Simple Equations and Inequalities	Write one- and two-variable linear equations and inequalities, and use them to answer questions.
	Perimeter, Circumference, and Area	Calculate the perimeter, circumference, and area of polygons and circles.
	Surface Area and Volume of Prisms	Calculate the surface area and volume of prisms.
	Measurement Units and Unit Conversion	Model situations, solve problems, and perform operations involving measurement units and scale models.
	Properties of Lines, Angles, and Shapes	Use the properties of lines, angles, two-dimensional shapes, and three-dimensional shapes to describe situations and to solve problems.
	The Coordinate Plane	Solve problems involving the graphing of points and polygons in the coordinate plane.

Reporting Category	Skill Area	Description
	Data Summaries and Displays	Describe the distribution of a quantitative dataset by its shape and measures of center and spread. Present data in displays such as line plots, histograms, box plots, and bar charts.
	Informal Inferential Statistics	Estimate a population parameter with sample data.
	Basic Probability	Compute probabilities for simple events and for compound events where the sample space can be listed.
Modeling	Producing	Produce a model for a given real-world or mathematical context.
	Interpreting	Interpret the parameters of a model in terms of the situation.
	Understanding	Show understanding by determining conditions under which a model works or does not work.
	Evaluating	Choose the best model for a situation or decide if a model is appropriate for a given situation.
	Improving	Improve a model by adjusting its parameters.

PREACT 9 SECURE SCIENCE CONTENT DESCRIPTION

- *Item tally and time* – The PreACT 9 Secure science test has 32 items (26 scored items and 6 field-test items) and a 35-minute time limit.
- *Concept* – The test measures the interpretation, analysis, evaluation, reasoning, and problem-solving skills required in the natural sciences. The content of the science test is drawn from life science, physical science, and Earth/space science.
- *Knowledge and skills tested* – The test measures knowledge areas and related skills reflected in the reporting categories for this test (further described in a table below):
    - **Interpretation of Data:** Students locate, translate, infer, and extend from and evaluate data and information in scientific graphs, tables, and diagrams of varying complexity. This reporting category is divided into the following three subcategories:
        - Locating and Understanding
        - Inferring and Translating
        - Extending and Re-evaluating
    - **Scientific Investigation:** Students understand the tools, procedures, and designs of scientific experiments and compare, extend, and modify those experiments. This reporting category is divided into the following three subcategories:
        - Locating and Comparing
        - Designing and Implementing
        - Extending and Improving
    - **Evaluating Models, Inferences, and Experimental Results:** Students evaluate the validity of scientific claims based on evidence and formulate conclusions and predictions based on that information using a claim, evidence, or reasoning model of scientific argument. This reporting category is divided into the following three subcategories:
        - Inferences and Results – Evaluating and Extending
        - Models – Understanding and Comparing
        - Models – Evaluating and Extending
- *Format and item type*– Science and engineering knowledge, skills, and practices are applied to rich scientific passages that are written in one of three formats: Data Representation, Research Summaries, or Conflicting Viewpoints. Each passage is accompanied by a set of multiple-choice items. Interaction with each passage format requires students to engage in scientific sense-making around the following:

- Experimental procedures and phenomena (Research Summaries)
- Data presentations (Data Representation)
- Scientific models and explanations (Conflicting Viewpoints)

PreACT 9 Secure Science test blueprints. Four scores are reported for the PreACT 9 Secure science test—a total test score based on all 26 items and the three reporting category scores. The reporting categories constitute a specific number of items and percentage of the test, as shown below. A table describing the reporting categories in detail follows this.

Reporting Category	Number of Items	Percentage of Test
Interpretation of Data	6–13	23–50%
Scientific Investigation	4–9	15–34%
Evaluation of Models, Inferences, and Experimental Results	5–10	19–38%

In addition, the overall science test score is combined with the overall mathematics score to determine the STEM score.

Topics from all major disciplines (biology, chemistry, physics, and Earth and space science) are used on the test to elicit evidence of students using science practices. Some items will require specific content knowledge to successfully complete the task; however, these tasks always involve the use of a science practice as well. Consequently, no specific science content subscore is reported according to the major science disciplines.

PreACT 9 Secure Reporting Category Descriptions

Reporting Category	Skill Area	Description/Examples
Interpretation of Data	Locating and Understanding	Locate one or more pieces of data and understand features of graphics and tables, such as units, legends, and axes.
	Inferring and Translating	Use data from one or more graphs and/or tables to identify trends, make inferences and comparisons, or translate into other graphic formats.
	Extending and Re-evaluating	Make predictions based on trends in data.
Scientific Investigation	Locating and Comparing	Locate, compare, and contrast information about one or more scientific investigations or experiments.
	Designing and Implementing	Understand and evaluate aspects of experimental design such as methods, tools, variables, and controls.
	Extending and Implementing	Make predictions about future experiments or experimental conditions and determine additional methods to improve or evaluate investigations.
Evaluation of Models, Inferences, and Experimental Results	Inferences and Results: Evaluating and Extending	Evaluate and formulate hypotheses, predictions, and conclusions based on experimental results and other scientific data and knowledge.
	Models: Understanding and Comparing	Locate and compare information within a theoretical model or across competing models. (Note: These skills are only used with conflicting viewpoints passages.)

Reporting Category	Skill Area	Description/Examples
	Models: Evaluating and Extending	Evaluate and formulate predictions and hypotheses based on the examination of competing theoretical models. (Note: These skills are only used with conflicting viewpoints passages.)

III. Standards and the PreACT 9 Secure, PreACT Secure, and the ACT Test

Summary results of the alignment analysis at each grade level for ELA/literacy, mathematics, and science are discussed below. The detailed results of the analysis are included in the alignment tables found below in **Sections IV-VI**.

For each set of standards in Illinois' K–12 framework, the summary indicates the ACT tests that were analyzed for alignment, the total number of standards evaluated, the number of those standards assessed in whole or in part by items in one or more ACT assessment content categories, and the standards for which no link to ACT assessments was found.

ENGLISH LANGUAGE ARTS (ELA)

ELA test development subject matter experts conducted analyses of the alignment between several sets of Illinois ELA standards and the ACT assessments.

Across all sections of the Illinois ELA standards, the analyses found strong alignment. Overall, vast majority of the ELA & Literacy standards evaluated were assessed by the ELA sections of the ACT assessments, as summarized below. Some of the gaps identified are related to expectations in the standards that are difficult to assess in a timed, standardized test setting. Additionally, many of the gaps indicated pertain to a sub-standard for which many other elements of the standard are aligned (see note below about counting the alphabetic sub-standards).

The ACT

ACT Alignment with Illinois Learning Standards ELA and Literacy, Grades 11 & 12

Content Area	Number of Standards Aligned
ELA & Literacy	**118 of 129**
Anchor Standards for Reading	**10 of 10**
Anchor Standards for Writing	**7 of 10**
Anchor Standards for Language	**6 of 6**
Reading Standards for Literature	**8 of 9**
Reading Standards for Informational Text	**10 of 10**
Writing	**25 of 28**
Language	**16 of 17**
Reading: History/Social Studies	**10 of 10**
Writing: History/Social Studies, Science, & Technical Subjects	**16 of 19**
Reading: Science & Technical Subjects	**10 of 10**

Notes

- Illinois Speaking and Listening standards in ELA were excluded from the analysis because ACT assessments are not intended to measure the knowledge and skills in these standards.
- Several of the ELA standards included alphabetic sub-standards (e.g., L11-12.2.a, L11-12.2.b). For the purpose of counting the number of aligned standards in the summary below, the sub-standards were counted separately because alignments were made to them individually.
- Anchor Standards for Writing not assessed by the ACT test are:
    - CCRA.W.6, Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.
    - CCRA.W.7, Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
    - CCRA.W.8, Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
- Reading Standards for Literature not assessed by the ACT are:
    - RL.11-12.7, Analyze multiple interpretations of a story, drama, or poem (e.g., recorded or live production of a play or recorded novel or poetry), evaluating how each version interprets the source text. (Include at least one play by Shakespeare and one play by an American dramatist.)

- Writing Standards not assessed by the ACT are:
    - W.11-12.6, Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.
    - W.11-12.7, Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
    - W.11-12.8, Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
- Language Standards not assessed by the ACT are:
    - L.11-12.4.c, Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, its etymology, or its standard usage.
- Writing: History/Social Studies, Science, & Technical Standards not assessed by the ACT are:
    - WHST.11-12.6, Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.
    - WHST.11-12.7, Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
    - WHST.11-12.8, Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and

overreliance on any one source and following a standard format for citation.

PreACT Secure

PreACT Secure Alignment with Illinois Learning Standards ELA and Literacy, Grades 9 & 10

Content Area	Number of Standards Aligned
ELA & Literacy	114 of 131
Anchor Standards for Reading	9 of 10
Anchor Standards for Writing	7 of 10
Anchor Standards for Language	6 of 6
Reading Standards for Literature	8 of 9
Reading Standards for Informational Text	9 of 10
Writing	25 of 28
Language	15 of 18
Reading: History/Social Studies	9 of 10
Writing: History/Social Studies, Science, & Technical Subjects	17 of 20
Reading: Science & Technical Subjects	9 of 10

Notes

- Illinois Speaking and Listening standards in ELA were excluded from the analysis because ACT assessments are not intended to measure the knowledge and skills in these standards.
- Several of the ELA standards included alphabetic sub-standards (e.g., L9-10.2.a, L9-10.2.b). For the purpose of counting the number of aligned standards in the summary below, the sub-standards were counted separately because alignments were made to them individually.
- Anchor Standards for Reading not assessed by the PreACT Secure are:
    - CCRA.R.7, Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.
- Anchor Standards for Writing not assessed by PreACT Secure are:
    - CCRA.W.6, Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.
    - CCRA.W.7, Conduct short as well as more sustained research projects based on focused questions,

demonstrating understanding of the subject under investigation.
    - CCRA.W.8, Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
- Reading Standards for Literature not assessed by PreACT Secure are:
    - RL.9-10.7, Analyze the representation of a subject or a key scene in two different artistic mediums, including what is emphasized or absent in each treatment (“Musée des Beaux Arts” and Breughel’s Landscape with the Fall of Icarus).
- Reading Standards for Informational Text not assessed by PreACT Secure are:
    - RI.9-10.7, Analyze various accounts of a subject told in different mediums (e.g., a person's life story in both print and multimedia), determining which details are emphasized in each account.
- Writing Standards not assessed by PreACT Secure are:
    - W.9-10.6, Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.
    - W.9-10.7, Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
    - W.9-10.8, Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
- Language Standards not assessed by PreACT Secure are:
    - L.9-10.2.c, Spell correctly.
    - L.9-10.4.b, Identify and correctly use patterns of word changes that indicate different meanings or parts of speech (e.g., analyze, analysis, analytical; advocate, advocacy).

    - L.9-10.4.c, Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, its etymology, or its etymology.
- Reading Standards in History/Social Studies not assessed by PreACT Secure are:
    - RH.9-10.7, Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text.
- Writing: History/Social Studies, Science, & Technical Standards not assessed by PreACT Secure are:
    - WHST.9-10.6, Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, taking advantage of technology's capacity to link to other information flexibly and dynamically.
    - WHST.9-10.7, Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
    - WHST.9-10.8, Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
- Reading Standards in Science/Technical not assessed by PreACT Secure are:
    - RST.9-10.7, Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

PreACT 9 Secure

PreACT 9 Secure Alignment with Illinois Learning Standards ELA and Literacy, Grades 9 & 10

Content Area	Number of Standards Aligned
ELA & Literacy	**114 of 131**
Anchor Standards for Reading	**9 of 10**
Anchor Standards for Writing	**7 of 10**
Anchor Standards for Language	**6 of 6**
Reading Standards for Literature	**8 of 9**
Reading Standards for Informational Text	**9 of 10**
Writing	**25 of 28**
Language	**15 of 18**
Reading: History/Social Studies	**9 of 10**
Writing: History/Social Studies, Science, & Technical Subjects	**17 of 20**
Reading: Science & Technical Subjects	**9 of 10**

Notes

- Illinois Speaking and Listening standards in ELA were excluded from the analysis because ACT assessments are not intended to measure the knowledge and skills in these standards.
- Several of the ELA standards included alphabetic sub-standards (e.g., L9-10.2.a, L9-10.2.b). For the purpose of counting the number of aligned standards in the summary below, the sub-standards were counted separately because alignments were made to them individually.
- Anchor Standards for Reading not assessed by the PreACT 9 Secure are:
    - CCRA.R.7, Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.
- Anchor Standards for Writing not assessed by PreACT 9 Secure are:
    - CCRA.W.6, Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

    - CCRA.W.7, Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
    - CCRA.W.8, Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
- Reading Standards for Literature not assessed by PreACT 9 Secure are:
    - RL.9-10.7, Analyze the representation of a subject or a key scene in two different artistic mediums, including what is emphasized or absent in each treatment ("Musée des Beaux Arts" and Breughel's Landscape with the Fall of Icarus).
- Reading Standards for Informational Text not assessed by PreACT 9 Secure are:
    - RI.9-10.7, Analyze various accounts of a subject told in different mediums (e.g., a person's life story in both print and multimedia), determining which details are emphasized in each account.
- Writing Standards not assessed by PreACT 9 Secure are:
    - W.9-10.6, Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.
    - W.9-10.7, Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
    - W.9-10.8, Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
- Language Standards not assessed by PreACT 9 Secure are:
    - L.9-10.2.c, Spell correctly.
    - L.9-10.4.b, Identify and correctly use patterns of word changes that indicate different meanings or parts of

speech (e.g., analyze, analysis, analytical; advocate, advocacy).
    - L.9-10.4.c, Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, its etymology, or its etymology.
- Reading Standards in History/Social Studies not assessed by PreACT 9 Secure are:
    - RH.9-10.7, Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text.
- Writing: History/Social Studies, Science, & Technical Standards not assessed by PreACT 9 Secure are:
    - WHST.9-10.6, Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, taking advantage of technology's capacity to link to other information flexibly and dynamically.
    - WHST.9-10.7, Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
    - WHST.9-10.8, Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
- Reading Standards in Science/Technical not assessed by PreACT 9 Secure are:
    - RST.9-10.7, Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

MATHEMATICS

Mathematics test development subject-matter experts analyzed the linkage between the State Mathematics Standards for High School and the ACT, PreACT Secure, and PreACT Secure 9 mathematics tests.

Results show broad and deep alignment between PreACT Secure/The ACT and the Illinois Learning Standards. Nearly all of the Illinois Learning Standards evaluated are assessed by items in one or more PreACT Secure or ACT mathematics test content categories. In several of the Illinois mathematics domains, all the standards are assessed by PreACT Secure and the ACT assessments. Alignment between PreACT 9 Secure and Illinois Learning Standards is not as broad by design, as a significant subset of the Illinois Learning Standards target skills learned after Grade 9. That said, the standards assessed on PreACT 9 Secure provide strong coverage of those skills typically found in Algebra I or Math I courses.

The ACT

ACT Alignment with Illinois Learning Standards Mathematics, High School

Content Area	Number of Standards Aligned
Mathematics	**159 of 164**
Standards for Mathematical Practice	**8 of 8**
Number & Quantity	**27 of 27**
Algebra	**27 of 27**
Functions	**28 of 28**
Geometry	**42 of 43**
Statistics & Probability	**27 of 31**

Notes

- Geometry Standards not assessed by the ACT are:
  - G.C.1, Prove that all circles are similar.
- Statistics & Probability Standards not assessed by the ACT are:
  - S.ID.9, Distinguish between correlation and causation.
  - S.IC.6, Evaluate reports based on data.
  - S.MD.6, (+) Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).
  - S.MD.7, (+) Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).

PreACT Secure

PreACT Secure Alignment with Illinois Learning Standards Mathematics, High School

Content Area	Number of Standards Aligned
Mathematics	159 of 164
Standards for Mathematical Practice	8 of 8
Number & Quantity	27 of 27
Algebra	27 of 27
Functions	28 of 28
Geometry	42 of 43
Statistics & Probability	27 of 31

Notes

- Geometry Standards not assessed by PreACT Secure are:
  - G.C.1, Prove that all circles are similar.
- Statistics & Probability Standards not assessed by PreACT Secure are:
  - S.ID.9, Distinguish between correlation and causation.
  - S.IC.6, Evaluate reports based on data.
  - S.MD.6, (+) Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).
  - S.MD.7, (+) Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).

PreACT 9 Secure

PreACT 9 Secure Alignment with Illinois Learning Standards Mathematics, High School

Content Area	Number of Standards Aligned
Mathematics	79 of 164
Standards for Mathematical Practice	8 of 8
Number & Quantity	6 of 27
Algebra	18 of 27
Functions	17 of 28
Geometry	21 of 43
Statistics & Probability	9 of 31

Notes

As previously mentioned, the math test is tailored to assess only those standards typically covered in Grade 9. As such, the following list of standards not assessed is longer than for the ACT and PreACT Secure math tests. Where clusters of standards are not assessed, the cluster title and abbreviated code are given, with exceptions given in

parentheses. For example, N.CN is meant to capture the 9 individual standards not assessed within the N.CN cluster.

- Number & Quantity Standards not assessed by PreACT 9 Secure are:
    - N.CN, The Complex Number System
    - N.VM, Vector and Matrix Quantities
- Algebra Standards not assessed by PreACT 9 Secure are:
    - A.SSE.4, Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems.
    - A.APR , Arithmetic with Polynomials and Rational Expressions (except A.APR.1)
    - A.REI.8, (+) Represent a system of linear equations as a single matrix equation in a vector variable.
    - A.REI.9, (+) Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension 3 × 3 or greater).
- Function Standards not assessed by PreACT 9 Secure are:
    - F.BF.5, (+) Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.
    - F.LE.4, For exponential models, express as a logarithm the solution to $ab^{ct} = d$ where a, c, and d are numbers and the base b is 2, 10, or e; evaluate the logarithm using technology.
    - F.TF, Trigonometric Functions
- Geometry Standards not assessed by PreACT 9 Secure are:
    - G.CO.9, Prove theorems about lines and angles.
    - G.CO.10, Prove theorems about triangles.
    - G.CO.11, Prove theorems about parallelograms.
    - G.CO.13, Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.
    - G.SRT, Similarity, Right Triangles, and Trigonometry (except G.SRT.1, 2, and 3)
    - G.C, Circles
    - G.GPE, Expressing Geometric Properties with Equations (except G.GPE.4, 5, and 7)
    - G.GMD.2, (+) Give an informal argument using Cavalieri's principle for the formulas for the volume of a sphere and other solid figures.
- Statistics & Probability Standards not assessed by PreACT 9 Secure are:
    - S.ID.4, Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population

percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.
- S.ID.8, Compute (using technology) and interpret the correlation coefficient of a linear fit.
- S.ID.9, Distinguish between correlation and causation.
- S.IC, Making Inferences and Justifying Conclusions (except S.IC.1 and 2)
- S.CP, Conditional Probability and the Rules of Probability (except S.CP.1)
- S.MD, Using Probability to Make Decisions

SCIENCE

ACT science test development subject-matter experts analyzed the linkage between the Illinois Science Standards, High School, and the ACT, PreACT Secure, and PreACT 9 Secure science tests.

The alignment results indicate a very strong conceptual alignment between dimensions of the Illinois Science standards and the ACT science test. Overall, 100% of the science standards were assessed, in part or in whole, on the science sections of the ACT assessments.

Interpreting science alignment results requires special attention to the design of the ACT science test, which primarily assesses a student's ability to apply scientific practices and to connect concepts to authentic scientific investigations, data, and arguments across the disciplines in science. The ACT science test reports these skills across three domains: Interpretation of Data; Scientific Investigation; and Evaluating Models, Inferences, and Experimental Results. The rich scientific scenarios allow students to integrate the three strands in the standards—Science and Engineering Practices (SEP), Cross-Cutting Concepts (CCC), and Disciplinary Core Ideas (DCI)— with authentic phenomena. Given this design, the subject matter experts looked for linkages between the Illinois science performance expectations and the ACT science assessments, using insight into both the practices assessed and the content framework used to select passages and concepts for the test.

The ACT

The ACT Alignment with Illinois Learning Standards Science, High School

Science	Number of Standards Aligned
Science	71 of 71
Physical Science	24 of 24
Life Science	24 of 24
Earth & Space Science	19 of 19
Engineering Design	4 of 4

PreACT Secure

PreACT Secure Alignment with Illinois Learning Standards Science, High School

Science	Number of Standards Aligned
Science	71 of 71
Physical Science	24 of 24
Life Science	24 of 24
Earth & Space Science	19 of 19
Engineering Design	4 of 4

PreACT 9 Secure

PreACT 9 Secure Alignment with Illinois Learning Standards Science, High School

Science	Number of Standards Aligned
Science	71 of 71
Physical Science	24 of 24
Life Science	24 of 24
Earth & Space Science	19 of 19
Engineering Design	4 of 4

IV. Detailed Alignment Results: the ACT Test

Comprehensive results of the ELA/literacy, mathematics, and science alignments for the ACT test are presented in Tables 1–3 below.

Table 1. Illinois Learning Standards: English Language Arts (ELA) – Aligned to the ACT

	Illinois Learning Standards in ELA/Literacy, Grades 11-12	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
Standard Number	**Standard**			
	College and Career Readiness Anchor Standards for Reading			
	Key Ideas and Details			
CCRA.R.1	Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.		Key Ideas and Details: Close Reading	
CCRA.R.2	Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.		Key Ideas and Details: Central Ideas, Themes, Summaries	
CCRA.R.3	Analyze how and why individuals, events, and ideas develop and interact over the course of a text.		Key Ideas and Details: Relationships	
	Craft and Structure			
CCRA.R.4	Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.		Craft and Structure: Word Meanings and Word Choice Text Structure	
CCRA.R.5	Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.		Craft and Structure: Text Structure	

	Illinois Learning Standards in ELA/Literacy, Grades 11-12	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
Standard Number	**Standard**			
CCRA.R.6	Assess how point of view or purpose shapes the content and style of a text.		Craft and Structure: Purpose and Point of View	
	Integration of Knowledge and Ideas			
CCRA.R.7	Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.		Integration of Knowledge and Ideas: Visual and Quantitative Information	
CCRA.R.8	Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.		Integration of Knowledge and Ideas: Arguments	
CCRA.R.9	Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.		Integration of Knowledge and Ideas: Synthesis of Multiple Texts	
	Range of Reading and Level of Text Complexity			
CCRA.R.10	Read and comprehend complex literary and informational texts independently and proficiently.		All reporting categories	
	College and Career Readiness Anchor Standards for Writing			
	Text Types and Purposes			
CCRA.W.1	Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly Style		All reporting categories

	Illinois Learning Standards in ELA/Literacy, Grades 11-12	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
Standard Number	**Standard**			
CCRA.W.2	Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly Style		All reporting categories
CCRA.W.3	Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly Style		
	Production and Distribution of Writing			
CCRA.W.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly Style		All reporting categories
CCRA.W.5	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.	All reporting categories		All reporting categories
CCRA.W.6	Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.			

	Illinois Learning Standards in ELA/Literacy, Grades 11-12	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
Standard Number	**Standard**			
	Research to Build and Present Knowledge			
CCRA.W.7	Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.			
CCRA.W.8	Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.			
CCRA.W.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.		All reporting categories	
	Range of Writing			
CCRA.W.10	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.	All reporting categories		All reporting categories
	College and Career Readiness Anchor Standards for Language			
	Conventions of Standard English			
CCRA.L.1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.	Conventions of Standard English Grammar, Usage, and Mechanics: Sentence Structure and Formation Usage Conventions		Language Use and Conventions: Applying the conventions of standard written English
CCRA.L.2	Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.	Conventions of Standard English Grammar, Usage, and Mechanics: Punctuation Conventions		Language Use and Conventions: Applying the conventions of standard written English

	Illinois Learning Standards in ELA/Literacy, Grades 11-12	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
Standard Number	**Standard**			
	Knowledge of Language			
CCRA.L.3	Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly Style	Craft and Structure: Word Meanings and Word Choice Text Structure	Language Use and Conventions: Enhanced Meaning Applying the conventions of standard written English
	Vocabulary Acquisition and Use			
CCRA.L.4	Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.		Craft and Structure: Word Meanings and Word Choice	
CCRA.L.5	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.		Craft and Structure: Word Meanings and Word Choice Text Structure	
CCRA.L.6	Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly	Craft and Structure: Word Meanings and Word Choice Text Structure	Language Use and Conventions: Enhanced Meaning Applying the conventions of standard written English
	Reading: Literature			
	Key Ideas and Details			
RL.11-12.1	Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.		Key Ideas and Details: Close Reading	

	Illinois Learning Standards in ELA/Literacy, Grades 11-12	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
Standard Number	**Standard**			
RL.11-12.2	Determine two or more themes or central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to produce a complex account; provide an objective summary of the text.		Key Ideas and Details: Central Ideas, Themes, Summaries Craft and Structure: Text Structure	
RL.11-12.3	Analyze the impact of the author's choices regarding how to develop and relate elements of a story or drama (e.g., where a story is set, how the action is ordered, how the characters are introduced and developed).		Key Ideas and Details: Relationships Craft and Structure: Text Structure Purpose and Point of View	
	Craft and Structure			
RL.11-12.4	Determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the impact of specific word choices on meaning and tone, including words with multiple meanings or language that is particularly fresh, engaging, or beautiful. (Include Shakespeare as well as other authors.)		Craft and Structure: Word Meanings and Word Choice Text Structure	
RL.11-12.5	Analyze how an author's choices concerning how to structure specific parts of a text (e.g., the choice of where to begin or end a story, the choice to provide a comedic or tragic resolution) contribute to its overall structure and meaning as well as its aesthetic impact.		Craft and Structure: Text Structure	
RL.11-12.6	Analyze a case in which grasping point of view requires distinguishing what is directly stated in a text from what is really meant (e.g., satire, sarcasm, irony, or understatement).		Craft and Structure: Word Meanings and Word Choice Text Structure Purpose and Point of View	

	Illinois Learning Standards in ELA/Literacy, Grades 11-12	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
Standard Number	**Standard**			
	Integration of Knowledge and Ideas			
RL.11-12.7	Analyze multiple interpretations of a story, drama, or poem (e.g., recorded or live production of a play or recorded novel or poetry), evaluating how each version interprets the source text. (Include at least one play by Shakespeare and one play by an American dramatist.)			
RL.11-12.9	Demonstrate knowledge of eighteenth-, nineteenth- and early-twentieth-century foundational works of American literature, including how two or more texts from the same period treat similar themes or topics.		Key Ideas and Details: Central Ideas, Themes, Summaries Craft and Structure: Text Structure Purpose and Point of View Integration of Knowledge and Ideas: Synthesis of Multiple Texts	
RL.11-12.10	By the end of grade 11, read and comprehend literature, including stories, dramas, and poems, in the grades 11–CCR text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 12, read and comprehend literature, including stories, dramas, and poems, at the high end of the grades 11–CCR text complexity band independently and proficiently.		Key Ideas and Details: Close Reading Relationships Central Ideas, Themes, Summaries Craft and Structure: Word Meanings and Word Choice Text Structure Purpose and Point of View Integration of Knowledge and Ideas: Synthesis of Multiple Texts	
	Reading: Informational Text			
	Key Ideas and Details			
RI.11-12.1	Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.		Key Ideas and Details: Close Reading	

	Illinois Learning Standards in ELA/Literacy, Grades 11-12	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
Standard Number	**Standard**			
RI.11-12.2	Determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex analysis; provide an objective summary of the text.		Key Ideas and Details: Central Ideas, Themes, Summaries Craft and Structure: Text Structure	
RI.11-12.3	Analyze a complex set of ideas or sequence of events and explain how specific individuals, ideas, or events interact and develop over the course of the text.		Key Ideas and Details: Relationships Craft and Structure: Text Structure	
	Craft and Structure			
RI.11-12.4	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text (e.g., how Madison defines faction in Federalist No. 10).		Craft and Structure: Word Meanings and Word Choice Text Structure	
RI.11-12.5	Analyze and evaluate the effectiveness of the structure an author uses in his or her exposition or argument, including whether the structure makes points clear, convincing, and engaging.		Craft and Structure: Text Structure Integration of Knowledge and Ideas: Arguments	
RI.11-12.6	Determine an author's point of view or purpose in a text in which the rhetoric is particularly effective, analyzing how style and content contribute to the power, persuasiveness, or beauty of the text.		Craft and Structure: Word Meanings and Word Choice Text Structure Purpose and Point of View Integration of Knowledge and Ideas: Arguments	

	Illinois Learning Standards in ELA/Literacy, Grades 11-12	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
Standard Number	**Standard**			
	Integration of Knowledge and Ideas			
RI.11-12.7	Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.		Integration of Knowledge and Ideas: Visual and Quantitative Information	
RI.11-12.8	Delineate and evaluate the reasoning in seminal U.S. texts, including the application of constitutional principles and use of legal reasoning (e.g., in U.S. Supreme Court majority opinions and dissents) and the premises, purposes, and arguments in works of public advocacy (e.g., The Federalist, presidential addresses).		Craft and Structure: Purpose and Point of View Integration of Knowledge and Ideas: Arguments	
RI.11-12.9	Analyze seventeenth-, eighteenth-, and nineteenth-century foundational U.S. documents of historical and literary significance (including The Declaration of Independence, the Preamble to the Constitution, the Bill of Rights, and Lincoln's Second Inaugural Address) for their themes, purposes, and rhetorical features.		Key Ideas and Details: Central Ideas, Themes, Summaries Craft and Structure: Text Structure Purpose and Point of View Integration of Knowledge and Ideas: Synthesis of Multiple Texts	
	Range of Reading and Level of Text Complexity			
RI.11-12.10	By the end of grade 11, read and comprehend literary nonfiction in the grades 11–CCR text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 12, read and comprehend literary nonfiction at the high end of the grades 11–CCR text complexity band independently and proficiently.		All reporting categories	

	Illinois Learning Standards in ELA/Literacy, Grades 11-12	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
Standard Number	**Standard**			
	Writing			
	Text Types and Purposes			
W.11-12.1	Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly Style		All reporting categories
W.11-12.1.a	Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences claim(s), counterclaims, reasons, and evidence.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion		Ideas and Analysis: Purpose Critical Elements and Differing Perspectives Organization: Connecting Ideas Organizational Strategy
W.11-12.1.b	Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level, concerns, values, and possible biases.	Production of Writing: Topic Development—Purpose and Focus		Ideas and Analysis: Purpose Critical Elements and Differing Perspectives Development and Support: Reasoning and Evidence
W.11-12.1.c	Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly		Organization: Connecting Ideas Organizational Strategy Language Use and Conventions: Applying the conventions of standard written English
W.11-12.1.d	Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.	Knowledge of Language: Expressing Ideas Clearly Style		Language Use and Conventions: Enhanced Meaning Applying the conventions of standard written English

	Illinois Learning Standards in ELA/Literacy, Grades 11-12	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
Standard Number	**Standard**			
W.11-12.1.e	Provide a concluding statement or section that follows from and supports the argument presented.	Production of Writing: Organization, Unity, and Cohesion		All reporting categories
W.11-12.2	Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly Style		All reporting categories
W.11-12.2.a	Introduce a topic; organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion		Ideas and Analysis: Purpose Organization: Connecting Ideas Organizational Strategy
W.11-12.2.b	Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.	Production of Writing: Topic Development—Purpose and Focus		Development and Support: Reasoning and Evidence
W.11-12.2.c	Use appropriate and varied transitions and syntax to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.	Production of Writing: Organization, Unity, and Cohesion Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly		Organization: Connecting Ideas Organizational Strategy Language Use and Conventions: Applying the conventions of standard written English

	Illinois Learning Standards in ELA/Literacy, Grades 11-12	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
Standard Number	**Standard**			
W.11-12.2.d	Use precise language, domain-specific vocabulary, and techniques such as metaphor, simile, and analogy to manage the complexity of the topic.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly Style		Language Use and Conventions: Enhanced Meaning
W.11-12.2.e	Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.	Knowledge of Language: Expressing Ideas Clearly Style		Language Use and Conventions: Enhanced Meaning Applying the conventions of standard written English
W.11-12.2.f	Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).	Production of Writing: Organization, Unity, and Cohesion		All reporting categories
W.11-12.3	Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly Style		
W.11-12.3.a	Engage and orient the reader by setting out a problem, situation, or observation and its significance, establishing one or multiple point(s) of view, and introducing a narrator and/or characters; create a smooth progression of experiences or events.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion		
W.11-12.3.b	Use narrative techniques, such as dialogue, pacing, description, reflection, and multiple plot lines, to develop experiences, events, and/or characters.	Production of Writing: Topic Development—Purpose and Focus		

	Illinois Learning Standards in ELA/Literacy, Grades 11-12	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
Standard Number	**Standard**			
W.11-12.3.c	Use a variety of techniques to sequence events so that they build on one another to create a coherent whole and build toward a particular tone and outcome (e.g., a sense of mystery, suspense, growth, or resolution).	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly Style		
W.11-12.3.d	Use precise words and phrases, telling details, and sensory language to convey a vivid picture of the experiences, events, setting, and/or characters.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly Style		
W.11-12.3.e	Provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative.	Production of Writing: Organization, Unity, and Cohesion		
	Production and Distribution of Writing			
W.11-12.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly Style		All reporting categories
W.11-12.5	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.	All reporting categories		All reporting categories
W.11-12.6	Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.			

	Illinois Learning Standards in ELA/Literacy, Grades 11-12	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
Standard Number	**Standard**			
	Research to Build and Present Knowledge			
W.11-12.7	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.			
W.11-12.8	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.			
W.11-12.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.		All reporting categories	
W.11-12.9.a	Apply grades 11–12 Reading standards to literature (e.g., Demonstrate knowledge of eighteenth-, nineteenth- and early-twentieth-century foundational works of American literature, including how two or more texts from the same period treat similar themes or topics).		Key Ideas and Details: Close Reading Relationships Central Ideas, Themes, Summaries Craft and Structure: Word Meanings and Word Choice Text Structure Purpose and Point of View Integration of Knowledge and Ideas: Synthesis of Multiple Texts	

	Illinois Learning Standards in ELA/Literacy, Grades 11-12	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
Standard Number	**Standard**			
W.11-12.9.b	Apply grades 11–12 Reading standards to literary nonfiction (e.g., Delineate and evaluate the reasoning in seminal U.S. texts, including the application of constitutional principles and use of legal reasoning [e.g., in U.S. Supreme Court Case majority opinions and dissents] and the premises, purposes, and arguments in works of public advocacy [e.g., The Federalist, presidential addresses]).		All reporting categories	
	Range of Writing			
W.11-12.10	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.	All reporting categories		All reporting categories
	Language			
	Conventions of Standard English			
L.11-12.1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.	Conventions of Standard English: Sentence Structure and Formation Usage Conventions		Language Use and Conventions: Applying the conventions of standard Written English
L.11-12.1.a	Apply the understanding that usage is a matter of convention, can change over time, and is sometimes contested.	Conventions of Standard English: Usage Conventions		Language Use and Conventions: Applying the conventions of standard written English
L.11-12.1.b	Resolve issues of complex or contested usage, consulting references (e.g., Merriam-Webster's Dictionary of English Usage, Garner's Modern American Usage) as needed.	Conventions of Standard English: Usage Conventions		

	Illinois Learning Standards in ELA/Literacy, Grades 11-12	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
Standard Number	**Standard**			
L.11-12.2	Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.	Conventions of Standard English: Punctuation Conventions		Language Use and Conventions: Applying the conventions of standard written English
L.11-12.2.a	Observe hyphenation conventions.			Language Use and Conventions: Applying the conventions of standard written English
L.11-12.2.b	Spell correctly.			Language Use and Conventions: Applying the conventions of standard written English
	Knowledge of Language			
L.11-12.3	Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly Style Conventions of Standard English: Sentence Structure and Formation	Craft and Structure: Word Meanings and Word Choice Text Structure	Language Use and Conventions: Enhanced Meaning Applying the conventions of standard written English
L.11-12.3.a	Vary syntax for effect, consulting references (e.g., Tufte's Artful Sentences) for guidance as needed; apply an understanding of syntax to the study of complex texts when reading.	Knowledge of Language: Style Conventions of Standard English: Sentence Structure and Formation	Craft and Structure: Word Meanings and Word Choice Text Structure	Language Use and Conventions: Enhanced Meaning Applying the conventions of standard written English
	Vocabulary Acquisition and Use			
L.11-12.4	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 11–12 reading and content, choosing flexibly from a range of strategies.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly Conventions of Standard English: Usage Conventions	Craft and Structure: Word Meanings and Word Choice Text Structure	Language Use and Conventions: Applying the conventions of standard written English

	Illinois Learning Standards in ELA/Literacy, Grades 11-12	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
Standard Number	**Standard**			
L.11-12.4.a	Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly Conventions of Standard English: Usage Conventions	Craft and Structure: Word Meanings and Word Choice Text Structure	
L.11-12.4.b	Identify and correctly use patterns of word changes that indicate different meanings or parts of speech (e.g., conceive, conception, conceivable).			Language Use and Conventions: Applying the conventions of standard written English
L.11-12.4.c	Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, its etymology, or its standard usage.			
L.11-12.4.d	Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).	Knowledge of Language: Expressing Ideas Clearly Conventions of Standard English: Usage Conventions	Craft and Structure: Word Meanings and Word Choice	
L.11-12.5	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly Conventions of Standard English: Usage Conventions	Craft and Structure: Word Meanings and Word Choice Text Structure	
L.11-12.5.a	Interpret figures of speech (e.g., hyperbole, paradox) in context and analyze their role in the text.	Production of Writing: Topic Development—Purpose and Focus	Craft and Structure: Word Meanings and Word Choice Text Structure	

	Illinois Learning Standards in ELA/Literacy, Grades 11-12	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
Standard Number	**Standard**			
L.11-12.5.b	Analyze nuances in the meaning of words with similar denotations.	Knowledge of Language: Expressing Ideas Clearly Conventions of Standard English: Usage Conventions	Craft and Structure: Word Meanings and Word Choice	
L.11-12.6	Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly Style Conventions of Standard English: Usage Conventions	Craft and Structure: Word Meanings and Word Choice Text Structure	Language Use and Conventions: Enhanced Meaning Applying the conventions of standard written English
	Reading Literacy in History/Social Studies: Reading Informational Text			
	Key Ideas and Details			
RH.11-12.1	Cite specific textual evidence to support analysis of primary and secondary sources, connecting insights gained from specific details to an understanding of the text as a whole.		Key Ideas and Details: Close Reading	
RH.11-12.2	Determine the central ideas or information of a primary or secondary source; provide an accurate summary that makes clear the relationships among the key details and ideas.		Key Ideas and Details: Close Reading Relationships Central Ideas, Themes, Summaries	
RH.11-12.3	Evaluate various explanations for actions or events and determine which explanation best accords with textual evidence, acknowledging where the text leaves matters uncertain.		Key Ideas and Details: Close Reading Relationships	

	Illinois Learning Standards in ELA/Literacy, Grades 11-12	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
Standard Number	**Standard**			
	Craft and Structure			
RH.11-12.4	Determine the meaning of words and phrases as they are used in a text, including analyzing how an author uses and refines the meaning of a key term over the course of a text (e.g., how Madison defines faction in Federalist No. 10).		Craft and Structure: Word Meanings and Word Choice Text Structure	
RH.11-12.5	Analyze in detail how a complex primary source is structured, including how key sentences, paragraphs, and larger portions of the text contribute to the whole.		Craft and Structure: Text Structure	
RH.11-12.6	Evaluate authors' differing points of view on the same historical event or issue by assessing the authors' claims, reasoning, and evidence.		Craft and Structure: Purpose and Point of View Integration of Knowledge and Ideas: Arguments Synthesis of Multiple Texts	
	Integration of Knowledge and Ideas			
RH.11-12.7	Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, as well as in words) in order to address a question or solve a problem.		Integration of Knowledge and Ideas: Visual and Quantitative Information	
RH.11-12.8	Evaluate an author's premises, claims, and evidence by corroborating or challenging them with other information.		Integration of Knowledge and Ideas: Arguments Synthesis of Multiple Texts Visual and Quantitative Information	

	Illinois Learning Standards in ELA/Literacy, Grades 11-12	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
Standard Number	**Standard**			
RH.11-12.9	Integrate information from diverse sources, both primary and secondary, into a coherent understanding of an idea or event, noting discrepancies among sources.		Key Ideas and Details: Close Reading Relationships Integration of Knowledge and Ideas: Synthesis of Multiple Texts Visual and Quantitative Information	
	Range of Reading and Level of Text Complexity			
RH.11-12.10	By the end of grade 12, read and comprehend history/social studies texts in the grades 11-CCR text complexity band independently and proficiently.		All reporting categories	
	Writing Literacy in History/Social Studies/Science/Technical Subjects: Writing Text			
	Types and Purposes			
WHST.11-12.1	Write arguments focused on discipline-specific content.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly Style		All reporting categories
WHST.11-12.1.a	Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion		Ideas and Analysis: Purpose Critical Elements and Differing Perspectives Organization: Connecting Ideas Organizational Strategy

	Illinois Learning Standards in ELA/Literacy, Grades 11-12	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
Standard Number	**Standard**			
WHST.11-12.1.b	Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form that anticipates the audience's knowledge level, concerns, values, and possible biases.	Production of Writing: Topic Development—Purpose and Focus		Ideas and Analysis: Purpose Critical Elements and Differing Perspectives Development and Support: Reasoning and Evidence
WHST.11-12.1.c	Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly		Organization: Connecting Ideas Organizational Strategy Language Use and Conventions: Applying the conventions of standard written English
WHST.11-12.1.d	Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.	Knowledge of Language: Expressing Ideas Clearly Style		Language Use and Conventions: Enhanced Meaning Applying the conventions of standard written English
WHST.11-12.1.e	Provide a concluding statement or section that follows from or supports the argument presented.	Production of Writing: Organization, Unity, and Cohesion		All reporting categories
WHST.11-12.2	Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly Style		All reporting categories

	Illinois Learning Standards in ELA/Literacy, Grades 11-12	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
Standard Number	**Standard**			
WHST.11-12.2.a	Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion		Ideas and Analysis: Purpose Organization: Connecting Ideas Organizational Strategy
WHST.11-12.2.b	Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.	Production of Writing: Topic Development—Purpose and Focus		Development and Support: Reasoning and Evidence
WHST.11-12.2.c	Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly		Organization: Connecting Ideas Organizational Strategy Language Use and Conventions: Applying the conventions of standard written English
WHST.11-12.2.d	Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly Style		Language Use and Conventions: Enhanced Meaning
WHST.11-12.2.e	Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic).	Production of Writing: Organization, Unity, and Cohesion		All reporting categories

	Illinois Learning Standards in ELA/Literacy, Grades 11-12	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
Standard Number	**Standard**			
	Production and Distribution of Writing			
WHST.11-12.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly Style		All reporting categories
WHST.11-12.5	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.	All reporting categories		All reporting categories
WHST.11-12.6	Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.			
	Research to Build and Present Knowledge			
WHST.11-12.7	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.			

	Illinois Learning Standards in ELA/Literacy, Grades 11-12	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
Standard Number	**Standard**			
WHST.11-12.8	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.			
WHST.11-12.9	Draw evidence from informational texts to support analysis, reflection, and research.		All reporting categories	
	Range of Writing			
WHST.11-12.10	Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	All reporting categories		All reporting categories
	Reading Literacy in Science and Technical Subjects: Reading Informational Text			
	Key Ideas and Details			
RST.11-12.1	Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.		Key Ideas and Details: Close Reading	
RST.11-12.2	Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.		Key Ideas and Details: Close Reading Relationships Central Ideas, Themes, Summaries	

	Illinois Learning Standards in ELA/Literacy, Grades 11-12	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
Standard Number	**Standard**			
RST.11-12.3	Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.		Key Ideas and Details: Relationships	
	Craft and Structure			
RST.11-12.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics.		Craft and Structure: Word Meanings and Word Choice	
RST.11-12.5	Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.		Key Ideas and Details: Close Reading Relationships Craft and Structure: Text Structure	
RST.11-12.6	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.		Craft and Structure: Purpose and Point of View Text Structure	
	Integration of Knowledge and Ideas			
RST.11-12.7	Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.		Integration of Knowledge and Ideas: Visual and Quantitative Information	
RST.11-12.8	Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.		Integration of Knowledge and Ideas: Arguments Synthesis of Multiple Texts Visual and Quantitative Information	

	Illinois Learning Standards in ELA/Literacy, Grades 11-12	The ACT English Reporting Categories and Skill Areas	The ACT Reading Reporting Categories and Skill Areas	The ACT Writing Reporting Categories and Skill Areas
Standard Number	**Standard**			
RST.11-12.9	Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.		Key Ideas and Details: Close Reading Relationships Integration of Knowledge and Ideas: Synthesis of Multiple Texts Visual and Quantitative Information	
	Range of Reading and Level of Text Complexity			
RST.11-12.10	By the end of grade 12, read and comprehend science/technical texts in the grades 11-CCR text complexity band independently and proficiently.		All reporting categories	

Table 2. Illinois Learning Standards: Mathematics – Aligned to the ACT

	Illinois Learning Standards in Mathematics, High School	The ACT Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
	Mathematical Practices	
HS.MP.1	Make sense of problems and persevere in solving them.	Modeling: Producing Interpreting Understanding Evaluating
HS.MP.2	Reason abstractly and quantitatively.	Modeling: Producing Interpreting Understanding
HS.MP.3	Construct viable arguments and critique the reasoning of others.	Modeling: Producing Interpreting Understanding Evaluating Improving
HS.MP.4	Model with mathematics.	Modeling: Producing Interpreting Understanding Evaluating Improving
HS.MP.5	Use appropriate tools strategically.	Modeling: Producing Understanding Evaluating
HS.MP.6	Attend to precision.	Modeling: Interpreting Understanding
HS.MP.7	Look for and make use of structure.	Modeling: Producing Understanding Evaluating
HS.MP.8	Look for and express regularity in repeated reasoning.	Modeling: Understanding Evaluating

	Illinois Learning Standards in Mathematics, High School	The ACT Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
	Number and Quantity	
N.RN	The Real Number System	
	Extend the properties of exponents to rational exponents.	
N.RN.1	Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. *For example, we define $5^{1/3}$ to be the cube root of 5 because we want $(5^{1/3})^3 = 5^{(1/3)^3}$ to hold, so $(5^{1/3})^3$ must equal 5.*	Number & Quantity: Properties of Exponents
N.RN.2	Rewrite expressions involving radicals and rational exponents using the properties of exponents.	Number & Quantity: Properties of Exponents
	Use properties of rational and irrational numbers.	
N.RN.3	Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational.	Number & Quantity: Rational and Irrational Numbers
N.Q	Quantities*	
	Reason quantitatively and use units to solve problems.	
N.Q.1	Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.	Number & Quantity: Quantities and Units Integrating Essential Skills: Computation and Problem Solving with Real Numbers Measurement Units and Unit Conversion
N.Q.2	Define appropriate quantities for the purpose of descriptive modeling.	Number & Quantity: Quantities and Units Integrating Essential Skills: Computation and Problem Solving with Real Numbers
N.Q.3	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.	Number & Quantity: Quantities and Units Integrating Essential Skills: Computation and Problem Solving with Real Numbers
N.CN	The Complex Number System	
	Perform arithmetic operations with complex numbers.	
N.CN.1	Know there is a complex number i such that $i^2 = -1$, and every complex number has the form $a + bi$ with a and b real.	Number & Quantity: Complex Numbers

	Illinois Learning Standards in Mathematics, High School	The ACT Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
N.CN.2	Use the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.	Number & Quantity: Complex Numbers
N.CN.3	(+) Find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers.	Number & Quantity: Complex Numbers
	Represent complex numbers and their operations on the complex plane.	
N.CN.4	(+) Represent complex numbers on the complex plane in rectangular and polar form (including real and imaginary numbers), and explain why the rectangular and polar forms of a given complex number represent the same number.	Number & Quantity: Complex Numbers
N.CN.5	(+) Represent addition, subtraction, multiplication, and conjugation of complex numbers geometrically on the complex plane; use properties of this representation for computation. *For example,* $(-1 + \sqrt{3}i)^3 = 8$ *because* $(-1 + \sqrt{3}i)$ *has modulus* 2 *and argument* 120°.	Number & Quantity: Complex Numbers
N.CN.6	(+) Calculate the distance between numbers in the complex plane as the modulus of the difference, and the midpoint of a segment as the average of the numbers at its endpoints.	Number & Quantity: Complex Numbers
	Use complex numbers in polynomial identities and equations.	
N.CN.7	Solve quadratic equations with real coefficients that have complex solutions.	Number & Quantity: Complex Numbers Algebra: Quadratic Expressions, Equations, and Inequalities
N.CN.8	(+) Extend polynomial identities to the complex numbers. *For example, rewrite* $x^2 + 4$ *as* $(x + 2i)(x - 2i)$.	Number & Quantity: Complex Numbers Algebra: Polynomial Expressions and Equations
N.CN.9	(+) Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.	Number & Quantity: Complex Numbers Algebra: Quadratic Expressions, Equations, and Inequalities Polynomial Expressions and Equations

	Illinois Learning Standards in Mathematics, High School	The ACT Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
N.VM	Vector and Matrix Quantities	
	Represent and model with vector quantities.	
N.VM.1	(+) Recognize vector quantities as having both magnitude and direction. Represent vector quantities by directed line segments, and use appropriate symbols for vectors and their magnitudes (e.g., $\boldsymbol{v}$, $\lvert\boldsymbol{v}\rvert$, $\lVert\boldsymbol{v}\rVert$, v).	Number & Quantity: Vectors and Matrices
N.VM.2	(+) Find the components of a vector by subtracting the coordinates of an initial point from the coordinates of a terminal point.	Number & Quantity: Vectors and Matrices
N.VM.3	(+) Solve problems involving velocity and other quantities that can be represented by vectors.	Number & Quantity: Vectors and Matrices
	Perform operations on vectors.	
N.VM.4	(+) Add and subtract vectors. a. Add vectors end-to-end, component-wise, and by the parallelogram rule. Understand that the magnitude of a sum of two vectors is typically not the sum of the magnitudes. b. Given two vectors in magnitude and direction form, determine the magnitude and direction of their sum. c. Understand vector subtraction $\boldsymbol{v} - \boldsymbol{w}$ as $\boldsymbol{v} + (-\boldsymbol{w})$, where $-\boldsymbol{w}$ is the additive inverse of $\boldsymbol{w}$, with the same magnitude as $\boldsymbol{w}$ and pointing in the opposite direction. Represent vector subtraction graphically by connecting the tips in the appropriate order, and perform vector subtraction component-wise.	Number & Quantity: Vectors and Matrices
N.VM.5	(+) Multiply a vector by a scalar. a. Represent scalar multiplication graphically by scaling vectors and possibly reversing their direction; perform scalar multiplication component-wise, e.g., as $c(v_x, v_y) = (cv_x, cv_y)$. b. Compute the magnitude of a scalar multiple $c\boldsymbol{v}$ using $\lVert c\boldsymbol{v}\rVert = \lvert c\rvert\boldsymbol{v}$. Compute the direction of $c\boldsymbol{v}$ knowing that when $\lvert c\rvert\boldsymbol{v} \neq 0$, the direction of $c\boldsymbol{v}$ is either along $\boldsymbol{v}$ (for $c > 0$) or against $\boldsymbol{v}$ (for $c < 0$).	Number & Quantity: Vectors and Matrices
	Perform operations on matrices and use matrices in applications.	
N.VM.6	(+) Use matrices to represent and manipulate data, e.g., to represent payoffs or incidence relationships in a network.	Number & Quantity: Vectors and Matrices
N.VM.7	(+) Multiply matrices by scalars to produce new matrices, e.g., as when all of the payoffs in a game are doubled.	Number & Quantity: Vectors and Matrices
N.VM.8	(+) Add, subtract, and multiply matrices of appropriate dimensions.	Number & Quantity: Vectors and Matrices

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N.VM.9	(+) Understand that, unlike multiplication of numbers, matrix multiplication for square matrices is not a commutative operation, but still satisfies the associative and distributive properties.	Number & Quantity: Vectors and Matrices
N.VM.10	(+) Understand that the zero and identity matrices play a role in matrix addition and multiplication similar to the role of 0 and 1 in the real numbers. The determinant of a square matrix is nonzero if and only if the matrix has a multiplicative inverse.	Number & Quantity: Vectors and Matrices
N.VM.11	(+) Multiply a vector (regarded as a matrix with one column) by a matrix of suitable dimensions to produce another vector. Work with matrices as transformations of vectors.	Number & Quantity: Vectors and Matrices
N.VM.12	(+) Work with 2 × 2 matrices as a transformations of the plane, and interpret the absolute value of the determinant in terms of area.	Number & Quantity: Vectors and Matrices
	Algebra	
A.SSE	**Seeing Structure in Expressions**	
	Interpret the structure of expressions.	
A.SSE.1	Interpret expressions that represent a quantity in terms of its context.* a. Interpret parts of an expression, such as terms, factors, and coefficients. b. Interpret complicated expressions by viewing one or more of their parts as a single entity. *For example, interpret $P(1 + r)^n$ as the product of P and a factor not depending on P.*	Algebra: Linear Expressions, Equations, and Inequalities Quadratic Expressions, Equations, and Inequalities Rational and Radical Expressions and Equations Polynomial Expressions and Equations Functions: Exponential and Logarithmic Functions Integrating Essential Skills: Writing Algebraic Expressions
A.SSE.2	Use the structure of an expression to identify ways to rewrite it. For example, see $x^4 - y^4$ as $(x^2)^2 - (y^2)^2$, thus recognizing it as a difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.	Algebra: Linear Expressions, Equations, and Inequalities Quadratic Expressions, Equations, and Inequalities Rational and Radical Expressions and Equations Polynomial Expressions and Equations

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Standard Number	**Standard**	
	Write expressions in equivalent forms to solve problems.	
A.SSE.3	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.* a. Factor a quadratic expression to reveal the zeros of the function it defines. b. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines. c. Use the properties of exponents to transform expressions for exponential functions. *For example the expression* 1.15^t *can be rewritten as* $(1.15^{1/12})^{12t} \approx 1.012^{12t}$ *to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.*	Algebra: Linear Expressions, Equations, and Inequalities Quadratic Expressions, Equations, and Inequalities Rational and Radical Expressions and Equations Polynomial Expressions and Equations Functions: Exponential and Logarithmic Functions
A.SSE.4	Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems. *For example, calculate mortgage payments.**	Functions: Sequences and Series
A.APR	Arithmetic with Polynomials and Rational Expressions	
	Perform arithmetic operations on polynomials.	
A.APR.1	Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.	Algebra: Polynomial Expressions and Equations
	Understand the relationship between zeros and factors of polynomials.	
A.APR.2	Know and apply the Remainder Theorem: For a polynomial $p(x)$ and a number a, the remainder on division by $x - a$ is $p(a)$, so $p(a) = 0$ if and only if $(x - a)$ is a factor of $p(x)$.	Algebra: Polynomial Expressions and Equations
A.APR.3	Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.	Algebra: Polynomial Expressions and Equations
	Use polynomial identities to solve problems..	
A.APR.4	Prove polynomial identities and use them to describe numerical relationships. *For example, the polynomial identity* $(x^2 + y^2)^2 = (x^2 - y^2)^2 + (2xy)^2$ *can be used to generate Pythagorean triples.*	Algebra: Polynomial Expressions and Equations

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A.APR.5	(+) Know and apply the Binomial Theorem for the expansion of $(x + y)^n$ in powers of x and y for a positive integer n, where x and y are any numbers, with coefficients determined for example by Pascal's Triangle. (The Binomial Theorem can be proved by mathematical induction or by a combinatorial argument.)	Algebra: Polynomial Expressions and Equations
	Rewrite rational expressions.	
A.APR.6	Rewrite simple rational expressions in different forms; write $a(x)/b(x)$ in the form $q(x) + r(x)/b(x)$, where $a(x)$, $b(x)$, $q(x)$, and $r(x)$ are polynomials with the degree of $r(x)$ less than the degree of $b(x)$, using inspection, long division, or, for the more complicated examples, a computer algebra system.	Algebra: Rational and Radical Expressions and Equations
A.APR.7	(+) Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions.	Algebra: Rational and Radical Expressions and Equations
A.CED	Creating Equations*	
	Create equations that describe numbers or relationships	
A.CED.1	Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.	Algebra: Linear Expressions, Equations, and Inequalities Quadratic Expressions, Equations, and Inequalities Rational and Radical Expressions and Equations Functions: Exponential and Logarithmic Functions
A.CED.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	Algebra: Linear Expressions, Equations, and Inequalities Quadratic Expressions, Equations, and Inequalities Rational and Radical Expressions and Equations Polynomial Expressions and Equations Functions: Exponential and Logarithmic Functions

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Standard Number	**Standard**	
A.CED.3	Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.	Algebra: Linear Expressions, Equations, and Inequalities Quadratic Expressions, Equations, and Inequalities Rational and Radical Expressions and Equations Polynomial Expressions and Equations Systems of Equations and Inequalities Functions: Exponential and Logarithmic Functions Integrating Essential Skills: Writing and Solving Simple Equations and Inequalities
A.CED.4	Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law $V = IR$ to highlight resistance R.	Algebra: Linear Expressions, Equations, and Inequalities Quadratic Expressions, Equations, and Inequalities Rational and Radical Expressions and Equations Polynomial Expressions and Equations Functions: Exponential and Logarithmic Functions
A.REI	**Reasoning with Equations and Inequalities**	
	Understand solving equations as a process of reasoning and explain the reasoning.	
A.REI.1	Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.	Algebra: Linear Expressions, Equations, and Inequalities Quadratic Expressions, Equations, and Inequalities Rational and Radical Expressions and Equations Polynomial Expressions and Equations Functions: Exponential and Logarithmic Functions

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Standard Number	**Standard**	
A.REI.2	Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.	Algebra: Rational and Radical Expressions and Equations
	Solve equations and inequalities in one variable.	
A.REI.3	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	Algebra: Linear Expressions, Equations, and Inequalities Integrating Essential Skills: Writing and Solving Simple Equations and Inequalities
A.REI.4	Solve quadratic equations in one variable. a. Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x - p)^2 = q$ that has the same solutions. Derive the quadratic formula from this form. b. Solve quadratic equations by inspection (e.g., for $x^2 = 49$), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers a and b.	Number & Quantity: Complex Numbers Algebra: Quadratic Expressions, Equations, and Inequalities
	Solve systems of equations.	
A.REI.5	Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.	Algebra: Systems of Equations and Inequalities Integrating Essential Skills: Writing and Solving Simple Equations and Inequalities
A.REI.6	Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.	Algebra: Systems of Equations and Inequalities Integrating Essential Skills: Writing and Solving Simple Equations and Inequalities
A.REI.7	Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. *For example, find the points of intersection between the line* $y = -3x$ and the circle $x^2 + y^2 = 3$.	Algebra: Systems of Equations and Inequalities

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Standard Number	**Standard**	
A.REI.8	(+) Represent a system of linear equations as a single matrix equation in a vector variable.	Number & Quantity: Vectors and Matrices Algebra: Systems of Equations and Inequalities
A.REI.9	(+) Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension 3 × 3 or greater).	Number & Quantity: Vectors and Matrices Algebra: Systems of Equations and Inequalities
	Represent and solve equations and inequalities graphically.	
A.REI.10	Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).	Algebra: Linear Expressions, Equations, and Inequalities Quadratic Expressions, Equations, and Inequalities Rational and Radical Expressions and Equations Polynomial Expressions and Equations Functions: Exponential and Logarithmic Functions
A.REI.11	Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.*	Algebra: Systems of Equations and Inequalities Integrating Essential Skills: Writing and Solving Simple Equations and Inequalities
A.REI.12	Graph the solutions to a linear inequality in two variables as a half plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.	Algebra: Linear Expressions, Equations, and Inequalities Systems of Equations and Inequalities

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Standard Number	**Standard**	
	Functions	
F.IF	Interpreting Functions	
	Understand the concept of a function and use function notation.	
F.IF.1	Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If *f* is a function and *x* is an element of its domain, then *f*(*x*) denotes the output of *f* corresponding to the input *x*. The graph of *f* is the graph of the equation *y* = *f*(*x*).	Functions: Properties of Functions
F.IF.2	Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.	Functions: Properties of Functions
F.IF.3	Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. *For example, the Fibonacci sequence is defined recursively by f(0) = f(1) = 1, f(n + 1) = f(n) + f(n − 1) for n ≥ 1.*	Functions: Sequences and Series
	Interpret functions that arise in applications in terms of the context.	
F.IF.4	For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.**	Functions: Properties of Functions
F.IF.5	Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. *For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.**	Functions: Properties of Functions
F.IF.6	Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.*	Functions: Properties of Functions Integrating Essential Skills: Writing and Solving Simple Equations and Inequalities

	Illinois Learning Standards in Mathematics, High School	The ACT Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
	Analyze functions using different representations.	
F.IF.7	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.* a. Graph linear and quadratic functions and show intercepts, maxima, and minima. b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions. c. Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior. d. (+) Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior. e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.	Functions: Properties of Functions Trigonometric Functions Exponential and Logarithmic Functions
F.IF.8	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. a. Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context. b. Use the properties of exponents to interpret expressions for exponential functions. *For example, identify percent rate of change in functions such as* $y = (1.02)^t$, $y = (0.97)^t$, $y = (1.01)^{12t}$, $y = (1.2)^{t/10}$, *and classify them as representing exponential growth or decay.*	Algebra: Linear Expressions, Equations, and Inequalities Quadratic Expressions, Equations, and Inequalities Functions: Properties of Functions Exponential and Logarithmic Functions
F.IF.9	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.*	Functions: Properties of Functions

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Standard Number	**Standard**	
F.BF	Building Functions	
	Build a function that models a relationship between two quantities.	
F.BF.1	Write a function that describes a relationship between two quantities.* a. Determine an explicit expression, a recursive process, or steps for calculation from a context. b. Combine standard function types using arithmetic operations. *For example, build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential, and relate these functions to the model.* c. (+) Compose functions. *For example, if T(y) is the temperature in the atmosphere as a function of height, and h(t) is the height of a weather balloon as a function of time, then T(h(t)) is the temperature at the location of the weather balloon as a function of time.*	Algebra: Linear Expressions, Equations, and Inequalities Quadratic Expressions, Equations, and Inequalities Functions: Properties of Functions Function Composition and Inverse Functions Exponential and Logarithmic Functions
F.BF.2	Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.*	Functions: Sequences and Series
	Build new functions from existing functions.	
F.BF.3	Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k\,f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. *Include recognizing even and odd functions from their graphs and algebraic expressions for them.*	Functions: Function Composition and Inverse Functions
F.BF.4	Find inverse functions. a. Solve an equation of the form $f(x) = c$ for a simple function f that has an inverse and write an expression for the inverse. *For example, $f(x) = 2x^3$ or $f(x) = (x + 1)/(x – 1)$ for $x \neq 1$.* b. (+) Verify by composition that one function is the inverse of another. c. (+) Read values of an inverse function from a graph or a table, given that the function has an inverse. d. (+) Produce an invertible function from a non-invertible function by restricting the domain.	Functions: Function Composition and Inverse Functions

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Standard Number	**Standard**	
F.BF.5	(+) Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.	Functions: Function Composition and Inverse Functions Exponential and Logarithmic Functions
F.LE	Linear and Exponential Models*	
	Construct and compare linear and exponential models and solve problems.	
F.LE.1	Distinguish between situations that can be modeled with linear functions and with exponential functions. a. Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals. b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. c. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.	Algebra: Linear Expressions, Equations, and Inequalities Functions: Properties of Functions Exponential and Logarithmic Functions
F.LE.2	Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).	Algebra: Linear Expressions, Equations, and Inequalities Functions: Properties of Functions Sequences and Series Exponential and Logarithmic Functions
F.LE.3	Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.	Functions: Properties of Functions Exponential and Logarithmic Functions
F.LE.4	For exponential models, express as a logarithm the solution to $ab^{ct} = d$ where a, c, and d are numbers and the base b is 2, 10, or e; evaluate the logarithm using technology.	Functions: Exponential and Logarithmic Functions

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Standard Number	**Standard**	
	Interpret expressions for functions in terms of the situation they model.	
F.LE.5	Interpret the parameters in a linear or exponential function in terms of a context.	Algebra: Linear Expressions, Equations, and Inequalities Functions: Properties of Functions Exponential and Logarithmic Functions
F.TF	Trigonometric Functions	
	Extend the domain of trigonometric functions using the unit circle.	
F.TF.1	Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle.	Functions: Trigonometric Functions
F.TF.2	Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle.	Functions: Trigonometric Functions
F.TF.3	(+) Use special triangles to determine geometrically the values of sine, cosine, tangent for $\pi/3$, $\pi/4$ and $\pi/6$, and use the unit circle to express the values of sine, cosines, and tangent for x, $\pi + x$, and $2\pi - x$ in terms of their values for x, where x is any real number.	Functions: Trigonometric Functions
F.TF.4	(+) Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions.	Functions: Properties of Functions Trigonometric Functions
	Model periodic phenomena with trigonometric functions.	
F.TF.5	Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline.*	Functions: Properties of Functions Trigonometric Functions
F.TF.6	(+) Understand that restricting a trigonometric function to a domain on which it is always increasing or always decreasing allows its inverse to be constructed.	Functions: Properties of Functions Trigonometric Functions
F.TF.7	(+) Use inverse functions to solve trigonometric equations that arise in modeling contexts; evaluate the solutions using technology, and interpret them in terms of the context.*	Functions: Trigonometric Functions

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Standard Number	**Standard**	
	Prove and apply trigonometric identities.	
F.TF.8	Prove the Pythagorean identity $\sin^2(\theta) + \cos^2(\theta) = 1$ and use it to find $\sin(\theta)$, $\cos(\theta)$,or $\tan(\theta)$ given $\sin(\theta)$, $\cos(\theta)$, or $\tan(\theta)$ and the quadrant of the angle.	Functions: Trigonometric Functions
F.TF.9	(+) Prove the addition and subtraction formulas for sine, cosine, and tangent and use them to solve problems.	Functions: Trigonometric Functions
	Geometry	
G.CO	Congruence	
	Experiment with transformations in the plane.	
G.CO.1	Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.	Geometry: Transformations Integrating Essential Skills: Properties of Lines, Angles, and Shapes
G.CO.2	Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).	Geometry: Transformations Integrating Essential Skills: Properties of Lines, Angles, and Shapes
G.CO.3	Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.	Geometry: Transformations Integrating Essential Skills: Properties of Lines, Angles, and Shapes
G.CO.4	Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.	Geometry: Transformations Integrating Essential Skills: Properties of Lines, Angles, and Shapes
G.CO.5	Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.	Geometry: Transformations Integrating Essential Skills: Properties of Lines, Angles, and Shapes
	Understand congruence in terms of rigid motions.	
G.CO.6	Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.	Geometry: Transformations Integrating Essential Skills: Properties of Lines, Angles, and Shapes

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Standard Number	**Standard**	
G.CO.7	Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.	Geometry: Transformations Proof, Reasoning, and Constructions Integrating Essential Skills: Properties of Lines, Angles, and Shapes
G.CO.8	Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.	Geometry: Transformations Proof, Reasoning, and Constructions Integrating Essential Skills: Properties of Lines, Angles, and Shapes
	Prove geometric theorems.	
G.CO.9	Prove theorems about lines and angles. *Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.*	Geometry: Proof, Reasoning, and Constructions Integrating Essential Skills: Properties of Lines, Angles, and Shapes
G.CO.10	Prove theorems about triangles. *Theorems include: measures of interior angles of a triangle sum to 180°; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.*	Geometry: Proof, Reasoning, and Constructions Integrating Essential Skills: Properties of Lines, Angles, and Shapes
G.CO.11	Prove theorems about parallelograms. *Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.*	Geometry: Proof, Reasoning, and Constructions
	Make geometric constructions.	
G.CO.12	Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). *Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.*	Geometry: Proof, Reasoning, and Constructions

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G.CO.13	Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.	Geometry: Proof, Reasoning, and Constructions
G.SRT	Similarity, Right Triangles, and Trigonometry	
	Understand similarity in terms of similarity transformations.	
G.SRT.1	Verify experimentally the properties of dilations given by a center and a scale factor: a. A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged. b. The dilation of a line segment is longer or shorter in the ratio given by the scale factor.	Geometry: Transformations Similarity, Right Triangles, and Trigonometry
G.SRT.2	Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.	Geometry: Transformations Similarity, Right Triangles, and Trigonometry
G.SRT.3	Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.	Geometry: Transformations Similarity, Right Triangles, and Trigonometry
	Prove theorems involving similarity.	
G.SRT.4	Prove theorems about triangles. *Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.*	Geometry: Proof, Reasoning, and Constructions Similarity, Right Triangles, and Trigonometry
G.SRT.5	Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.	Geometry: Proof, Reasoning, and Constructions Similarity, Right Triangles, and Trigonometry
	Define trigonometric ratios and solve problems involving right triangles.	
G.SRT.6	Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.	Geometry: Similarity, Right Triangles, and Trigonometry
G.SRT.7	Explain and use the relationship between the sine and cosine of complementary angles.	Geometry: Similarity, Right Triangles, and Trigonometry

	Illinois Learning Standards in Mathematics, High School	The ACT Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
G.SRT.8	Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.*	Geometry: Similarity, Right Triangles, and Trigonometry Integrating Essential Skills: Pythagorean Theorem
	Apply trigonometry to general triangles.	
G.SRT.9	(+) Derive the formula $A = 1/2\ ab \sin(C)$ for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.	Geometry: Similarity, Right Triangles, and Trigonometry
G.SRT.10	(+) Prove the Laws of Sines and Cosines and use them to solve problems.	Geometry: Similarity, Right Triangles, and Trigonometry
G.SRT.11	(+) Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).	Geometry: Similarity, Right Triangles, and Trigonometry
G.C	Circles	
	Understand and apply theorems about circles.	
G.C.1	Prove that all circles are similar.	
G.C.2	Identify and describe relationships among inscribed angles, radii, and chords. *Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.*	Geometry: Properties of Circles
G.C.3	Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.	Geometry: Proof, Reasoning, and Constructions Properties of Circles
G.C.4	(+) Construct a tangent line from a point outside a given circle to the circle.	Geometry: Proof, Reasoning, and Constructions Properties of Circles
	Find arc lengths and areas of sectors of circles.	
G.C.5	Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.	Geometry: Properties of Circles

	Illinois Learning Standards in Mathematics, High School	The ACT Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
G.GPE	Expressing Geometric Properties with Equations	
	Translate between the geometric description and the equation for a conic section.	
G.GPE.1	Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.	Geometry: Conic Sections
G.GPE.2	Derive the equation of a parabola given a focus and directrix.	Geometry: Conic Sections
G.GPE.3	(+)Derive the equations of ellipses and hyperbolas given the foci, using the fact that the sum or difference of distances from the foci is constant.	Geometry: Conic Sections
	Use coordinates to prove simple geometric theorems algebraically.	
G.GPE.4	Use coordinates to prove simple geometric theorems algebraically. *For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point (1, √3) lies on the circle centered at the origin and containing the point (0, 2).*	Geometry: Coordinate Geometry
G.GPE.5	Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).	Geometry: Coordinate Geometry
G.GPE.6	Find the point on a directed line segment between two given points that partitions the segment in a given ratio.	Geometry: Coordinate Geometry
G.GPE.7	Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.*	Geometry: Coordinate Geometry Integrating Essential Skills: Perimeter, Circumference, and Area
G.GMD	Geometric Measurement and Dimension	
	Explain volume formulas and use them to solve problems.	
G.GMD.1	Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. *Use dissection arguments, Cavalieri's principle, and informal limit arguments* .	Geometry: Proof, Reasoning, and Constructions Geometric Measurement and Modeling Integrating Essential Skills: Surface Area and Volume

	Illinois Learning Standards in Mathematics, High School	The ACT Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
G.GMD.2	(+) Give an informal argument using Cavalieri's principle for the formulas for the volume of a sphere and other solid figures.	Geometry: Proof, Reasoning, and Constructions Geometric Measurement and Modeling
G.GMD.3	Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.*	Geometry: Geometric Measurement and Modeling Integrating Essential Skills: Surface Area and Volume
	Visualize relationships between two-dimensional and three-dimensional objects.	
G.GMD.4	Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.	Geometry: Geometric Measurement and Modeling Integrating Essential Skills: Surface Area and Volume Properties of Lines, Angles, and Shapes
G.MG	Modeling with Geometry	
	Apply geometric concepts in modeling situations.	
G.MG.1	Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).*	Geometry: Geometric Measurement and Modeling Integrating Essential Skills: Properties of Lines, Angles, and Shapes
G.MG.2	Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).*	Geometry: Geometric Measurement and Modeling Integrating Essential Skills: Properties of Lines, Angles, and Shapes
G.MG.3	Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).*	Geometry: Geometric Measurement and Modeling Integrating Essential Skills: Properties of Lines, Angles, and Shapes

	Illinois Learning Standards in Mathematics, High School	The ACT Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
	Statistics and Probability	
S.ID	Interpreting Categorical and Quantitative Data	
	Summarize, represent, and interpret data on a single count or measurement variable.	
S.ID.1	Represent data with plots on the real number line (dot plots, histograms, and box plots).	Statistics & Probability: Interpret Data on a Single Variable Integrating Essential Skills: Data Summary and Displays
S.ID.2	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.	Statistics & Probability: Interpret Data on a Single Variable Integrating Essential Skills: Data Summary and Displays
S.ID.3	Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).	Statistics & Probability: Interpret Data on a Single Variable Integrating Essential Skills: Data Summary and Displays
S.ID.4	Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.	Statistics & Probability: Interpret Data on a Single Variable
S.ID.5	Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.	Statistics & Probability: Interpret Data on Two Variables
S.ID.6	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. a. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. *Use given functions or choose a function suggested by the context. Emphasize linear and exponential models.* b. Informally assess the fit of a function by plotting and analyzing residuals. c. Fit a linear function for a scatter plot that suggests a linear association.	Statistics & Probability: Interpret Data on Two Variables Integrating Essential Skills: Scatterplots and Association

	Illinois Learning Standards in Mathematics, High School	The ACT Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
	Interpret linear models.	
S.ID.7	Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.	Statistics & Probability: Interpret Data on Two Variables
S.ID.8	Compute (using technology) and interpret the correlation coefficient of a linear fit.	Statistics & Probability: Interpret Data on Two Variables
S.ID.9	Distinguish between correlation and causation.	
S.IC	**Making Inferences and Justifying Conclusions**	
	Understand and evaluate random processes underlying statistical experiments.	
S.IC.1	Understand statistics as a process for making inferences about population parameters based on a random sample from that population.	Statistics & Probability: Making Inferences from Experiments and Surveys
S.IC.2	Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation. *For example, a model says a spinning coin falls heads up with probability 0.5. Would a result of 5 tails in a row cause you to question the model?*	Statistics & Probability: Making Inferences from Experiments and Surveys
	Make inferences and justify conclusions from sample surveys, experiments, and observational studies.	
S.IC.3	Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.	Statistics & Probability: Making Inferences from Experiments and Surveys
S.IC.4	Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.	Statistics & Probability: Making Inferences from Experiments and Surveys Integrating Essential Skills: Basic Probability
S.IC.5	Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant.	Statistics & Probability: Making Inferences from Experiments and Surveys Integrating Essential Skills: Basic Probability
S.IC.6	Evaluate reports based on data.	
S.CP	**Conditional Probability and the Rules of Probability**	
	Understand independence and conditional probability and use them to interpret data.	
S.CP.1	Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or," "and," "not").	Statistics & Probability: Counting, Permutations, and Combinations

	Illinois Learning Standards in Mathematics, High School	The ACT Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
S.CP.2	Understand that two events *A* and *B* are independent if the probability of *A* and *B* occurring together is the product of their probabilities, and use this characterization to determine if they are independent.	Statistics & Probability: Rules of Probability
S.CP.3	Understand the conditional probability of *A* given *B* as *P*(*A* and *B*)/*P*(*B*), and interpret independence of *A* and *B* as saying that the conditional probability of *A* given *B* is the same as the probability of *A*, and the conditional probability of *B* given *A* is the same as the probability of *B*.	Statistics & Probability: Rules of Probability
S.CP.4	Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities. *For example, collect data from a random sample of students in your school on their favorite subject among math, science, and English. Estimate the probability that a randomly selected student from your school will favor science given that the student is in tenth grade. Do the same for other subjects and compare the results.*	Statistics & Probability: Rules of Probability Integrating Essential Skills: Basic Probability
S.CP.5	Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. *For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer.*	Statistics & Probability: Rules of Probability
	Use the rules of probability to compute probabilities of compound events in a uniform probability model.	
S.CP.6	Find the conditional probability of *A* given *B* as the fraction of *B*'s outcomes that also belong to *A,* and interpret the answer in terms of the model.	Statistics & Probability: Rules of Probability
S.CP.7	Apply the Addition Rule, *P*(*A* or *B*) = *P*(*A*) + *P*(*B*) – *P*(*A* and *B*), and interpret the answer in terms of the model.	Statistics & Probability: Rules of Probability Integrating Essential Skills: Basic Probability
S.CP.8	(+) Apply the general Multiplication Rule in a uniform probability model, *P*(*A* and *B*) = *P*(*A*)*P*(*B*|*A*) = *P*(*B*)*P*(*A*|*B*), and interpret the answer in terms of the model.	Statistics & Probability: Rules of Probability
S.CP.9	(+) Use permutations and combinations to compute probabilities of compound events and solve problems.	Statistics & Probability: Rules of Probability Counting, Permutations, and Combinations
S.MD	**Using Probability to Make Decisions**	

	Illinois Learning Standards in Mathematics, High School	The ACT Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
	Calculate expected values and use them to solve problems.	
S.MD.1	(+) Define a random variable for a quantity of interest by assigning a numerical value to each event in a sample space; graph the corresponding probability distribution using the same graphical displays as for data distributions.	Statistics & Probability: Rules of Probability
S.MD.2	(+) Calculate the expected value of a random variable; interpret it as the mean of the probability distribution.	Statistics & Probability: Rules of Probability
S.MD.3	(+) Develop a probability distribution for a random variable defined for a sample space in which theoretical probabilities can be calculated; find the expected value. For example, find the theoretical probability distribution for the number of correct answers obtained by guessing on all five questions of a multiple-choice test where each question has four choices, and find the expected grade under various grading schemes.	Statistics & Probability: Rules of Probability
S.MD.4	(+) Develop a probability distribution for a random variable defined for a sample space in which probabilities are assigned empirically; find the expected value. For example, find a current data distribution on the number of TV sets per household in the United States, and calculate the expected number of sets per household. How many TV sets would you expect to find in 100 randomly selected households?	Statistics & Probability: Rules of Probability
	Use probability to evaluate outcomes of decisions.	
S.MD.5	(+) Weigh the possible outcomes of a decision by assigning probabilities to payoff values and finding expected values. a. Find the expected payoff for a game of chance. For example, find the expected winnings from a state lottery ticket or a game at a fast food restaurant. b. Evaluate and compare strategies on the basis of expected values. For example, compare a high-deductible versus a low-deductible automobile insurance policy using various, but reasonable, chances of having a minor or a major accident.	Statistics & Probability: Rules of Probability
S.MD.6	(+) Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).	
S.MD.7	(+) Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).	

Table 3. Illinois Learning Standards: Science – Aligned to the ACT

	Illinois Learning Standards in Science, High School	The ACT Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
	Physical Science	
	Structure and Properties of Matter	
HS-PS1-1	Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms.	Interpretation of Data: Locating and Understanding Inferring and Translating Extending and Reevaluating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-PS1-3	Plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles.	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-PS1-8	Develop models to illustrate the changes in the composition of the nucleus of the atom and the energy released during the processes of fission, fusion, and radioactive decay.	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-PS2-6	Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials.	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The ACT Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
	Chemical Reactions	
HS-PS1-2	Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-PS1-4	Develop a model to illustrate that the release or absorption of energy from a chemical reaction system depends upon the changes in total bond energy	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-PS1-5	Apply scientific principles and evidence to provide an explanation about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-PS1-6	Refine the design of a chemical system by specifying a change in conditions that would produce increased amounts of products at equilibrium	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-PS1-7	Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
	Forces and Interactions	
HS-PS2-1	Analyze data to support the claim that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The ACT Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
HS-PS2-2	Use mathematical representations to support the claim that the total momentum of a system of objects is conserved when there is no net force on the system	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-PS2-3	Apply scientific and engineering ideas to design, evaluate, and refine a device that minimizes the force on a macroscopic object during a collision	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-PS2-4	Use mathematical representations of Newton's Law of Gravitation and Coulomb's Law to describe and predict the gravitational and electrostatic forces between objects	Interpretation of Data: Locating and Understanding Inferring and Translating Extending and Reevaluating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-PS2-5	Plan and conduct an investigation to provide evidence that an electric current can produce a magnetic field and that a changing magnetic field can produce an electric current	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
	Energy	
HS-PS3-1	Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The ACT Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
HS-PS3-2	Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative position of particles (objects)	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-PS3-3	Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-PS3-4	Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperature are combined within a closed system results in a more uniform energy distribution among the components in the system (second law of thermodynamics)	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-PS3-5	Develop and use a model of two objects interacting through electric or magnetic fields to illustrate the forces between objects and the changes in energy of the objects due to the interaction	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
	Waves and Electromagnetic Radiation	
HS-PS4-1	Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The ACT Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
HS-PS4-2	Evaluate questions about the advantages of using a digital transmission and storage of information	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Designing and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-PS4-3	Evaluate the claims, evidence, and reasoning behind the idea that electromagnetic radiation can be described either by a wave model or a particle model, and that for some situations one model is more useful than the other	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-PS4-4	Evaluate the validity and reliability of claims in published materials of the effects that different frequencies of electromagnetic radiation have when absorbed by matter	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-PS4-5	Communicate technical information about how some technological devices use the principles of wave behavior and wave interactions with matter to transmit and capture information and energy	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
	Life Science	
	Structure and Function	
HS-LS1-1	Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results Evaluating and Extending
HS-LS1-2	Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The ACT Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
HS-LS1-3	Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
	Matter and Energy in Organisms and Ecosystems	
HS-LS1-5	Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-LS1-6	Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-LS1-7	Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-LS2-3	Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The ACT Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
HS-LS2-4	Use mathematical representations to support claims for the cycling of matter and flow of energy among organisms in an ecosystem	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-LS2-5	Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
	Interdependent Relationships in Ecosystems	
HS-LS2-1	Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-LS2-2	Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-LS2-6	Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The ACT Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
HS-LS2-7	Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-LS2-8	Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing
HS-LS4-6	Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
	Inheritance and Variation of Traits	
HS-LS1-4	Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-LS3-1	Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Designing and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The ACT Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
HS-LS3-2	Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-LS3-3	Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
	Natural Selection and Evolution	
HS-LS4-1	Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-LS4-2	Construct an explanation based on evidence that the process of evolution primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-LS4-3	Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-LS4-4	Construct an explanation based on evidence for how natural selection leads to adaptation of populations	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The ACT Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
HS-LS4-5	Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
	Earth and Space Science	
	Space Systems	
HS-ESS1-1	Develop a model based on evidence to illustrate the life span of the sun and the role of nuclear fusion in the sun's core to release energy that eventually reaches Earth in the form of radiation	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-ESS1-2	Construct an explanation of the Big Bang theory based on astronomical evidence of light spectra, motion of distant galaxies, and composition of matter in the universe	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-ESS1-3	Communicate scientific ideas about the way stars, over their life cycle, produce elements	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-ESS1-4	Use mathematical or computational representations to predict the motion of orbiting objects in the solar system	Interpretation of Data: Locating and Understanding Inferring and Translating Extending and Reevaluating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
	History of Earth	
HS-ESS1-5	Evaluate evidence of the past and current movements of continental and oceanic crust and the theory of plate tectonics to explain the ages of crustal rocks	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The ACT Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
HS-ESS1-6	Apply scientific reasoning and evidence from ancient Earth materials, meteorites, and other planetary surfaces to construct an account of Earth's formation and early history	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-ESS2-1	Develop a model to illustrate how Earth's internal and surface processes operate at different spatial and temporal scales to form continental and ocean-floor features	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
	Earth's Systems	
HS-ESS2-2	Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-ESS2-3	Develop a model based on evidence of Earth's interior to describe the cycling of matter by thermal convection	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-ESS2-5	Plan and conduct an investigation of the properties of water and its effects on Earth materials and surface processes	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing
HS-ESS2-6	Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The ACT Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
HS-ESS2-7	Construct an argument based on evidence about the simultaneous coevolution of Earth's systems and life on Earth	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
	Weather and Climate	
HS-ESS2-4	Use a model to describe how variations in the flow of energy into and out of Earth's systems result in changes in climate	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-ESS3-5	Analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth systems	Interpretation of Data: Locating and Understanding Inferring and Translating Extending and Reevaluating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
	Human Sustainability	
HS-ESS3-1	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-ESS3-2	Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The ACT Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
HS-ESS3-3	Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-ESS3-4	Evaluate or refine a technological solution that reduces impacts of human activities on natural systems	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-ESS3-6	Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
	Engineering Design	
HS-ETS1-1	Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Designing and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-ETS1-2	Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The ACT Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
HS-ETS1-3	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-ETS1-4	Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem	Interpretation of Data: Locating and Understanding Inferring and Translating Extending and Reevaluating Scientific Investigation: Locating and Comparing Designing and Implementing Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending

V. Detailed Alignment Results: PreACT Secure

Comprehensive results of the ELA/literacy, mathematics, and science alignments for the PreACT Secure are presented in Tables 4-6 below.

Table 4. Illinois Learning Standards: English Language Arts (ELA), High School – Aligned to the PreACT Secure

	Illinois Learning Standards in ELA/Literacy, Grades 9-10	The PreACT Secure English Reporting Categories and Skill Areas	The PreACT Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
	College and Career Readiness Anchor Standards for Reading		
	Key Ideas and Details		
CCRA.R.1	Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.		Key Ideas and Details: Close Reading
CCRA.R.2	Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.		Key Ideas and Details: Central Ideas, Themes, Summaries
CCRA.R.3	Analyze how and why individuals, events, and ideas develop and interact over the course of a text.		Key Ideas and Details: Relationships
	Craft and Structure		
CCRA.R.4	Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.		Craft and Structure: Word Meanings and Word Choice Text Structure
CCRA.R.5	Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.		Craft and Structure: Text Structure

	Illinois Learning Standards in ELA/Literacy, Grades 9-10	The PreACT Secure English Reporting Categories and Skill Areas	The PreACT Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
CCRA.R.6	Assess how point of view or purpose shapes the content and style of a text.		Craft and Structure: Purpose and Point of View
	Integration of Knowledge and Ideas		
CCRA.R.7	Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.		
CCRA.R.8	Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.		Integration of Knowledge and Ideas: Arguments
CCRA.R.9	Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.		Integration of Knowledge and Ideas: Synthesis of Multiple Texts
	Range of Reading and Level of Text Complexity		
CCRA.R.10	Read and comprehend complex literary and informational texts independently and proficiently.		All reporting categories
	College and Career Readiness Anchor Standards for Writing		
	Text Types and Purposes		
CCRA.W.1	Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly Style	

	Illinois Learning Standards in ELA/Literacy, Grades 9-10	The PreACT Secure English Reporting Categories and Skill Areas	The PreACT Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
CCRA.W.2	Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly Style	
CCRA.W.3	Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly Style	
	Production and Distribution of Writing		
CCRA.W.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly Style	
CCRA.W.5	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.	All reporting categories	
CCRA.W.6	Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.		

	Illinois Learning Standards in ELA/Literacy, Grades 9-10	The PreACT Secure English Reporting Categories and Skill Areas	The PreACT Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
	Research to Build and Present Knowledge		
CCRA.W.7	Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.		
CCRA.W.8	Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.		
CCRA.W.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.		All reporting categories
	Range of Writing		
CCRA.W.10	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.	All reporting categories	
	College and Career Readiness Anchor Standards for Language		
	Conventions of Standard English		
CCRA.L.1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.	Conventions of Standard English Grammar, Usage, and Mechanics: Sentence Structure and Formation Usage Conventions	
CCRA.L.2	Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.	Conventions of Standard English Grammar, Usage, and Mechanics: Punctuation Conventions	

	Illinois Learning Standards in ELA/Literacy, Grades 9-10	The PreACT Secure English Reporting Categories and Skill Areas	The PreACT Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
	Knowledge of Language		
CCRA.L.3	Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly Style	Craft and Structure: Word Meanings and Word Choice Text Structure
	Vocabulary Acquisition and Use		
CCRA.L.4	Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.		Craft and Structure: Word Meanings and Word Choice
CCRA.L.5	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.		Craft and Structure: Word Meanings and Word Choice Text Structure
CCRA.L.6	Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly	Craft and Structure: Word Meanings and Word Choice Text Structure

	Illinois Learning Standards in ELA/Literacy, Grades 9-10	The PreACT Secure English Reporting Categories and Skill Areas	The PreACT Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
	Reading: Literature		
	Key Ideas and Details		
RL.9-10.1	Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.		Key Ideas and Details: Close Reading Relationships Central Ideas, Themes, Summaries Craft and Structure: Word Meanings and Word Choice Text Structure Purpose and Point of View Integration of Knowledge and Ideas: Synthesis of Multiple Texts
RL.9-10.2	Determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.		Key Ideas and Details: Central Ideas, Themes, Summaries Craft and Structure: Text Structure
RL.9-10.3	Analyze how complex characters (e.g., those with multiple or conflicting motivations) develop over the course of a text, interact with other characters, and advance the plot or develop the theme.		Key Ideas and Details: Relationships Craft and Structure: Text Structure Purpose and Point of View

	Illinois Learning Standards in ELA/Literacy, Grades 9-10	The PreACT Secure English Reporting Categories and Skill Areas	The PreACT Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
	Craft and Structure		
RL.9-10.4	Determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language evokes a sense of time and place; how it sets a formal or informal tone).		Craft and Structure: Word Meanings and Word Choice Text Structure
RL.9-10.5	Analyze how an author's choices concerning how to structure a text, order events within it (e.g., parallel plots), and manipulate time (e.g., pacing, flashbacks) create such effects as mystery, tension, or surprise.		Craft and Structure: Text Structure
RL.9-10.6	Analyze a particular point of view or cultural experience reflected in a work of literature from outside the United States, drawing on a wide reading of world literature.		Craft and Structure: Purpose and Point of View
	Integration of Knowledge and Ideas		
RL.9-10.7	Analyze the representation of a subject or a key scene in two different artistic mediums, including what is emphasized or absent in each treatment (e.g., Auden's "Musée des Beaux Arts" and Breughel's Landscape with the Fall of Icarus).		
RL.9-10.9	Analyze how an author draws on and transforms source material in a specific work (e.g., how Shakespeare treats a theme or topic from Ovid or the Bible or how a later author draws on a play by Shakespeare).		Integration of Knowledge and Ideas: Synthesis of Multiple Texts

	Illinois Learning Standards in ELA/Literacy, Grades 9-10	The PreACT Secure English Reporting Categories and Skill Areas	The PreACT Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
RL.9-10.10	By the end of grade 9, read and comprehend literature, including stories, dramas, and poems, in the grades 9—10 text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 10, read and comprehend literature, including stories, dramas, and poems, at the high end of the grades 9—10 text complexity band independently and proficiently.		Key Ideas and Details: Close Reading Relationships Central Ideas, Themes, Summaries Craft and Structure: Word Meanings and Word Choice Text Structure Purpose and Point of View Integration of Knowledge and Ideas: Synthesis of Multiple Texts
	Reading: Informational Text		
	Key Ideas and Details		
RI.9-10.1	Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.		Key Ideas and Details: Close Reading
RI.9-10.2	Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.		Key Ideas and Details: Central Ideas, Themes, Summaries Craft and Structure: Text Structure
RI.9-10.3	Analyze how the author unfolds an analysis or series of ideas or events, including the order in which the points are made, how they are introduced and developed, and the connections that are drawn between them.		Key Ideas and Details: Relationships Craft and Structure: Text Structure
	Craft and Structure		
RI.9-10.4	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language of a court opinion differs from that of a newspaper).		Craft and Structure: Word Meanings and Word Choice Text Structure

	Illinois Learning Standards in ELA/Literacy, Grades 9-10	The PreACT Secure English Reporting Categories and Skill Areas	The PreACT Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
RI.9-10.5	Analyze in detail how an author's ideas or claims are developed and refined by particular sentences, paragraphs, or larger portions of a text (e.g., a section or chapter).		Craft and Structure: Text Structure Integration of Knowledge and Ideas: Arguments
RI.9-10.6	Determine an author's point of view or purpose in a text and analyze how an author uses rhetoric to advance that point of view or purpose.		Craft and Structure: Word Meanings and Word Choice Text Structure Purpose and Point of View Integration of Knowledge and Ideas: Arguments
	Integration of Knowledge and Ideas		
RI.9-10.7	Analyze various accounts of a subject told in different mediums (e.g., a person's life story in both print and multimedia), determining which details are emphasized in each account.		
RI.9-10.8	Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning.		Craft and Structure: Purpose and Point of View Integration of Knowledge and Ideas: Arguments

	Illinois Learning Standards in ELA/Literacy, Grades 9-10	The PreACT Secure English Reporting Categories and Skill Areas	The PreACT Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
RI.9-10.9	Analyze seminal U.S. documents of historical and literary significance (e.g., Washington's Farewell Address, the Gettysburg Address, Roosevelt's Four Freedoms speech, King's "Letter from Birmingham Jail"), including how they address related themes and concepts.		Key Ideas and Details: Central Ideas, Themes, Summaries Craft and Structure: Text Structure Purpose and Point of View Integration of Knowledge and Ideas: Synthesis of Multiple Texts
	Range of Reading and Level of Text Complexity		
RI.9-10.10	By the end of grade 9, read and comprehend literary nonfiction in the grades 9—10 text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 10, read and comprehend literary nonfiction at the high end of the grades 9—10 text complexity band independently and proficiently.		Key Ideas and Details: Close Reading Relationships Central Ideas, Themes, Summaries Craft and Structure: Word Meanings and Word Choice Text Structure Purpose and Point of View Integration of Knowledge and Ideas: Arguments Synthesis of Multiple Texts

	Illinois Learning Standards in ELA/Literacy, Grades 9-10	The PreACT Secure English Reporting Categories and Skill Areas	The PreACT Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
	Writing		
	Text Types and Purposes		
W.9-10.1	Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly Style	
W.9-10.1.a	Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among claim(s), counterclaims, reasons, and evidence.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion	
W.9-10.1.b	Develop claim(s) and counterclaims fairly, supplying evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level and concerns.	Production of Writing: Topic Development—Purpose and Focus	
W.9-10.1.c	Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly	
W.9-10.1.d	Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.	Knowledge of Language: Expressing Ideas Clearly Style	
W.9-10.1.e	Provide a concluding statement or section that follows from and supports the argument presented.	Production of Writing: Organization, Unity, and Cohesion	

	Illinois Learning Standards in ELA/Literacy, Grades 9-10	The PreACT Secure English Reporting Categories and Skill Areas	The PreACT Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
W.9-10.2	Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly Style	
W.9-10.2.a	Introduce a topic; organize complex ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion	
W.9-10.2.b	Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.	Production of Writing: Topic Development—Purpose and Focus	
W.9-10.2.c	Use appropriate and varied transitions to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly	
W.9-10.2.d	Use precise language and domain-specific vocabulary to manage the complexity of the topic.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly Style	
W.9-10.2.e	Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.	Knowledge of Language: Expressing Ideas Clearly Style	

	Illinois Learning Standards in ELA/Literacy, Grades 9-10	The PreACT Secure English Reporting Categories and Skill Areas	The PreACT Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
W.9-10.2.f	Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).	Production of Writing: Organization, Unity, and Cohesion	
W.9-10.3	Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly Style	
W.9-10.3.a	Engage and orient the reader by setting out a problem, situation, or observation, establishing one or multiple point(s) of view, and introducing a narrator and/or characters; create a smooth progression of experiences or events.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion	
W.9-10.3.b	Use narrative techniques, such as dialogue, pacing, description, reflection, and multiple plot lines, to develop experiences, events, and/or characters.	Production of Writing: Topic Development—Purpose and Focus	
W.9-10.3.c	Use a variety of techniques to sequence events so that they build on one another to create a coherent whole.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion	
W.9-10.3.d	Use precise words and phrases, telling details, and sensory language to convey a vivid picture of the experiences, events, setting, and/or characters.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly Style	
W.9-10.3.e	Provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative.	Production of Writing: Organization, Unity, and Cohesion	

	Illinois Learning Standards in ELA/Literacy, Grades 9-10	The PreACT Secure English Reporting Categories and Skill Areas	The PreACT Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
	Production and Distribution of Writing		
W.9-10.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly Style	
W.9-10.5	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.	All reporting categories	
W.9-10.6	Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.		
	Research to Build and Present Knowledge		
W.9-10.7	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.		

	Illinois Learning Standards in ELA/Literacy, Grades 9-10	The PreACT Secure English Reporting Categories and Skill Areas	The PreACT Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
W.9-10.8	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.		
W.9-10.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.		Key Ideas and Details: Close Reading Relationships Central Ideas, Themes, Summaries Craft and Structure: Word Meanings and Word Choice Text Structure Purpose and Point of View Integration of Knowledge and Ideas: Arguments Synthesis of Multiple Texts
W.9-10.9.a	Apply grades 9—10 Reading standards to literature (e.g., "Analyze how an author draws on and transforms source material in a specific work [e.g., how Shakespeare treats a theme or topic from Ovid or the Bible or how a later author draws on a play by Shakespeare]").		Key Ideas and Details: Close Reading Relationships Central Ideas, Themes, Summaries Craft and Structure: Word Meanings and Word Choice Text Structure Purpose and Point of View Integration of Knowledge and Ideas: Synthesis of Multiple Texts

	Illinois Learning Standards in ELA/Literacy, Grades 9-10	The PreACT Secure English Reporting Categories and Skill Areas	The PreACT Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
W.9-10.9.b	Apply grades 9—10 Reading standards to literary nonfiction (e.g., "Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning").		Key Ideas and Details: Close Reading Relationships Central Ideas, Themes, Summaries Craft and Structure: Word Meanings and Word Choice Text Structure Purpose and Point of View Integration of Knowledge and Ideas: Arguments Synthesis of Multiple Texts
	Range of Writing		
W.9-10.10	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	All reporting categories	
	Language		
	Conventions of Standard English		
L.9-10.1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.	Conventions of Standard English: Sentence Structure and Formation Usage Conventions	
L.9-10.1.a	Use parallel structure.	Conventions of Standard English: Sentence Structure and Formation	
L.9-10.1.b	Use various types of phrases (noun, verb, adjectival, adverbial, participial, prepositional, absolute) and clauses (independent, dependent; noun, relative, adverbial) to convey specific meanings and add variety and interest to writing or presentations.	Conventions of Standard English: Sentence Structure and Formation Usage Conventions	

	Illinois Learning Standards in ELA/Literacy, Grades 9-10	The PreACT Secure English Reporting Categories and Skill Areas	The PreACT Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
L.9-10.2	Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.	Conventions of Standard English: Sentence Structure and Formation Punctuation Conventions	
L.9-10.2.a	Use a semicolon (and perhaps a conjunctive adverb) to link two or more closely related independent clauses.	Conventions of Standard English: Sentence Structure and Formation Punctuation Conventions	
L.9-10.2.b	Use a colon to introduce a list or quotation.	Conventions of Standard English: Punctuation Conventions	
L.9-10.2.c	Spell correctly.		
	Knowledge of Language		
L.9-10.3	Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly Style	Craft and Structure: Word Meanings and Word Choice Text Structure
L.9-10.3.a	Write and edit work so that it conforms to the guidelines in a style manual (e.g., MLA Handbook, Turabian's Manual for Writers) appropriate for the discipline and writing type.	Knowledge of Language: Style Conventions of Standard English: Sentence Structure and Formation	
	Vocabulary Acquisition and Use		
L.9-10.4	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 9—10 reading and content, choosing flexibly from a range of strategies.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly Conventions of Standard English: Usage Conventions	Craft and Structure: Word Meanings and Word Choice Text Structure

	Illinois Learning Standards in ELA/Literacy, Grades 9-10	The PreACT Secure English Reporting Categories and Skill Areas	The PreACT Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
L.9-10.4.a	Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly Conventions of Standard English: Usage Conventions	Craft and Structure: Word Meanings and Word Choice Text Structure
L.9-10.4.b	Identify and correctly use patterns of word changes that indicate different meanings or parts of speech (e.g., analyze, analysis, analytical; advocate, advocacy).		
L.9-10.4.c	Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, or its etymology.		
L.9-10.4.d	Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).	Knowledge of Language: Expressing Ideas Clearly Conventions of Standard English: Usage Conventions	Craft and Structure: Word Meanings and Word Choice
L.9-10.5	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly Conventions of Standard English: Usage Conventions	Craft and Structure: Word Meanings and Word Choice Text Structure
L.9-10.5.a	Interpret figures of speech (e.g., euphemism, oxymoron) in context and analyze their role in the text.	Production of Writing: Topic Development—Purpose and Focus	Craft and Structure: Word Meanings and Word Choice Text Structure

	Illinois Learning Standards in ELA/Literacy, Grades 9-10	The PreACT Secure English Reporting Categories and Skill Areas	The PreACT Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
L.9-10.5.b	Analyze nuances in the meaning of words with similar denotations.	Knowledge of Language: Expressing Ideas Clearly Conventions of Standard English: Usage Conventions	Craft and Structure: Word Meanings and Word Choice
L.9-10.6	Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly Style Conventions of Standard English: Usage Conventions	Craft and Structure: Word Meanings and Word Choice Text Structure
	Reading Literacy in History/Social Studies: Reading Informational Text		
	Key Ideas and Details		
RH.9-10.1	Cite specific textual evidence to support analysis of primary and secondary sources, attending to such features as the date and origin of the information.		Key Ideas and Details: Close Reading
RH.9-10.2	Determine the central ideas or information of a primary or secondary source; provide an accurate summary of how key events or ideas develop over the course of the text.		Key Ideas and Details: Central Ideas, Themes, Summaries
RH.9-10.3	Analyze in detail a series of events described in a text; determine whether earlier events caused later ones or simply preceded them.		Key Ideas and Details: Relationships
	Craft and Structure		
RH.9-10.4	Determine the meaning of words and phrases as they are used in a text, including vocabulary describing political, social, or economic aspects of history/social studies.		Craft and Structure: Word Meanings and Word Choice Text Structure

	Illinois Learning Standards in ELA/Literacy, Grades 9-10	The PreACT Secure English Reporting Categories and Skill Areas	The PreACT Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
RH.9-10.5	Analyze how a text uses structure to emphasize key points or advance an explanation or analysis		Craft and Structure: Text Structure
RH.9-10.6	Compare the point of view of two or more authors for how they treat the same or similar topics, including which details they include and emphasize in their respective accounts.		Key Ideas and Details: Close Reading Craft and Structure: Text Structure Purpose and Point of View Integration of Knowledge and Ideas: Synthesis of Multiple Texts
	Integration of Knowledge and Ideas		
RH.9-10.7	Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text.		
RH.9-10.8	Assess the extent to which the reasoning and evidence in a text support the author's claims.		Integration of Knowledge and Ideas: Arguments
RH.9-10.9	Compare and contrast treatments of the same topic in several primary and secondary sources.		Integration of Knowledge and Ideas: Synthesis of Multiple Texts
	Range of Reading and Level of Text Complexity		
RH.9-10.10	By the end of grade 10, read and comprehend history/social studies texts in the grades 9—10 text complexity band independently and proficiently.		Key Ideas and Details: Close Reading Relationships Central Ideas, Themes, Summaries Craft and Structure: Word Meanings and Word Choice Text Structure Purpose and Point of View Integration of Knowledge and Ideas: Arguments Synthesis of Multiple Texts

	Illinois Learning Standards in ELA/Literacy, Grades 9-10	The PreACT Secure English Reporting Categories and Skill Areas	The PreACT Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
	Writing Literacy in History/Social Studies/Science/Technical Subjects: Writing Text		
	Types and Purposes		
WHST.9-10.1	Write arguments focused on discipline-specific content.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly Style	
WHST.9-10.1.a	Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among the claim(s), counterclaims, reasons, and evidence.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion	
WHST.9-10.1.b	Develop claim(s) and counterclaims fairly, supplying data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form and in a manner that anticipates the audience's knowledge level and concerns.	Production of Writing: Topic Development—Purpose and Focus	
WHST.9-10.1.c	Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly	
WHST.9-10.1.d	Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.	Knowledge of Language: Expressing Ideas Clearly Style	

	Illinois Learning Standards in ELA/Literacy, Grades 9-10	The PreACT Secure English Reporting Categories and Skill Areas	The PreACT Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
WHST.9-10.1.e	Provide a concluding statement or section that follows from or supports the argument presented.	Production of Writing: Organization, Unity, and Cohesion	
WHST.9-10.2	Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly Style	
WHST.9-10.2.a	Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion	
WHST.9-10.2.b	Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.	Production of Writing: Topic Development—Purpose and Focus	
WHST.9-10.2.c	Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among ideas and concepts.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly	
WHST.9-10.2.d	Use precise language and domain-specific vocabulary to manage the complexity of the topic and convey a style appropriate to the discipline and context as well as to the expertise of likely readers.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly Style	

	Illinois Learning Standards in ELA/Literacy, Grades 9-10	The PreACT Secure English Reporting Categories and Skill Areas	The PreACT Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
WHST.9-10.2.e	Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.	Knowledge of Language: Expressing Ideas Clearly Style	
WHST.9-10.2.f	Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).	Production of Writing: Organization, Unity, and Cohesion	
	Production and Distribution of Writing		
WHST.9-10.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly Style	
WHST.9-10.5	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.	All reporting categories	
WHST.9-10.6	Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.		

	Illinois Learning Standards in ELA/Literacy, Grades 9-10	The PreACT Secure English Reporting Categories and Skill Areas	The PreACT Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
	Research to Build and Present Knowledge		
WHST.9-10.7	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.		
WHST.9-10.8	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.		
WHST.9-10.9	Draw evidence from informational texts to support analysis, reflection, and research.		Key Ideas and Details: Close Reading Relationships Central Ideas, Themes, Summaries Craft and Structure: Word Meanings and Word Choice Text Structure Purpose and Point of View Integration of Knowledge and Ideas: Arguments Synthesis of Multiple Texts

	Illinois Learning Standards in ELA/Literacy, Grades 9-10	The PreACT Secure English Reporting Categories and Skill Areas	The PreACT Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
	Range of Writing		
WHST.9-10.10	Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	All reporting categories	
	Reading Literacy in Science and Technical Subjects: Reading Informational Text		
	Key Ideas and Details		
RST.9-10.1	Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.		Key Ideas and Details: Close Reading
RST.9-10.2	Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.		Key Ideas and Details: Close Reading Relationships Central Ideas, Themes, Summaries
RST.9-10.3	Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.		Key Ideas and Details: Relationships
	Craft and Structure		
RST.9-10.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9—10 texts and topics.		Craft and Structure: Word Meanings and Word Choice

	Illinois Learning Standards in ELA/Literacy, Grades 9-10	The PreACT Secure English Reporting Categories and Skill Areas	The PreACT Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
RST.9-10.5	Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy).		Key Ideas and Details: Relationships Craft and Structure: Text Structure
RST.9-10.6	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address.		Craft and Structure: Text Structure Purpose and Point of View
	Integration of Knowledge and Ideas		
RST.9-10.7	Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.		
RST.9-10.8	Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem.		Integration of Knowledge and Ideas: Arguments
RST.9-10.9	Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.		Integration of Knowledge and Ideas: Synthesis of Multiple Texts

	Illinois Learning Standards in ELA/Literacy, Grades 9-10	The PreACT Secure English Reporting Categories and Skill Areas	The PreACT Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
	Range of Reading and Level of Text Complexity		
RST.9-10.10	By the end of grade 10, read and comprehend science/technical texts in the grades 9–10 text complexity band independently and proficiently.		Key Ideas and Details: Close Reading Relationships Central Ideas, Themes, Summaries Craft and Structure: Word Meanings and Word Choice Text Structure Purpose and Point of View Integration of Knowledge and Ideas: Arguments Synthesis of Multiple Texts

Table 5. Illinois Learning Standards: Mathematics, High School – Aligned to PreACT Secure

	Illinois Learning Standards in Mathematics, High School	PreACT Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
	Mathematical Practices	
HS.MP.1	Make sense of problems and persevere in solving them.	Modeling: Producing Interpreting Understanding Evaluating
HS.MP.2	Reason abstractly and quantitatively.	Modeling: Producing Interpreting Understanding
HS.MP.3	Construct viable arguments and critique the reasoning of others.	Modeling: Producing Interpreting Understanding Evaluating Improving
HS.MP.4	Model with mathematics.	Modeling: Producing Interpreting Understanding Evaluating Improving
HS.MP.5	Use appropriate tools strategically.	Modeling: Producing Understanding Evaluating
HS.MP.6	Attend to precision.	Modeling: Interpreting Understanding
HS.MP.7	Look for and make use of structure.	Modeling: Producing Understanding Evaluating
HS.MP.8	Look for and express regularity in repeated reasoning.	Modeling: Understanding Evaluating

	Illinois Learning Standards in Mathematics, High School	PreACT Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
	Number and Quantity	
N.RN	The Real Number System	
	Extend the properties of exponents to rational exponents.	
N.RN.1	Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. *For example, we define $5^{1/3}$ to be the cube root of 5 because we want $(5^{1/3})^3 = 5^{(1/3)^3}$ to hold, so $(5^{1/3})^3$ must equal 5.*	Number & Quantity: Properties of Exponents
N.RN.2	Rewrite expressions involving radicals and rational exponents using the properties of exponents.	Number & Quantity: Properties of Exponents
	Use properties of rational and irrational numbers.	
N.RN.3	Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational.	Number & Quantity: Rational and Irrational Numbers
N.Q	Quantities*	
	Reason quantitatively and use units to solve problems.	
N.Q.1	Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.	Number & Quantity: Quantities and Units Integrating Essential Skills: Computation and Problem Solving with Integers and Rational Numbers Measurement Units and Unit Conversion
N.Q.2	Define appropriate quantities for the purpose of descriptive modeling.	Number & Quantity: Quantities and Units Integrating Essential Skills: Computation and Problem Solving with Integers and Rational Numbers
N.Q.3	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.	Number & Quantity: Quantities and Units Integrating Essential Skills: Computation and Problem Solving with Integers and Rational Numbers

	Illinois Learning Standards in Mathematics, High School	PreACT Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
N.CN	The Complex Number System	
	Perform arithmetic operations with complex numbers.	
N.CN.1	Know there is a complex number i such that $i^2 = –1$, and every complex number has the form $a + bi$ with a and b real.	Number & Quantity: Complex Numbers
N.CN.2	Use the relation $i^2 = –1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.	Number & Quantity: Complex Numbers
N.CN.3	(+) Find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers.	Number & Quantity: Complex Numbers
	Represent complex numbers and their operations on the complex plane.	
N.CN.4	(+) Represent complex numbers on the complex plane in rectangular and polar form (including real and imaginary numbers), and explain why the rectangular and polar forms of a given complex number represent the same number.	Number & Quantity: Complex Numbers
N.CN.5	(+) Represent addition, subtraction, multiplication, and conjugation of complex numbers geometrically on the complex plane; use properties of this representation for computation. *For example,* $(–1 + \sqrt{3}i)^3 = 8$ *because* $(–1 + \sqrt{3}i)$ *has modulus* 2 *and argument* 120°.	Number & Quantity: Complex Numbers
N.CN.6	(+) Calculate the distance between numbers in the complex plane as the modulus of the difference, and the midpoint of a segment as the average of the numbers at its endpoints.	Number & Quantity: Complex Numbers
	Use complex numbers in polynomial identities and equations.	
N.CN.7	Solve quadratic equations with real coefficients that have complex solutions.	Number & Quantity: Complex Numbers Algebra: Quadratic Expressions, Equations, and Inequalities
N.CN.8	(+) Extend polynomial identities to the complex numbers. *For example, rewrite* $x^2 + 4$ *as* $(x + 2i)(x – 2i)$.	Number & Quantity: Complex Numbers Algebra: Polynomial Expressions and Equations

	Illinois Learning Standards in Mathematics, High School	PreACT Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
N.CN.9	(+) Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.	Number & Quantity: Complex Numbers Algebra: Quadratic Expressions, Equations, and Inequalities Polynomial Expressions and Equations
N.VM	Vector and Matrix Quantities	
	Represent and model with vector quantities.	
N.VM.1	(+) Recognize vector quantities as having both magnitude and direction. Represent vector quantities by directed line segments, and use appropriate symbols for vectors and their magnitudes (e.g., $\boldsymbol{v}$, $\lvert\boldsymbol{v}\rvert$, $\lVert\boldsymbol{v}\rVert$, v).	Number & Quantity: Vectors and Matrices
N.VM.2	(+) Find the components of a vector by subtracting the coordinates of an initial point from the coordinates of a terminal point.	Number & Quantity: Vectors and Matrices
N.VM.3	(+) Solve problems involving velocity and other quantities that can be represented by vectors.	Number & Quantity: Vectors and Matrices
	Perform operations on vectors.	
N.VM.4	(+) Add and subtract vectors. a. Add vectors end-to-end, component-wise, and by the parallelogram rule. Understand that the magnitude of a sum of two vectors is typically not the sum of the magnitudes. b. Given two vectors in magnitude and direction form, determine the magnitude and direction of their sum. c. Understand vector subtraction $\boldsymbol{v} - \boldsymbol{w}$ as $\boldsymbol{v} + (-\boldsymbol{w})$, where $-\boldsymbol{w}$ is the additive inverse of $\boldsymbol{w}$, with the same magnitude as $\boldsymbol{w}$ and pointing in the opposite direction. Represent vector subtraction graphically by connecting the tips in the appropriate order, and perform vector subtraction component-wise.	Number & Quantity: Vectors and Matrices
N.VM.5	(+) Multiply a vector by a scalar. a. Represent scalar multiplication graphically by scaling vectors and possibly reversing their direction; perform scalar multiplication component-wise, e.g., as $c(v_x, v_y) = (cv_x, cv_y)$. b. Compute the magnitude of a scalar multiple $c\boldsymbol{v}$ using $\lVert c\boldsymbol{v}\rVert = \lvert c\rvert\boldsymbol{v}$. Compute the direction of $c\boldsymbol{v}$ knowing that when $\lvert c\rvert\boldsymbol{v} \neq 0$, the direction of $c\boldsymbol{v}$ is either along $\boldsymbol{v}$ (for $c > 0$) or against $\boldsymbol{v}$ (for $c < 0$).	Number & Quantity: Vectors and Matrices

	Illinois Learning Standards in Mathematics, High School	PreACT Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
	Perform operations on matrices and use matrices in applications.	
N.VM.6	(+) Use matrices to represent and manipulate data, e.g., to represent payoffs or incidence relationships in a network.	Number & Quantity: Vectors and Matrices
N.VM.7	(+) Multiply matrices by scalars to produce new matrices, e.g., as when all of the payoffs in a game are doubled.	Number & Quantity: Vectors and Matrices
N.VM.8	(+) Add, subtract, and multiply matrices of appropriate dimensions.	Number & Quantity: Vectors and Matrices
N.VM.9	(+) Understand that, unlike multiplication of numbers, matrix multiplication for square matrices is not a commutative operation, but still satisfies the associative and distributive properties.	Number & Quantity: Vectors and Matrices
N.VM.10	(+) Understand that the zero and identity matrices play a role in matrix addition and multiplication similar to the role of 0 and 1 in the real numbers. The determinant of a square matrix is nonzero if and only if the matrix has a multiplicative inverse.	Number & Quantity: Vectors and Matrices
N.VM.11	(+) Multiply a vector (regarded as a matrix with one column) by a matrix of suitable dimensions to produce another vector. Work with matrices as transformations of vectors.	Number & Quantity: Vectors and Matrices
N.VM.12	(+) Work with 2 × 2 matrices as a transformations of the plane, and interpret the absolute value of the determinant in terms of area.	Number & Quantity: Vectors and Matrices
	Algebra	
A.SSE	**Seeing Structure in Expressions**	
	Interpret the structure of expressions.	
A.SSE.1	Interpret expressions that represent a quantity in terms of its context.* a. Interpret parts of an expression, such as terms, factors, and coefficients. b. Interpret complicated expressions by viewing one or more of their parts as a single entity. *For example, interpret $P(1 + r)^n$ as the product of P and a factor not depending on P.*	Algebra: Linear Expressions, Equations, and Inequalities Quadratic Expressions, Equations, and Inequalities Rational and Radical Expressions and Equations Polynomial Expressions and Equations Functions: Exponential and Logarithmic Functions Integrating Essential Skills: Writing Algebraic Expressions

	Illinois Learning Standards in Mathematics, High School	PreACT Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
A.SSE.2	Use the structure of an expression to identify ways to rewrite it. For example, see $x^4 - y^4$ as $(x^2)^2 - (y^2)^2$, thus recognizing it as a difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.	Algebra: Linear Expressions, Equations, and Inequalities Quadratic Expressions, Equations, and Inequalities Rational and Radical Expressions and Equations Polynomial Expressions and Equations
	Write expressions in equivalent forms to solve problems.	
A.SSE.3	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.* a. Factor a quadratic expression to reveal the zeros of the function it defines. b. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines. c. Use the properties of exponents to transform expressions for exponential functions. *For example the expression* 1.15^t *can be rewritten as* $(1.15^{1/12})^{12t} \approx 1.012^{12t}$ *to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.*	Algebra: Linear Expressions, Equations, and Inequalities Quadratic Expressions, Equations, and Inequalities Rational and Radical Expressions and Equations Polynomial Expressions and Equations Functions: Exponential and Logarithmic Functions
A.SSE.4	Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems. *For example, calculate mortgage payments.**	Functions: Sequences and Series
A.APR	Arithmetic with Polynomials and Rational Expressions	
	Perform arithmetic operations on polynomials.	
A.APR.1	Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.	Algebra: Polynomial Expressions and Equations
	Understand the relationship between zeros and factors of polynomials.	
A.APR.2	Know and apply the Remainder Theorem: For a polynomial $p(x)$ and a number a, the remainder on division by $x - a$ is $p(a)$, so $p(a) = 0$ if and only if $(x - a)$ is a factor of $p(x)$.	Algebra: Polynomial Expressions and Equations
A.APR.3	Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.	Algebra: Polynomial Expressions and Equations
	Use polynomial identities to solve problems.	

	Illinois Learning Standards in Mathematics, High School	PreACT Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
A.APR.4	Prove polynomial identities and use them to describe numerical relationships. *For example, the polynomial identity* $(x^2 + y^2)^2 = (x^2 - y^2)^2 + (2xy)^2$ *can be used to generate Pythagorean triples.*	Algebra: Polynomial Expressions and Equations
A.APR.5	(+) Know and apply the Binomial Theorem for the expansion of $(x + y)^n$ in powers of x and y for a positive integer n, where x and y are any numbers, with coefficients determined for example by Pascal's Triangle. (The Binomial Theorem can be proved by mathematical induction or by a combinatorial argument.)	Algebra: Polynomial Expressions and Equations
	Rewrite rational expressions.	
A.APR.6	Rewrite simple rational expressions in different forms; write $a(x)/b(x)$ in the form $q(x) + r(x)/b(x)$, where $a(x)$, $b(x)$, $q(x)$, and $r(x)$ are polynomials with the degree of $r(x)$ less than the degree of $b(x)$, using inspection, long division, or, for the more complicated examples, a computer algebra system.	Algebra: Rational and Radical Expressions and Equations
A.APR.7	(+) Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions.	Algebra: Rational and Radical Expressions and Equations
A.CED	Creating Equations*	
	Create equations that describe numbers or relationships	
A.CED.1	Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.	Algebra: Linear Expressions, Equations, and Inequalities Quadratic Expressions, Equations, and Inequalities Rational and Radical Expressions and Equations Functions: Exponential and Logarithmic Functions

	Illinois Learning Standards in Mathematics, High School	PreACT Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
A.CED.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	Algebra: Linear Expressions, Equations, and Inequalities Quadratic Expressions, Equations, and Inequalities Rational and Radical Expressions and Equations Polynomial Expressions and Equations Functions: Exponential and Logarithmic Functions
A.CED.3	Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.	Algebra: Linear Expressions, Equations, and Inequalities Quadratic Expressions, Equations, and Inequalities Rational and Radical Expressions and Equations Polynomial Expressions and Equations Systems of Equations and Inequalities Functions: Exponential and Logarithmic Functions Integrating Essential Skills: Writing and Solving Simple Equations and Inequalities
A.CED.4	Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law $V = IR$ to highlight resistance R.	Algebra: Representation of Expressions and Equations

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Standard Number	**Standard**	
A.REI	Reasoning with Equations and Inequalities	
	Understand solving equations as a process of reasoning and explain the reasoning.	
A.REI.1	Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.	Algebra: Linear Expressions, Equations, and Inequalities Quadratic Expressions, Equations, and Inequalities Rational and Radical Expressions and Equations Polynomial Expressions and Equations Functions: Exponential and Logarithmic Functions
A.REI.2	Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.	Algebra: Rational and Radical Expressions and Equations
	Solve equations and inequalities in one variable.	
A.REI.3	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	Algebra: Linear Expressions, Equations, and Inequalities Integrating Essential Skills: Writing and Solving Simple Equations and Inequalities
A.REI.4	Solve quadratic equations in one variable. a. Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x - p)^2 = q$ that has the same solutions. Derive the quadratic formula from this form. b. Solve quadratic equations by inspection (e.g., for $x^2 = 49$), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers a and b.	Number & Quantity: Complex Numbers Algebra: Quadratic Expressions, Equations, and Inequalities
	Solve systems of equations.	
A.REI.5	Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.	Algebra: Systems of Equations and Inequalities
A.REI.6	Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.	Algebra: Systems of Equations and Inequalities

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Standard Number	**Standard**	
A.REI.7	Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. *For example, find the points of intersection between the line* $y = -3x$ and the circle $x^2 + y^2 = 3$.	Algebra: Systems of Equations and Inequalities
A.REI.8	(+) Represent a system of linear equations as a single matrix equation in a vector variable.	Number & Quantity: Vectors and Matrices Algebra: Systems of Equations and Inequalities
A.REI.9	(+) Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension 3 × 3 or greater).	Number & Quantity: Vectors and Matrices Algebra: Systems of Equations and Inequalities
	Represent and solve equations and inequalities graphically.	
A.REI.10	Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).	Algebra: Linear Expressions, Equations, and Inequalities Quadratic Expressions, Equations, and Inequalities Rational and Radical Expressions and Equations Polynomial Expressions and Equations Functions: Exponential and Logarithmic Functions
A.REI.11	Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.*	Algebra: Systems of Equations and Inequalities
A.REI.12	Graph the solutions to a linear inequality in two variables as a half plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.	Algebra: Linear Expressions, Equations, and Inequalities Systems of Equations and Inequalities

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Standard Number	**Standard**	
	Functions	
F.IF	Interpreting Functions	
	Understand the concept of a function and use function notation.	
F.IF.1	Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If *f* is a function and *x* is an element of its domain, then *f*(*x*) denotes the output of *f* corresponding to the input *x*. The graph of *f* is the graph of the equation *y* = *f*(*x*).	Functions: Properties of Functions
F.IF.2	Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.	Functions: Properties of Functions
F.IF.3	Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. *For example, the Fibonacci sequence is defined recursively by f(0) = f(1) = 1, f(n + 1) = f(n) + f(n − 1) for n ≥ 1.*	Functions: Sequences and Series
	Interpret functions that arise in applications in terms of the context.	
F.IF.4	For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.**	Functions: Properties of Functions
F.IF.5	Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. *For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.**	Functions: Properties of Functions
F.IF.6	Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.*	Algebra: Linear Expressions, Equations, and Inequalities Functions: Properties of Functions

	Illinois Learning Standards in Mathematics, High School	PreACT Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
	Analyze functions using different representations.	
F.IF.7	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.* a. Graph linear and quadratic functions and show intercepts, maxima, and minima. b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions. c. Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior. d. (+) Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior. e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.	Functions: Properties of Functions Trigonometric Functions Exponential and Logarithmic Functions
F.IF.8	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. a. Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context. b. Use the properties of exponents to interpret expressions for exponential functions. *For example, identify percent rate of change in functions such as* $y = (1.02)^t$, $y = (0.97)^t$, $y = (1.01)^{12t}$, $y = (1.2)^{t/10}$, *and classify them as representing exponential growth or decay.*	Algebra: Linear Expressions, Equations, and Inequalities Quadratic Expressions, Equations, and Inequalities Representation of Expressions and Equations Functions: Properties of Functions Exponential and Logarithmic Functions
F.IF.9	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.*	Functions: Properties of Functions

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Standard Number	**Standard**	
F.BF	Building Functions	
	Build a function that models a relationship between two quantities.	
F.BF.1	Write a function that describes a relationship between two quantities.* a. Determine an explicit expression, a recursive process, or steps for calculation from a context. b. Combine standard function types using arithmetic operations. *For example, build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential, and relate these functions to the model.* c. (+) Compose functions. *For example, if T(y) is the temperature in the atmosphere as a function of height, and h(t) is the height of a weather balloon as a function of time, then T(h(t)) is the temperature at the location of the weather balloon as a function of time.*	Algebra: Linear Expressions, Equations, and Inequalities Quadratic Expressions, Equations, and Inequalities Functions: Properties of Functions Function Composition, Transformation, and Inverse Functions Exponential and Logarithmic Functions
F.BF.2	Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.*	Functions: Sequences and Series
	Build new functions from existing functions.	
F.BF.3	Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k\,f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. *Include recognizing even and odd functions from their graphs and algebraic expressions for them.*	Functions: Function Composition, Transformation, and Inverse Functions
F.BF.4	Find inverse functions. a. Solve an equation of the form $f(x) = c$ for a simple function f that has an inverse and write an expression for the inverse. *For example, $f(x) = 2x^3$ or $f(x) = (x + 1)/(x – 1)$ for $x \neq 1$.* b. (+) Verify by composition that one function is the inverse of another. c. (+) Read values of an inverse function from a graph or a table, given that the function has an inverse. d. (+) Produce an invertible function from a non-invertible function by restricting the domain.	Functions: Function Composition, Transformation, and Inverse Functions

	Illinois Learning Standards in Mathematics, High School	PreACT Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
F.BF.5	(+) Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.	Functions: Function Composition, Transformation, and Inverse Functions Exponential and Logarithmic Functions
F.LE	Linear and Exponential Models*	
	Construct and compare linear and exponential models and solve problems.	
F.LE.1	Distinguish between situations that can be modeled with linear functions and with exponential functions. a. Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals. b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. c. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.	Algebra: Linear Expressions, Equations, and Inequalities Functions: Properties of Functions Exponential and Logarithmic Functions
F.LE.2	Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).	Algebra: Linear Expressions, Equations, and Inequalities Functions: Properties of Functions Sequences and Series Exponential and Logarithmic Functions
F.LE.3	Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.	Functions: Properties of Functions Exponential and Logarithmic Functions
F.LE.4	For exponential models, express as a logarithm the solution to $ab^{ct} = d$ where a, c, and d are numbers and the base b is 2, 10, or e; evaluate the logarithm using technology.	Functions: Exponential and Logarithmic Functions
	Interpret expressions for functions in terms of the situation they model.	
F.LE.5	Interpret the parameters in a linear or exponential function in terms of a context.	Algebra: Linear Expressions, Equations, and Inequalities Functions: Properties of Functions Exponential and Logarithmic Functions

	Illinois Learning Standards in Mathematics, High School	PreACT Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
F.TF	Trigonometric Functions	
	Extend the domain of trigonometric functions using the unit circle.	
F.TF.1	Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle.	Functions: Trigonometric Functions
F.TF.2	Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle.	Functions: Trigonometric Functions
F.TF.3	(+) Use special triangles to determine geometrically the values of sine, cosine, tangent for $\pi/3$, $\pi/4$ and $\pi/6$, and use the unit circle to express the values of sine, cosines, and tangent for x, $\pi + x$, and $2\pi - x$ in terms of their values for x, where x is any real number.	Functions: Trigonometric Functions
F.TF.4	(+) Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions.	Functions: Properties of Functions Trigonometric Functions
	Model periodic phenomena with trigonometric functions.	
F.TF.5	Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline.*	Functions: Properties of Functions Trigonometric Functions
F.TF.6	(+) Understand that restricting a trigonometric function to a domain on which it is always increasing or always decreasing allows its inverse to be constructed.	Functions: Properties of Functions Trigonometric Functions
F.TF.7	(+) Use inverse functions to solve trigonometric equations that arise in modeling contexts; evaluate the solutions using technology, and interpret them in terms of the context.*	Functions: Trigonometric Functions
	Prove and apply trigonometric identities.	
F.TF.8	Prove the Pythagorean identity $\sin^2(\theta) + \cos^2(\theta) = 1$ and use it to find $\sin(\theta)$, $\cos(\theta)$, or $\tan(\theta)$ given $\sin(\theta)$, $\cos(\theta)$, or $\tan(\theta)$ and the quadrant of the angle.	Functions: Trigonometric Functions
F.TF.9	(+) Prove the addition and subtraction formulas for sine, cosine, and tangent and use them to solve problems.	Functions: Trigonometric Functions

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Standard Number	**Standard**	
	Geometry	
G.CO	**Congruence**	
	Experiment with transformations in the plane.	
G.CO.1	Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.	Geometry: Transformations Integrating Essential Skills: Properties of Lines, Angles, and Shapes
G.CO.2	Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).	Geometry: Transformations
G.CO.3	Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.	Geometry: Transformations
G.CO.4	Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.	Geometry: Transformations
G.CO.5	Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.	Geometry: Transformations
	Understand congruence in terms of rigid motions.	
G.CO.6	Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.	Geometry: Transformations
G.CO.7	Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.	Geometry: Transformations Proof, Reasoning, and Constructions
G.CO.8	Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.	Geometry: Transformations Proof, Reasoning, and Constructions

	Illinois Learning Standards in Mathematics, High School	PreACT Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
	Prove geometric theorems.	
G.CO.9	Prove theorems about lines and angles. *Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.*	Geometry: Proof, Reasoning, and Constructions
G.CO.10	Prove theorems about triangles. *Theorems include: measures of interior angles of a triangle sum to 180°; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.*	Geometry: Proof, Reasoning, and Constructions
G.CO.11	Prove theorems about parallelograms. *Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.*	Geometry: Proof, Reasoning, and Constructions
	Make geometric constructions.	
G.CO.12	Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). *Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.*	Geometry: Proof, Reasoning, and Constructions
G.CO.13	Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.	Geometry: Proof, Reasoning, and Constructions
G.SRT	Similarity, Right Triangles, and Trigonometry	
	Understand similarity in terms of similarity transformations.	
G.SRT.1	Verify experimentally the properties of dilations given by a center and a scale factor: a. A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged. b. The dilation of a line segment is longer or shorter in the ratio given by the scale factor.	Geometry: Transformations Similarity, Right Triangles, and Trigonometry

	Illinois Learning Standards in Mathematics, High School	PreACT Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
G.SRT.2	Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.	Geometry: Transformations Similarity, Right Triangles, and Trigonometry
G.SRT.3	Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.	Geometry: Transformations Similarity, Right Triangles, and Trigonometry
	Prove theorems involving similarity.	
G.SRT.4	Prove theorems about triangles. *Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.*	Geometry: Proof, Reasoning, and Constructions Similarity, Right Triangles, and Trigonometry
G.SRT.5	Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.	Geometry: Proof, Reasoning, and Constructions Similarity, Right Triangles, and Trigonometry
	Define trigonometric ratios and solve problems involving right triangles.	
G.SRT.6	Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.	Geometry: Similarity, Right Triangles, and Trigonometry
G.SRT.7	Explain and use the relationship between the sine and cosine of complementary angles.	Geometry: Similarity, Right Triangles, and Trigonometry
G.SRT.8	Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.*	Geometry: Similarity, Right Triangles, and Trigonometry Pythagorean Theorem
	Apply trigonometry to general triangles.	
G.SRT.9	(+) Derive the formula $A = 1/2\ ab\ \sin(C)$ for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.	Geometry: Similarity, Right Triangles, and Trigonometry
G.SRT.10	(+) Prove the Laws of Sines and Cosines and use them to solve problems.	Geometry: Similarity, Right Triangles, and Trigonometry
G.SRT.11	(+) Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).	Geometry: Similarity, Right Triangles, and Trigonometry

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Standard Number	**Standard**	
G.C	Circles	
	Understand and apply theorems about circles.	
G.C.1	Prove that all circles are similar.	
G.C.2	Identify and describe relationships among inscribed angles, radii, and chords. *Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.*	Geometry: Properties of Circles
G.C.3	Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.	Geometry: Proof, Reasoning, and Constructions Properties of Circles
G.C.4	(+) Construct a tangent line from a point outside a given circle to the circle.	Geometry: Proof, Reasoning, and Constructions Properties of Circles
	Find arc lengths and areas of sectors of circles.	
G.C.5	Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.	Geometry: Properties of Circles
G.GPE	Expressing Geometric Properties with Equations	
	Translate between the geometric description and the equation for a conic section.	
G.GPE.1	Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.	Geometry: Conic Sections
G.GPE.2	Derive the equation of a parabola given a focus and directrix.	Geometry: Conic Sections
G.GPE.3	(+) Derive the equations of ellipses and hyperbolas given the foci, using the fact that the sum or difference of distances from the foci is constant.	Geometry: Conic Sections
	Use coordinates to prove simple geometric theorems algebraically.	
G.GPE.4	Use coordinates to prove simple geometric theorems algebraically. *For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point (1, √3) lies on the circle centered at the origin and containing the point (0, 2).*	Geometry: Coordinate Geometry

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G.GPE.5	Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).	Geometry: Coordinate Geometry
G.GPE.6	Find the point on a directed line segment between two given points that partitions the segment in a given ratio.	Geometry: Coordinate Geometry
G.GPE.7	Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.*	Geometry: Coordinate Geometry Integrating Essential Skills: Perimeter, Circumference, and Area
G.GMD	Geometric Measurement and Dimension	
	Explain volume formulas and use them to solve problems.	
G.GMD.1	Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. *Use dissection arguments, Cavalieri's principle, and informal limit arguments.*	Geometry: Proof, Reasoning, and Constructions Geometric Measurement and Modeling
G.GMD.2	(+) Give an informal argument using Cavalieri's principle for the formulas for the volume of a sphere and other solid figures.	Geometry: Proof, Reasoning, and Constructions Geometric Measurement and Modeling
G.GMD.3	Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.*	Geometry: Geometric Measurement and Modeling
	Visualize relationships between two-dimensional and three-dimensional objects.	
G.GMD.4	Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.	Geometry: Geometric Measurement and Modeling Integrating Essential Skills: Properties of Lines, Angles, and Shapes
G.MG	Modeling with Geometry	

	Illinois Learning Standards in Mathematics, High School	PreACT Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
	Apply geometric concepts in modeling situations.	
G.MG.1	Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).*	Geometry: Geometric Measurement and Modeling Integrating Essential Skills: Properties of Lines, Angles, and Shapes
G.MG.2	Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).*	Geometry: Geometric Measurement and Modeling Integrating Essential Skills: Properties of Lines, Angles, and Shapes
G.MG.3	Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).*	Geometry: Geometric Measurement and Modeling Integrating Essential Skills: Properties of Lines, Angles, and Shapes
	Statistics and Probability	
S.ID	Interpreting Categorical and Quantitative Data	
	Summarize, represent, and interpret data on a single count or measurement variable.	
S.ID.1	Represent data with plots on the real number line (dot plots, histograms, and box plots).	Statistics & Probability: Univariate Data Analysis Integrating Essential Skills: Data Summaries and Displays
S.ID.2	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.	Statistics & Probability: Univariate Data Analysis Integrating Essential Skills: Data Summaries and Displays
S.ID.3	Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).	Statistics & Probability: Univariate Data Analysis Integrating Essential Skills: Data Summaries and Displays
S.ID.4	Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.	Statistics & Probability: Univariate Data Analysis

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S.ID.5	Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.	Statistics & Probability: Bivariate Data Analysis
S.ID.6	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. a. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. *Use given functions or choose a function suggested by the context. Emphasize linear and exponential models.* b. Informally assess the fit of a function by plotting and analyzing residuals. c. Fit a linear function for a scatter plot that suggests a linear association.	Statistics & Probability: Bivariate Data Analysis Scatterplots
	Interpret linear models.	
S.ID.7	Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.	Statistics & Probability: Bivariate Data Analysis
S.ID.8	Compute (using technology) and interpret the correlation coefficient of a linear fit.	Statistics & Probability: Bivariate Data Analysis
S.ID.9	Distinguish between correlation and causation.	
S.IC	**Making Inferences and Justifying Conclusions**	
	Understand and evaluate random processes underlying statistical experiments.	
S.IC.1	Understand statistics as a process for making inferences about population parameters based on a random sample from that population.	Statistics & Probability: Introduction to Formal Inferential Statistics Integrating Essential Skills: Informal Inferential Statistics
S.IC.2	Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation. *For example, a model says a spinning coin falls heads up with probability 0.5. Would a result of 5 tails in a row cause you to question the model?*	Statistics & Probability: Introduction to Formal Inferential Statistics Integrating Essential Skills: Informal Inferential Statistics
	Make inferences and justify conclusions from sample surveys, experiments, and observational studies.	
S.IC.3	Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.	Statistics & Probability: Introduction to Formal Inferential Statistics

	Illinois Learning Standards in Mathematics, High School	PreACT Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
S.IC.4	Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.	Statistics & Probability: Introduction to Formal Inferential Statistics Integrating Essential Skills: Informal Inferential Statistics
S.IC.5	Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant.	Statistics & Probability: Introduction to Formal Inferential Statistics Integrating Essential Skills: Informal Inferential Statistics
S.IC.6	Evaluate reports based on data.	
S.CP	**Conditional Probability and the Rules of Probability**	
	Understand independence and conditional probability and use them to interpret data.	
S.CP.1	Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or," "and," "not").	Statistics & Probability: Counting, Permutations, and Combinations
S.CP.2	Understand that two events *A* and *B* are independent if the probability of *A* and *B* occurring together is the product of their probabilities, and use this characterization to determine if they are independent.	Statistics & Probability: Rules of Probability
S.CP.3	Understand the conditional probability of *A* given *B* as *P*(*A* and *B*)/*P*(*B*), and interpret independence of *A* and *B* as saying that the conditional probability of *A* given *B* is the same as the probability of *A*, and the conditional probability of *B* given *A* is the same as the probability of *B*.	Statistics & Probability: Rules of Probability
S.CP.4	Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities. *For example, collect data from a random sample of students in your school on their favorite subject among math, science, and English. Estimate the probability that a randomly selected student from your school will favor science given that the student is in tenth grade. Do the same for other subjects and compare the results.*	Statistics & Probability: Rules of Probability
S.CP.5	Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. *For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer.*	Statistics & Probability: Rules of Probability

	Illinois Learning Standards in Mathematics, High School	PreACT Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
	Use the rules of probability to compute probabilities of compound events in a uniform probability model.	
S.CP.6	Find the conditional probability of *A* given *B* as the fraction of *B*'s outcomes that also belong to *A,* and interpret the answer in terms of the model.	Statistics & Probability: Rules of Probability
S.CP.7	Apply the Addition Rule, $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$, and interpret the answer in terms of the model.	Statistics & Probability: Rules of Probability Integrating Essential Skills: Basic Probability
S.CP.8	(+) Apply the general Multiplication Rule in a uniform probability model, $P(A \text{ and } B) = P(A)P(B\|A) = P(B)P(A\|B)$, and interpret the answer in terms of the model.	Statistics & Probability: Rules of Probability
S.CP.9	(+) Use permutations and combinations to compute probabilities of compound events and solve problems.	Statistics & Probability: Rules of Probability Counting, Permutations, and Combinations
S.MD	**Using Probability to Make Decisions**	
	Calculate expected values and use them to solve problems.	
S.MD.1	(+) Define a random variable for a quantity of interest by assigning a numerical value to each event in a sample space; graph the corresponding probability distribution using the same graphical displays as for data distributions.	Statistics & Probability: Rules of Probability
S.MD.2	(+) Calculate the expected value of a random variable; interpret it as the mean of the probability distribution.	Statistics & Probability: Rules of Probability
S.MD.3	(+) Develop a probability distribution for a random variable defined for a sample space in which theoretical probabilities can be calculated; find the expected value. For example, find the theoretical probability distribution for the number of correct answers obtained by guessing on all five questions of a multiple-choice test where each question has four choices, and find the expected grade under various grading schemes.	Statistics & Probability: Rules of Probability
S.MD.4	(+) Develop a probability distribution for a random variable defined for a sample space in which probabilities are assigned empirically; find the expected value. For example, find a current data distribution on the number of TV sets per household in the United States, and calculate the expected number of sets per household. How many TV sets would you expect to find in 100 randomly selected households?	Statistics & Probability: Rules of Probability

	Illinois Learning Standards in Mathematics, High School	PreACT Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
	Use probability to evaluate outcomes of decisions.	
S.MD.5	(+) Weigh the possible outcomes of a decision by assigning probabilities to payoff values and finding expected values. a. Find the expected payoff for a game of chance. For example, find the expected winnings from a state lottery ticket or a game at a fast food restaurant. b. Evaluate and compare strategies on the basis of expected values. For example, compare a high-deductible versus a low-deductible automobile insurance policy using various, but reasonable, chances of having a minor or a major accident.	Statistics & Probability: Rules of Probability
S.MD.6	(+) Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).	
S.MD.7	(+) Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).	

Table 6. Illinois Learning Standards: Science, High School – Aligned to the PreACT Secure

	Illinois Learning Standards in Science, High School	The PreACT Secure Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
	Physical Science	
	Structure and Properties of Matter	
HS-PS1-1	Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms.	Interpretation of Data: Locating and Understanding Inferring and Translating Extending and Reevaluating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-PS1-3	Plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles.	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-PS1-8	Develop models to illustrate the changes in the composition of the nucleus of the atom and the energy released during the processes of fission, fusion, and radioactive decay.	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-PS2-6	Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials.	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
	Chemical Reactions	
HS-PS1-2	Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The PreACT Secure Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
HS-PS1-4	Develop a model to illustrate that the release or absorption of energy from a chemical reaction system depends upon the changes in total bond energy	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-PS1-5	Apply scientific principles and evidence to provide an explanation about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-PS1-6	Refine the design of a chemical system by specifying a change in conditions that would produce increased amounts of products at equilibrium	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-PS1-7	Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
	Forces and Interactions	
HS-PS2-1	Analyze data to support the claim that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-PS2-2	Use mathematical representations to support the claim that the total momentum of a system of objects is conserved when there is no net force on the system	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The PreACT Secure Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
HS-PS2-3	Apply scientific and engineering ideas to design, evaluate, and refine a device that minimizes the force on a macroscopic object during a collision	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-PS2-4	Use mathematical representations of Newton's Law of Gravitation and Coulomb's Law to describe and predict the gravitational and electrostatic forces between objects	Interpretation of Data: Locating and Understanding Inferring and Translating Extending and Reevaluating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-PS2-5	Plan and conduct an investigation to provide evidence that an electric current can produce a magnetic field and that a changing magnetic field can produce an electric current	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
	Energy	
HS-PS3-1	Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-PS3-2	Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative position of particles (objects)	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The PreACT Secure Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
HS-PS3-3	Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-PS3-4	Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperature are combined within a closed system results in a more uniform energy distribution among the components in the system (second law of thermodynamics)	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-PS3-5	Develop and use a model of two objects interacting through electric or magnetic fields to illustrate the forces between objects and the changes in energy of the objects due to the interaction	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
	Waves and Electromagnetic Radiation	
HS-PS4-1	Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-PS4-2	Evaluate questions about the advantages of using a digital transmission and storage of information	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Designing and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The PreACT Secure Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
HS-PS4-3	Evaluate the claims, evidence, and reasoning behind the idea that electromagnetic radiation can be described either by a wave model or a particle model, and that for some situations one model is more useful than the other	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-PS4-4	Evaluate the validity and reliability of claims in published materials of the effects that different frequencies of electromagnetic radiation have when absorbed by matter	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-PS4-5	Communicate technical information about how some technological devices use the principles of wave behavior and wave interactions with matter to transmit and capture information and energy	Interpretation of Data: Locating and Understanding; Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
	Life Science	
	Structure and Function	
HS-LS1-1	Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells	Interpretation of Data: Locating and Understanding; Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results Evaluating and Extending
HS-LS1-2	Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-LS1-3	Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The PreACT Secure Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
	Matter and Energy in Organisms and Ecosystems	
HS-LS1-5	Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-LS1-6	Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-LS1-7	Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-LS2-3	Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-LS2-4	Use mathematical representations to support claims for the cycling of matter and flow of energy among organisms in an ecosystem	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-LS2-5	Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The PreACT Secure Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
	Interdependent Relationships in Ecosystems	
HS-LS2-1	Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-LS2-2	Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-LS2-6	Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-LS2-7	Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-LS2-8	Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing

	Illinois Learning Standards in Science, High School	The PreACT Secure Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
HS-LS4-6	Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
	Inheritance and Variation of Traits	
HS-LS1-4	Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-LS3-1	Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Designing and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-LS3-2	Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-LS3-3	Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The PreACT Secure Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
	Natural Selection and Evolution	
HS-LS4-1	Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-LS4-2	Construct an explanation based on evidence that the process of evolution primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-LS4-3	Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-LS4-4	Construct an explanation based on evidence for how natural selection leads to adaptation of populations	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-LS4-5	Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The PreACT Secure Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
	Earth and Space Science	
	Space Systems	
HS-ESS1-1	Develop a model based on evidence to illustrate the life span of the sun and the role of nuclear fusion in the sun's core to release energy that eventually reaches Earth in the form of radiation	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-ESS1-2	Construct an explanation of the Big Bang theory based on astronomical evidence of light spectra, motion of distant galaxies, and composition of matter in the universe	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-ESS1-3	Communicate scientific ideas about the way stars, over their life cycle, produce elements	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-ESS1-4	Use mathematical or computational representations to predict the motion of orbiting objects in the solar system	Interpretation of Data: Locating and Understanding Inferring and Translating Extending and Reevaluating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
	History of Earth	
HS-ESS1-5	Evaluate evidence of the past and current movements of continental and oceanic crust and the theory of plate tectonics to explain the ages of crustal rocks	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-ESS1-6	Apply scientific reasoning and evidence from ancient Earth materials, meteorites, and other planetary surfaces to construct an account of Earth's formation and early history	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The PreACT Secure Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
HS-ESS2-1	Develop a model to illustrate how Earth's internal and surface processes operate at different spatial and temporal scales to form continental and ocean-floor features	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
	Earth's Systems	
HS-ESS2-2	Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-ESS2-3	Develop a model based on evidence of Earth's interior to describe the cycling of matter by thermal convection	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-ESS2-5	Plan and conduct an investigation of the properties of water and its effects on Earth materials and surface processes	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing
HS-ESS2-6	Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-ESS2-7	Construct an argument based on evidence about the simultaneous coevolution of Earth's systems and life on Earth	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The PreACT Secure Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
	Weather and Climate	
HS-ESS2-4	Use a model to describe how variations in the flow of energy into and out of Earth's systems result in changes in climate	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-ESS3-5	Analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth systems	Interpretation of Data: Locating and Understanding Inferring and Translating Extending and Reevaluating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
	Human Sustainability	
HS-ESS3-1	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-ESS3-2	Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-ESS3-3	Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The PreACT Secure Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
HS-ESS3-4	Evaluate or refine a technological solution that reduces impacts of human activities on natural systems	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-ESS3-6	Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
	Engineering Design	
HS-ETS1-1	Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Designing and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-ETS1-2	Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-ETS1-3	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The PreACT Secure Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
HS-ETS1-4	Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem	Interpretation of Data: Locating and Understanding Inferring and Translating Extending and Reevaluating Scientific Investigation: Locating and Comparing Designing and Implementing Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending

VI. Detailed Alignment Results: PreACT 9 Secure

Comprehensive results of the ELA/literacy, mathematics, and science alignments for the PreACT 9 Secure are presented in Tables 7-9 below.

Table 7. Illinois Learning Standards: English Language Arts (ELA), High School – Aligned to the PreACT 9 Secure

	Illinois Learning Standards in ELA, Grades 9-10	The PreACT 9 Secure English Reporting Categories and Skill Areas	The PreACT 9 Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
	College and Career Readiness Anchor Standards for Reading		
	Key Ideas and Details		
CCRA.R.1	Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.		Key Ideas and Details: Close Reading
CCRA.R.2	Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.		Key Ideas and Details: Central Ideas, Themes, Summaries
CCRA.R.3	Analyze how and why individuals, events, and ideas develop and interact over the course of a text.		Key Ideas and Details: Relationships
	Craft and Structure		
CCRA.R.4	Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.		Craft and Structure: Word Meanings and Word Choice Text Structure
CCRA.R.5	Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.		Craft and Structure: Text Structure
CCRA.R.6	Assess how point of view or purpose shapes the content and style of a text.		Craft and Structure: Purpose and Point of View

	Illinois Learning Standards in ELA, Grades 9-10	The PreACT 9 Secure English Reporting Categories and Skill Areas	The PreACT 9 Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
	Integration of Knowledge and Ideas		
CCRA.R.7	Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.		
CCRA.R.8	Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.		Integration of Knowledge and Ideas: Arguments
CCRA.R.9	Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.		Integration of Knowledge and Ideas: Synthesis of Multiple Texts
	Range of Reading and Level of Text Complexity		
CCRA.R.10	Read and comprehend complex literary and informational texts independently and proficiently.		All reporting categories
	College and Career Readiness Anchor Standards for Writing		
	Text Types and Purposes		
CCRA.W.1	Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly Style	
CCRA.W.2	Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly Style	

	Illinois Learning Standards in ELA, Grades 9-10	The PreACT 9 Secure English Reporting Categories and Skill Areas	The PreACT 9 Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
CCRA.W.3	Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly Style	
	Production and Distribution of Writing		
CCRA.W.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly Style	
CCRA.W.5	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.	All reporting categories	
CCRA.W.6	Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.		
	Research to Build and Present Knowledge		
CCRA.W.7	Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.		
CCRA.W.8	Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.		

	Illinois Learning Standards in ELA, Grades 9-10	The PreACT 9 Secure English Reporting Categories and Skill Areas	The PreACT 9 Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
CCRA.W.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.		All reporting categories
	Range of Writing		
CCRA.W.10	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.	All reporting categories	
	College and Career Readiness Anchor Standards for Language		
	Conventions of Standard English		
CCRA.L.1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.	Conventions of Standard English Grammar, Usage, and Mechanics: Sentence Structure and Formation Usage Conventions	
CCRA.L.2	Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.	Conventions of Standard English Grammar, Usage, and Mechanics: Punctuation Conventions	
	Knowledge of Language		
CCRA.L.3	Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly Style	Craft and Structure: Word Meanings and Word Choice Text Structure
	Vocabulary Acquisition and Use		
CCRA.L.4	Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.		Craft and Structure: Word Meanings and Word Choice

	Illinois Learning Standards in ELA, Grades 9-10	The PreACT 9 Secure English Reporting Categories and Skill Areas	The PreACT 9 Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
CCRA.L.5	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.		Craft and Structure: Word Meanings and Word Choice Text Structure
CCRA.L.6	Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly	Craft and Structure: Word Meanings and Word Choice Text Structure
	Reading: Literature		
	Key Ideas and Details		
RL.9-10.1	Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.		Key Ideas and Details: Close Reading Relationships Central Ideas, Themes, Summaries Craft and Structure: Word Meanings and Word Choice Text Structure Purpose and Point of View Integration of Knowledge and Ideas: Synthesis of Multiple Texts
RL.9-10.2	Determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.		Key Ideas and Details: Central Ideas, Themes, Summaries Craft and Structure: Text Structure
RL.9-10.3	Analyze how complex characters (e.g., those with multiple or conflicting motivations) develop over the course of a text, interact with other characters, and advance the plot or develop the theme.		Key Ideas and Details: Relationships Craft and Structure: Text Structure Purpose and Point of View

	Illinois Learning Standards in ELA, Grades 9-10	The PreACT 9 Secure English Reporting Categories and Skill Areas	The PreACT 9 Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
	Craft and Structure		
RL.9-10.4	Determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language evokes a sense of time and place; how it sets a formal or informal tone).		Craft and Structure: Word Meanings and Word Choice Text Structure
RL.9-10.5	Analyze how an author's choices concerning how to structure a text, order events within it (e.g., parallel plots), and manipulate time (e.g., pacing, flashbacks) create such effects as mystery, tension, or surprise.		Craft and Structure: Text Structure
RL.9-10.6	Analyze a particular point of view or cultural experience reflected in a work of literature from outside the United States, drawing on a wide reading of world literature.		Craft and Structure: Purpose and Point of View
	Integration of Knowledge and Ideas		
RL.9-10.7	Analyze the representation of a subject or a key scene in two different artistic mediums, including what is emphasized or absent in each treatment (e.g., Auden's "Musée des Beaux Arts" and Breughel's Landscape with the Fall of Icarus).		
RL.9-10.9	Analyze how an author draws on and transforms source material in a specific work (e.g., how Shakespeare treats a theme or topic from Ovid or the Bible or how a later author draws on a play by Shakespeare).		Integration of Knowledge and Ideas: Synthesis of Multiple Texts

	Illinois Learning Standards in ELA, Grades 9-10	The PreACT 9 Secure English Reporting Categories and Skill Areas	The PreACT 9 Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
RL.9-10.10	By the end of grade 9, read and comprehend literature, including stories, dramas, and poems, in the grades 9—10 text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 10, read and comprehend literature, including stories, dramas, and poems, at the high end of the grades 9—10 text complexity band independently and proficiently.		Key Ideas and Details: Close Reading Relationships Central Ideas, Themes, Summaries Craft and Structure: Word Meanings and Word Choice Text Structure Purpose and Point of View Integration of Knowledge and Ideas: Synthesis of Multiple Texts
	Reading: Informational Text		
	Key Ideas and Details		
RI.9-10.1	Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.		Key Ideas and Details: Close Reading
RI.9-10.2	Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.		Key Ideas and Details: Central Ideas, Themes, Summaries Craft and Structure: Text Structure
RI.9-10.3	Analyze how the author unfolds an analysis or series of ideas or events, including the order in which the points are made, how they are introduced and developed, and the connections that are drawn between them.		Key Ideas and Details: Relationships Craft and Structure: Text Structure
	Craft and Structure		
RI.9-10.4	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language of a court opinion differs from that of a newspaper).		Craft and Structure: Word Meanings and Word Choice Text Structure

	Illinois Learning Standards in ELA, Grades 9-10	The PreACT 9 Secure English Reporting Categories and Skill Areas	The PreACT 9 Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
RI.9-10.5	Analyze in detail how an author's ideas or claims are developed and refined by particular sentences, paragraphs, or larger portions of a text (e.g., a section or chapter).		Craft and Structure: Text Structure Integration of Knowledge and Ideas: Arguments
RI.9-10.6	Determine an author's point of view or purpose in a text and analyze how an author uses rhetoric to advance that point of view or purpose.		Craft and Structure: Word Meanings and Word Choice Text Structure Purpose and Point of View Integration of Knowledge and Ideas: Arguments
	Integration of Knowledge and Ideas		
RI.9-10.7	Analyze various accounts of a subject told in different mediums (e.g., a person's life story in both print and multimedia), determining which details are emphasized in each account.		
RI.9-10.8	Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning.		Craft and Structure: Purpose and Point of View Integration of Knowledge and Ideas: Arguments
RI.9-10.9	Analyze seminal U.S. documents of historical and literary significance (e.g., Washington's Farewell Address, the Gettysburg Address, Roosevelt's Four Freedoms speech, King's "Letter from Birmingham Jail"), including how they address related themes and concepts.		Key Ideas and Details: Central Ideas, Themes, Summaries Craft and Structure: Text Structure Purpose and Point of View Integration of Knowledge and Ideas: Synthesis of Multiple Texts

	Illinois Learning Standards in ELA, Grades 9-10	The PreACT 9 Secure English Reporting Categories and Skill Areas	The PreACT 9 Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
	Range of Reading and Level of Text Complexity		
RI.9-10.10	By the end of grade 9, read and comprehend literary nonfiction in the grades 9—10 text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 10, read and comprehend literary nonfiction at the high end of the grades 9—10 text complexity band independently and proficiently.		Key Ideas and Details: Close Reading Relationships Central Ideas, Themes, Summaries Craft and Structure: Word Meanings and Word Choice Text Structure Purpose and Point of View Integration of Knowledge and Ideas: Arguments Synthesis of Multiple Texts
	Writing		
	Text Types and Purposes		
W.9-10.1	Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly Style	
W.9-10.1.a	Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among claim(s), counterclaims, reasons, and evidence.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion	
W.9-10.1.b	Develop claim(s) and counterclaims fairly, supplying evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level and concerns.	Production of Writing: Topic Development—Purpose and Focus	

	Illinois Learning Standards in ELA, Grades 9-10	The PreACT 9 Secure English Reporting Categories and Skill Areas	The PreACT 9 Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
W.9-10.1.c	Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly	
W.9-10.1.d	Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.	Knowledge of Language: Expressing Ideas Clearly Style	
W.9-10.1.e	Provide a concluding statement or section that follows from and supports the argument presented.	Production of Writing: Organization, Unity, and Cohesion	
W.9-10.2	Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly Style	
W.9-10.2.a	Introduce a topic; organize complex ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion	
W.9-10.2.b	Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.	Production of Writing: Topic Development—Purpose and Focus	

	Illinois Learning Standards in ELA, Grades 9-10	The PreACT 9 Secure English Reporting Categories and Skill Areas	The PreACT 9 Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
W.9-10.2.c	Use appropriate and varied transitions to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly	
W.9-10.2.d	Use precise language and domain-specific vocabulary to manage the complexity of the topic.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly Style	
W.9-10.2.e	Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.	Knowledge of Language: Expressing Ideas Clearly Style	
W.9-10.2.f	Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).	Production of Writing: Organization, Unity, and Cohesion	
W.9-10.3	Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly Style	
W.9-10.3.a	Engage and orient the reader by setting out a problem, situation, or observation, establishing one or multiple point(s) of view, and introducing a narrator and/or characters; create a smooth progression of experiences or events.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion	

	Illinois Learning Standards in ELA, Grades 9-10	The PreACT 9 Secure English Reporting Categories and Skill Areas	The PreACT 9 Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
W.9-10.3.b	Use narrative techniques, such as dialogue, pacing, description, reflection, and multiple plot lines, to develop experiences, events, and/or characters.	Production of Writing: Topic Development—Purpose and Focus	
W.9-10.3.c	Use a variety of techniques to sequence events so that they build on one another to create a coherent whole.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion	
W.9-10.3.d	Use precise words and phrases, telling details, and sensory language to convey a vivid picture of the experiences, events, setting, and/or characters.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly Style	
W.9-10.3.e	Provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative.	Production of Writing: Organization, Unity, and Cohesion	
	Production and Distribution of Writing		
W.9-10.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly Style	
W.9-10.5	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.	All reporting categories	

	Illinois Learning Standards in ELA, Grades 9-10	The PreACT 9 Secure English Reporting Categories and Skill Areas	The PreACT 9 Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
W.9-10.6	Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.		
	Research to Build and Present Knowledge		
W.9-10.7	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.		
W.9-10.8	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.		
W.9-10.9	Draw evidence from literary or informational texts to support analysis, reflection, and research.		Key Ideas and Details: Close Reading Relationships Central Ideas, Themes, Summaries Craft and Structure: Word Meanings and Word Choice Text Structure Purpose and Point of View Integration of Knowledge and Ideas: Arguments Synthesis of Multiple Texts

	Illinois Learning Standards in ELA, Grades 9-10	The PreACT 9 Secure English Reporting Categories and Skill Areas	The PreACT 9 Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
W.9-10.9.a	Apply grades 9—10 Reading standards to literature (e.g., "Analyze how an author draws on and transforms source material in a specific work [e.g., how Shakespeare treats a theme or topic from Ovid or the Bible or how a later author draws on a play by Shakespeare]").		Key Ideas and Details: Close Reading Relationships Central Ideas, Themes, Summaries Craft and Structure: Word Meanings and Word Choice Text Structure Purpose and Point of View Integration of Knowledge and Ideas: Synthesis of Multiple Texts
W.9-10.9.b	Apply grades 9—10 Reading standards to literary nonfiction (e.g., "Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning").		Key Ideas and Details: Close Reading Relationships Central Ideas, Themes, Summaries Craft and Structure: Word Meanings and Word Choice Text Structure Purpose and Point of View Integration of Knowledge and Ideas: Arguments Synthesis of Multiple Texts
	Range of Writing		
W.9-10.10	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	All reporting categories	

	Illinois Learning Standards in ELA, Grades 9-10	The PreACT 9 Secure English Reporting Categories and Skill Areas	The PreACT 9 Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
	Language		
	Conventions of Standard English		
L.9-10.1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.	Conventions of Standard English: Sentence Structure and Formation Usage Conventions	
L.9-10.1.a	Use parallel structure.	Conventions of Standard English: Sentence Structure and Formation	
L.9-10.1.b	Use various types of phrases (noun, verb, adjectival, adverbial, participial, prepositional, absolute) and clauses (independent, dependent; noun, relative, adverbial) to convey specific meanings and add variety and interest to writing or presentations.	Conventions of Standard English: Sentence Structure and Formation Usage Conventions	
L.9-10.2	Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.	Conventions of Standard English: Sentence Structure and Formation Punctuation Conventions	
L.9-10.2.a	Use a semicolon (and perhaps a conjunctive adverb) to link two or more closely related independent clauses.	Conventions of Standard English: Sentence Structure and Formation Punctuation Conventions	
L.9-10.2.b	Use a colon to introduce a list or quotation.	Conventions of Standard English: Punctuation Conventions	
L.9-10.2.c	Spell correctly.		

	Illinois Learning Standards in ELA, Grades 9-10	The PreACT 9 Secure English Reporting Categories and Skill Areas	The PreACT 9 Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
	Knowledge of Language		
L.9-10.3	Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly Style	Craft and Structure: Word Meanings and Word Choice Text Structure
L.9-10.3.a	Write and edit work so that it conforms to the guidelines in a style manual (e.g., MLA Handbook, Turabian's Manual for Writers) appropriate for the discipline and writing type.	Knowledge of Language: Style Conventions of Standard English: Sentence Structure and Formation	
	Vocabulary Acquisition and Use		
L.9-10.4	Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 9—10 reading and content, choosing flexibly from a range of strategies.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly Conventions of Standard English: Usage Conventions	Craft and Structure: Word Meanings and Word Choice Text Structure
L.9-10.4.a	Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly Conventions of Standard English: Usage Conventions	Craft and Structure: Word Meanings and Word Choice Text Structure
L.9-10.4.b	Identify and correctly use patterns of word changes that indicate different meanings or parts of speech (e.g., analyze, analysis, analytical; advocate, advocacy).		

	Illinois Learning Standards in ELA, Grades 9-10	The PreACT 9 Secure English Reporting Categories and Skill Areas	The PreACT 9 Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
L.9-10.4.c	Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, or its etymology.		
L.9-10.4.d	Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).	Knowledge of Language: Expressing Ideas Clearly Conventions of Standard English: Usage Conventions	Craft and Structure: Word Meanings and Word Choice
L.9-10.5	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly Conventions of Standard English: Usage Conventions	Craft and Structure: Word Meanings and Word Choice Text Structure
L.9-10.5.a	Interpret figures of speech (e.g., euphemism, oxymoron) in context and analyze their role in the text.	Production of Writing: Topic Development—Purpose and Focus	Craft and Structure: Word Meanings and Word Choice Text Structure
L.9-10.5.b	Analyze nuances in the meaning of words with similar denotations.	Knowledge of Language: Expressing Ideas Clearly Conventions of Standard English: Usage Conventions	Craft and Structure: Word Meanings and Word Choice

	Illinois Learning Standards in ELA, Grades 9-10	The PreACT 9 Secure English Reporting Categories and Skill Areas	The PreACT 9 Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
L.9-10.6	Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly Style Conventions of Standard English: Usage Conventions	Craft and Structure: Word Meanings and Word Choice Text Structure
	Reading Literacy in History/Social Studies: Reading Informational Text		
	Key Ideas and Details		
RH.9-10.1	Cite specific textual evidence to support analysis of primary and secondary sources, attending to such features as the date and origin of the information.		Key Ideas and Details: Close Reading
RH.9-10.2	Determine the central ideas or information of a primary or secondary source; provide an accurate summary of how key events or ideas develop over the course of the text.		Key Ideas and Details: Central Ideas, Themes, Summaries
RH.9-10.3	Analyze in detail a series of events described in a text; determine whether earlier events caused later ones or simply preceded them.		Key Ideas and Details: Relationships
	Craft and Structure		
RH.9-10.4	Determine the meaning of words and phrases as they are used in a text, including vocabulary describing political, social, or economic aspects of history/social studies.		Craft and Structure: Word Meanings and Word Choice Text Structure
RH.9-10.5	Analyze how a text uses structure to emphasize key points or advance an explanation or analysis		Craft and Structure: Text Structure

	Illinois Learning Standards in ELA, Grades 9-10	The PreACT 9 Secure English Reporting Categories and Skill Areas	The PreACT 9 Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
RH.9-10.6	Compare the point of view of two or more authors for how they treat the same or similar topics, including which details they include and emphasize in their respective accounts.		Key Ideas and Details: Close Reading Craft and Structure: Text Structure Purpose and Point of View Integration of Knowledge and Ideas: Synthesis of Multiple Texts
	Integration of Knowledge and Ideas		
RH.9-10.7	Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text.		
RH.9-10.8	Assess the extent to which the reasoning and evidence in a text support the author's claims.		Integration of Knowledge and Ideas: Arguments
RH.9-10.9	Compare and contrast treatments of the same topic in several primary and secondary sources.		Integration of Knowledge and Ideas: Synthesis of Multiple Texts
	Range of Reading and Level of Text Complexity		
RH.9-10.10	By the end of grade 10, read and comprehend history/social studies texts in the grades 9—10 text complexity band independently and proficiently.		Key Ideas and Details: Close Reading Relationships Central Ideas, Themes, Summaries Craft and Structure: Word Meanings and Word Choice Text Structure Purpose and Point of View Integration of Knowledge and Ideas: Arguments Synthesis of Multiple Texts

	Illinois Learning Standards in ELA, Grades 9-10	The PreACT 9 Secure English Reporting Categories and Skill Areas	The PreACT 9 Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
	Writing Literacy in History/Social Studies/Science/Technical Subjects: Writing Text		
	Types and Purposes		
WHST.9-10.1	Write arguments focused on discipline-specific content.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly Style	
WHST.9-10.1.a	Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among the claim(s), counterclaims, reasons, and evidence.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion	
WHST.9-10.1.b	Develop claim(s) and counterclaims fairly, supplying data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form and in a manner that anticipates the audience's knowledge level and concerns.	Production of Writing: Topic Development—Purpose and Focus	
WHST.9-10.1.c	Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly	
WHST.9-10.1.d	Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.	Knowledge of Language: Expressing Ideas Clearly Style	

	Illinois Learning Standards in ELA, Grades 9-10	The PreACT 9 Secure English Reporting Categories and Skill Areas	The PreACT 9 Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
WHST.9-10.1.e	Provide a concluding statement or section that follows from or supports the argument presented.	Production of Writing: Organization, Unity, and Cohesion	
WHST.9-10.2	Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly Style	
WHST.9-10.2.a	Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion	
WHST.9-10.2.b	Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.	Production of Writing: Topic Development—Purpose and Focus	
WHST.9-10.2.c	Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among ideas and concepts.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly	
WHST.9-10.2.d	Use precise language and domain-specific vocabulary to manage the complexity of the topic and convey a style appropriate to the discipline and context as well as to the expertise of likely readers.	Production of Writing: Topic Development—Purpose and Focus Knowledge of Language: Expressing Ideas Clearly Style	

	Illinois Learning Standards in ELA, Grades 9-10	The PreACT 9 Secure English Reporting Categories and Skill Areas	The PreACT 9 Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
WHST.9-10.2.e	Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.	Knowledge of Language: Expressing Ideas Clearly Style	
WHST.9-10.2.f	Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).	Production of Writing: Organization, Unity, and Cohesion	
	Production and Distribution of Writing		
WHST.9-10.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	Production of Writing: Topic Development—Purpose and Focus Organization, Unity, and Cohesion Knowledge of Language: Expressing Ideas Clearly Style	
WHST.9-10.5	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.	All reporting categories	
WHST.9-10.6	Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.		

	Illinois Learning Standards in ELA, Grades 9-10	The PreACT 9 Secure English Reporting Categories and Skill Areas	The PreACT 9 Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
	Research to Build and Present Knowledge		
WHST.9-10.7	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.		
WHST.9-10.8	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.		
WHST.9-10.9	Draw evidence from informational texts to support analysis, reflection, and research.		Key Ideas and Details: Close Reading Relationships Central Ideas, Themes, Summaries Craft and Structure: Word Meanings and Word Choice Text Structure Purpose and Point of View Integration of Knowledge and Ideas: Arguments Synthesis of Multiple Texts
	Range of Writing		
WHST.9-10.10	Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	All reporting categories	

	Illinois Learning Standards in ELA, Grades 9-10	The PreACT 9 Secure English Reporting Categories and Skill Areas	The PreACT 9 Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
	Reading Literacy in Science and Technical Subjects: Reading Informational Text		
	Key Ideas and Details		
RST.9-10.1	Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.		Key Ideas and Details: Close Reading
RST.9-10.2	Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.		Key Ideas and Details: Close Reading Relationships Central Ideas, Themes, Summaries
RST.9-10.3	Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.		Key Ideas and Details: Relationships
	Craft and Structure		
RST.9-10.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9—10 texts and topics.		Craft and Structure: Word Meanings and Word Choice
RST.9-10.5	Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy).		Key Ideas and Details: Relationships Craft and Structure: Text Structure
RST.9-10.6	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address.		Craft and Structure: Text Structure Purpose and Point of View

	Illinois Learning Standards in ELA, Grades 9-10	The PreACT 9 Secure English Reporting Categories and Skill Areas	The PreACT 9 Secure Reading Reporting Categories and Skill Areas
Standard Number	**Standard**		
	Integration of Knowledge and Ideas		
RST.9-10.7	Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.		
RST.9-10.8	Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem.		Integration of Knowledge and Ideas: Arguments
RST.9-10.9	Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.		Integration of Knowledge and Ideas: Synthesis of Multiple Texts
	Range of Reading and Level of Text Complexity		
RST.9-10.10	By the end of grade 10, read and comprehend science/technical texts in the grades 9–10 text complexity band independently and proficiently.		Key Ideas and Details: Close Reading Relationships Central Ideas, Themes, Summaries Craft and Structure: Word Meanings and Word Choice Text Structure Purpose and Point of View Integration of Knowledge and Ideas: Arguments Synthesis of Multiple Texts

Table 7. Illinois Learning Standards: Mathematics, High School – Aligned to PreACT 9 Secure

	Illinois Learning Standards in Mathematics, High School	PreACT 9 Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
	Mathematical Practices	
HS.MP.1	Make sense of problems and persevere in solving them.	Modeling: Producing Interpreting Understanding Evaluating
HS.MP.2	Reason abstractly and quantitatively.	Modeling: Producing Interpreting Understanding
HS.MP.3	Construct viable arguments and critique the reasoning of others.	Modeling: Producing Interpreting Understanding Evaluating Improving
HS.MP.4	Model with mathematics.	Modeling: Producing Interpreting Understanding Evaluating Improving
HS.MP.5	Use appropriate tools strategically.	Modeling: Producing Understanding Evaluating
HS.MP.6	Attend to precision.	Modeling: Interpreting Understanding
HS.MP.7	Look for and make use of structure.	Modeling: Producing Understanding Evaluating
HS.MP.8	Look for and express regularity in repeated reasoning.	Modeling: Understanding Evaluating

	Illinois Learning Standards in Mathematics, High School	PreACT 9 Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
	Number and Quantity	
N.RN	The Real Number System	
	Extend the properties of exponents to rational exponents.	
N.RN.1	Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. *For example, we define $5^{1/3}$ to be the cube root of 5 because we want $(5^{1/3})^3 = 5^{(1/3)^3}$ to hold, so $(5^{1/3})^3$ must equal 5.*	Number & Quantity: Properties of Exponents
N.RN.2	Rewrite expressions involving radicals and rational exponents using the properties of exponents.	Number & Quantity: Properties of Exponents
	Use properties of rational and irrational numbers.	
N.RN.3	Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational.	Number & Quantity: Rational and Irrational Numbers
N.Q	Quantities*	
	Reason quantitatively and use units to solve problems.	
N.Q.1	Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.	Number & Quantity: Quantities and Units Integrating Essential Skills: Computation and Problem Solving with Integers and Rational Numbers Measurement Units and Unit Conversion
N.Q.2	Define appropriate quantities for the purpose of descriptive modeling.	Number & Quantity: Quantities and Units Integrating Essential Skills: Computation and Problem Solving with Integers and Rational Numbers
N.Q.3	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.	Number & Quantity: Quantities and Units Integrating Essential Skills: Computation and Problem Solving with Integers and Rational Numbers

	Illinois Learning Standards in Mathematics, High School	PreACT 9 Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
N.CN	The Complex Number System	
	Perform arithmetic operations with complex numbers.	
N.CN.1	Know there is a complex number i such that $i^2 = –1$, and every complex number has the form $a + bi$ with a and b real.	
N.CN.2	Use the relation $i^2 = –1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.	
N.CN.3	(+) Find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers.	
	Represent complex numbers and their operations on the complex plane.	
N.CN.4	(+) Represent complex numbers on the complex plane in rectangular and polar form (including real and imaginary numbers), and explain why the rectangular and polar forms of a given complex number represent the same number.	
N.CN.5	(+) Represent addition, subtraction, multiplication, and conjugation of complex numbers geometrically on the complex plane; use properties of this representation for computation. *For example,* $(–1 + \sqrt{3}i)^3 = 8$ *because* $(–1 + \sqrt{3}i)$ *has modulus* 2 *and argument* 120°.	
N.CN.6	(+) Calculate the distance between numbers in the complex plane as the modulus of the difference, and the midpoint of a segment as the average of the numbers at its endpoints.	
	Use complex numbers in polynomial identities and equations.	
N.CN.7	Solve quadratic equations with real coefficients that have complex solutions.	
N.CN.8	(+) Extend polynomial identities to the complex numbers. *For example, rewrite* $x^2 + 4$ *as* $(x + 2i)(x – 2i)$.	
N.CN.9	(+) Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.	
N.VM	Vector and Matrix Quantities	
	Represent and model with vector quantities.	
N.VM.1	(+) Recognize vector quantities as having both magnitude and direction. Represent vector quantities by directed line segments, and use appropriate symbols for vectors and their magnitudes (e.g., $\boldsymbol{v}$, $\lvert\boldsymbol{v}\rvert$, $\lVert\boldsymbol{v}\rVert$, v).	

	Illinois Learning Standards in Mathematics, High School	PreACT 9 Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
N.VM.2	(+) Find the components of a vector by subtracting the coordinates of an initial point from the coordinates of a terminal point.	
N.VM.3	(+) Solve problems involving velocity and other quantities that can be represented by vectors.	
	Perform operations on vectors.	
N.VM.4	(+) Add and subtract vectors. a. Add vectors end-to-end, component-wise, and by the parallelogram rule. Understand that the magnitude of a sum of two vectors is typically not the sum of the magnitudes. b. Given two vectors in magnitude and direction form, determine the magnitude and direction of their sum. c. Understand vector subtraction $\boldsymbol{v} - \boldsymbol{w}$ as $\boldsymbol{v} + (-\boldsymbol{w})$, where $-\boldsymbol{w}$ is the additive inverse of $\boldsymbol{w}$, with the same magnitude as $\boldsymbol{w}$ and pointing in the opposite direction. Represent vector subtraction graphically by connecting the tips in the appropriate order, and perform vector subtraction component-wise.	
N.VM.5	(+) Multiply a vector by a scalar. a. Represent scalar multiplication graphically by scaling vectors and possibly reversing their direction; perform scalar multiplication component-wise, e.g., as $c(v_x, v_y) = (cv_x, cv_y)$. b. Compute the magnitude of a scalar multiple $c\boldsymbol{v}$ using $\|c\boldsymbol{v}\| = \|c\|\boldsymbol{v}$. Compute the direction of $c\boldsymbol{v}$ knowing that when $\|c\|\boldsymbol{v} \neq 0$, the direction of $c\boldsymbol{v}$ is either along $\boldsymbol{v}$ (for $c > 0$) or against $\boldsymbol{v}$ (for $c < 0$).	
	Perform operations on matrices and use matrices in applications.	
N.VM.6	(+) Use matrices to represent and manipulate data, e.g., to represent payoffs or incidence relationships in a network.	
N.VM.7	(+) Multiply matrices by scalars to produce new matrices, e.g., as when all of the payoffs in a game are doubled.	
N.VM.8	(+) Add, subtract, and multiply matrices of appropriate dimensions.	
N.VM.9	(+) Understand that, unlike multiplication of numbers, matrix multiplication for square matrices is not a commutative operation, but still satisfies the associative and distributive properties.	

	Illinois Learning Standards in Mathematics, High School	PreACT 9 Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
N.VM.10	(+) Understand that the zero and identity matrices play a role in matrix addition and multiplication similar to the role of 0 and 1 in the real numbers. The determinant of a square matrix is nonzero if and only if the matrix has a multiplicative inverse.	
N.VM.11	(+) Multiply a vector (regarded as a matrix with one column) by a matrix of suitable dimensions to produce another vector. Work with matrices as transformations of vectors.	
N.VM.12	(+) Work with 2 × 2 matrices as a transformations of the plane, and interpret the absolute value of the determinant in terms of area.	
	Algebra	
A.SSE	**Seeing Structure in Expressions**	
	Interpret the structure of expressions.	
A.SSE.1	Interpret expressions that represent a quantity in terms of its context.* a. Interpret parts of an expression, such as terms, factors, and coefficients. b. Interpret complicated expressions by viewing one or more of their parts as a single entity. *For example, interpret $P(1 + r)^n$ as the product of P and a factor not depending on P.*	Algebra: Linear Expressions, Equations, and Inequalities Quadratic Expressions, Equations, and Inequalities Rational and Radical Expressions and Equations Polynomial Expressions and Equations Functions: Exponential Functions Integrating Essential Skills: Writing Algebraic Expressions
A.SSE.2	Use the structure of an expression to identify ways to rewrite it. For example, see $x^4 - y^4$ as $(x^2)^2 - (y^2)^2$, thus recognizing it as a difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.	Algebra: Linear Expressions, Equations, and Inequalities Quadratic Expressions, Equations, and Inequalities Rational and Radical Expressions and Equations Polynomial Expressions and Equations

	Illinois Learning Standards in Mathematics, High School	PreACT 9 Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
	Write expressions in equivalent forms to solve problems.	
A.SSE.3	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.* a. Factor a quadratic expression to reveal the zeros of the function it defines. b. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines. c. Use the properties of exponents to transform expressions for exponential functions. *For example the expression* 1.15^t *can be rewritten as* $(1.15^{1/12})^{12t} \approx 1.012^{12t}$ *to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.*	Algebra: Linear Expressions, Equations, and Inequalities Quadratic Expressions, Equations, and Inequalities Rational and Radical Expressions and Equations Polynomial Expressions and Equations Functions: Exponential Functions
A.SSE.4	Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems. *For example, calculate mortgage payments.**	
A.APR	Arithmetic with Polynomials and Rational Expressions	
	Perform arithmetic operations on polynomials.	
A.APR.1	Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.	Algebra: Polynomial Expressions and Equations
	Understand the relationship between zeros and factors of polynomials.	
A.APR.2	Know and apply the Remainder Theorem: For a polynomial $p(x)$ and a number a, the remainder on division by $x - a$ is $p(a)$, so $p(a) = 0$ if and only if $(x - a)$ is a factor of $p(x)$.	
A.APR.3	Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.	
	Use polynomial identities to solve problems.	
A.APR.4	Prove polynomial identities and use them to describe numerical relationships. *For example, the polynomial identity* $(x^2 + y^2)^2 = (x^2 - y^2)^2 + (2xy)^2$ *can be used to generate Pythagorean triples.*	

	Illinois Learning Standards in Mathematics, High School	PreACT 9 Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
A.APR.5	(+) Know and apply the Binomial Theorem for the expansion of $(x + y)^n$ in powers of x and y for a positive integer n, where x and y are any numbers, with coefficients determined for example by Pascal's Triangle. (The Binomial Theorem can be proved by mathematical induction or by a combinatorial argument.)	
	Rewrite rational expressions.	
A.APR.6	Rewrite simple rational expressions in different forms; write $a(x)/b(x)$ in the form $q(x) + r(x)/b(x)$, where $a(x)$, $b(x)$, $q(x)$, and $r(x)$ are polynomials with the degree of $r(x)$ less than the degree of $b(x)$, using inspection, long division, or, for the more complicated examples, a computer algebra system.	
A.APR.7	(+) Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions.	
A.CED	Creating Equations*	
	Create equations that describe numbers or relationships	
A.CED.1	Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.	Algebra: Linear Expressions, Equations, and Inequalities Quadratic Expressions, Equations, and Inequalities Rational and Radical Expressions and Equations Functions: Exponential Functions
A.CED.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	Algebra: Linear Expressions, Equations, and Inequalities Quadratic Expressions, Equations, and Inequalities Functions: Exponential Functions
A.CED.3	Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.	Algebra: Linear Expressions, Equations, and Inequalities Systems of Equations and Inequalities Integrating Essential Skills: Writing and Solving Simple Equations and Inequalities

	Illinois Learning Standards in Mathematics, High School	PreACT 9 Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
A.CED.4	Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law $V = IR$ to highlight resistance R.	Algebra: Representation of Expressions and Equations
A.REI	Reasoning with Equations and Inequalities	
	Understand solving equations as a process of reasoning and explain the reasoning.	
A.REI.1	Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.	Algebra: Linear Expressions, Equations, and Inequalities Quadratic Expressions, Equations, and Inequalities Rational and Radical Expressions and Equations Functions: Exponential Functions
A.REI.2	Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.	Algebra: Rational and Radical Expressions and Equations
	Solve equations and inequalities in one variable.	
A.REI.3	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	Algebra: Linear Expressions, Equations, and Inequalities Integrating Essential Skills: Writing and Solving Simple Equations and Inequalities
A.REI.4	Solve quadratic equations in one variable. a. Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x - p)^2 = q$ that has the same solutions. Derive the quadratic formula from this form. b. Solve quadratic equations by inspection (e.g., for $x^2 = 49$), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers a and b.	Algebra: Quadratic Expressions, Equations, and Inequalities

	Illinois Learning Standards in Mathematics, High School	PreACT 9 Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
	Solve systems of equations.	
A.REI.5	Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.	Algebra: Systems of Equations and Inequalities
A.REI.6	Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.	Algebra: Systems of Equations and Inequalities
A.REI.7	Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. *For example, find the points of intersection between the line* $y = -3x$ and the circle $x^2 + y^2 = 3$.	Algebra: Systems of Equations and Inequalities
A.REI.8	(+) Represent a system of linear equations as a single matrix equation in a vector variable.	
A.REI.9	(+) Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension 3 × 3 or greater).	
	Represent and solve equations and inequalities graphically.	
A.REI.10	Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).	Algebra: Linear Expressions, Equations, and Inequalities Quadratic Expressions, Equations, and Inequalities Rational and Radical Expressions and Equations Functions: Exponential Functions
A.REI.11	Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.*	Algebra: Systems of Equations and Inequalities
A.REI.12	Graph the solutions to a linear inequality in two variables as a half plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.	Algebra: Linear Expressions, Equations, and Inequalities Systems of Equations and Inequalities

	Illinois Learning Standards in Mathematics, High School	PreACT 9 Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
	Functions	
F.IF	Interpreting Functions	
	Understand the concept of a function and use function notation.	
F.IF.1	Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If *f* is a function and *x* is an element of its domain, then *f*(*x*) denotes the output of *f* corresponding to the input *x*. The graph of *f* is the graph of the equation *y* = *f*(*x*).	Functions: Properties of Functions
F.IF.2	Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.	Functions: Properties of Functions
F.IF.3	Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. *For example, the Fibonacci sequence is defined recursively by f(0) = f(1) = 1, f(n + 1) = f(n) + f(n − 1) for n ≥ 1.*	Functions: Sequences
	Interpret functions that arise in applications in terms of the context.	
F.IF.4	For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.**	Functions: Properties of Functions
F.IF.5	Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. *For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.**	Functions: Properties of Functions
F.IF.6	Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.*	Algebra: Linear Expressions, Equations, and Inequalities Functions: Properties of Functions

	Illinois Learning Standards in Mathematics, High School	PreACT 9 Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
	Analyze functions using different representations.	
F.IF.7	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.* a. Graph linear and quadratic functions and show intercepts, maxima, and minima. b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions. c. Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior. d. (+) Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior. e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.	Functions: Properties of Functions Exponential Functions
F.IF.8	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. a. Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context. b. Use the properties of exponents to interpret expressions for exponential functions. *For example, identify percent rate of change in functions such as* $y = (1.02)^t$, $y = (0.97)^t$, $y = (1.01)^{12t}$, $y = (1.2)^{t/10}$, *and classify them as representing exponential growth or decay.*	Algebra: Linear Expressions, Equations, and Inequalities Quadratic Expressions, Equations, and Inequalities Representation of Expressions and Equations Functions: Properties of Functions Exponential Functions
F.IF.9	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.*	Functions: Properties of Functions

	Illinois Learning Standards in Mathematics, High School	PreACT 9 Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
F.BF	Building Functions	
	Build a function that models a relationship between two quantities.	
F.BF.1	Write a function that describes a relationship between two quantities.* a. Determine an explicit expression, a recursive process, or steps for calculation from a context. b. Combine standard function types using arithmetic operations. *For example, build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential, and relate these functions to the model.* c. (+) Compose functions. *For example, if T(y) is the temperature in the atmosphere as a function of height, and h(t) is the height of a weather balloon as a function of time, then T(h(t)) is the temperature at the location of the weather balloon as a function of time.*	Algebra: Linear Expressions, Equations, and Inequalities Quadratic Expressions, Equations, and Inequalities Functions: Properties of Functions Function Transformation and Inverses Exponential Functions
F.BF.2	Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.*	Functions: Sequences
	Build new functions from existing functions.	
F.BF.3	Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $kf(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. *Include recognizing even and odd functions from their graphs and algebraic expressions for them.*	Functions: Function Transformation and Inverses
F.BF.4	Find inverse functions. *a.* Solve an equation of the form $f(x) = c$ for a simple function f that has an inverse and write an expression for the inverse. *For example, $f(x) = 2x^3$ or $f(x) = (x + 1)/(x – 1)$ for $x \neq 1$.* b. (+) Verify by composition that one function is the inverse of another. c. (+) Read values of an inverse function from a graph or a table, given that the function has an inverse. d. (+) Produce an invertible function from a non-invertible function by restricting the domain.	Functions: Function Transformation and Inverses

	Illinois Learning Standards in Mathematics, High School	PreACT 9 Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
F.BF.5	(+) Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.	
F.LE	Linear and Exponential Models*	
	Construct and compare linear and exponential models and solve problems.	
F.LE.1	Distinguish between situations that can be modeled with linear functions and with exponential functions. a. Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals. b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. c. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.	Algebra: Linear Expressions, Equations, and Inequalities Functions: Properties of Functions Exponential Functions
F.LE.2	Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).	Algebra: Linear Expressions, Equations, and Inequalities Functions: Properties of Functions Sequences Exponential Functions
F.LE.3	Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.	Functions: Properties of Functions Exponential Functions
F.LE.4	For exponential models, express as a logarithm the solution to $ab^{ct} = d$ where a, c, and d are numbers and the base b is 2, 10, or e; evaluate the logarithm using technology.	
	Interpret expressions for functions in terms of the situation they model.	
F.LE.5	Interpret the parameters in a linear or exponential function in terms of a context.	Algebra: Linear Expressions, Equations, and Inequalities Functions: Properties of Functions Exponential Functions

	Illinois Learning Standards in Mathematics, High School	PreACT 9 Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
F.TF	Trigonometric Functions	
	Extend the domain of trigonometric functions using the unit circle.	
F.TF.1	Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle.	
F.TF.2	Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle.	
F.TF.3	(+) Use special triangles to determine geometrically the values of sine, cosine, tangent for $\pi/3$, $\pi/4$ and $\pi/6$, and use the unit circle to express the values of sine, cosines, and tangent for x, $\pi + x$, and $2\pi - x$ in terms of their values for x, where x is any real number.	
F.TF.4	(+) Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions.	
	Model periodic phenomena with trigonometric functions.	
F.TF.5	Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline.*	
F.TF.6	(+) Understand that restricting a trigonometric function to a domain on which it is always increasing or always decreasing allows its inverse to be constructed.	
F.TF.7	(+) Use inverse functions to solve trigonometric equations that arise in modeling contexts; evaluate the solutions using technology, and interpret them in terms of the context.*	
	Prove and apply trigonometric identities.	
F.TF.8	Prove the Pythagorean identity $\sin^2(\theta) + \cos^2(\theta) = 1$ and use it to find $\sin(\theta)$, $\cos(\theta)$,or $\tan(\theta)$ given $\sin(\theta)$, $\cos(\theta)$, or $\tan(\theta)$ and the quadrant of the angle.	
F.TF.9	(+) Prove the addition and subtraction formulas for sine, cosine, and tangent and use them to solve problems.	

	Illinois Learning Standards in Mathematics, High School	PreACT 9 Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
	Geometry	
G.CO	**Congruence**	
	Experiment with transformations in the plane.	
G.CO.1	Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.	Geometry: Transformations Integrating Essential Skills: Properties of Lines, Angles, and Shapes
G.CO.2	Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).	Geometry: Transformations
G.CO.3	Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.	Geometry: Transformations
G.CO.4	Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.	Geometry: Transformations
G.CO.5	Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.	Geometry: Transformations
	Understand congruence in terms of rigid motions.	
G.CO.6	Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.	Geometry: Transformations
G.CO.7	Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.	Geometry: Transformations Proof, Reasoning, and Constructions
G.CO.8	Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.	Geometry: Transformations Proof, Reasoning, and Constructions

	Illinois Learning Standards in Mathematics, High School	PreACT 9 Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
	Prove geometric theorems.	
G.CO.9	Prove theorems about lines and angles. *Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.*	
G.CO.10	Prove theorems about triangles. *Theorems include: measures of interior angles of a triangle sum to 180°; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.*	
G.CO.11	Prove theorems about parallelograms. *Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.*	
	Make geometric constructions.	
G.CO.12	Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). *Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.*	Geometry: Proof, Reasoning, and Constructions
G.CO.13	Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.	
G.SRT	Similarity, Right Triangles, and Trigonometry	
	Understand similarity in terms of similarity transformations.	
G.SRT.1	Verify experimentally the properties of dilations given by a center and a scale factor: a. A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged. b. The dilation of a line segment is longer or shorter in the ratio given by the scale factor.	Geometry: Transformations Similarity

	Illinois Learning Standards in Mathematics, High School	PreACT 9 Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
G.SRT.2	Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.	Geometry: Transformations Similarity
G.SRT.3	Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.	Geometry: Transformations Similarity
	Prove theorems involving similarity.	
G.SRT.4	Prove theorems about triangles. *Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.*	
G.SRT.5	Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.	
	Define trigonometric ratios and solve problems involving right triangles.	
G.SRT.6	Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.	
G.SRT.7	Explain and use the relationship between the sine and cosine of complementary angles.	
G.SRT.8	Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.*	
	Apply trigonometry to general triangles.	
G.SRT.9	(+) Derive the formula $A = 1/2\ ab\ \sin(C)$ for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.	
G.SRT.10	(+) Prove the Laws of Sines and Cosines and use them to solve problems.	
G.SRT.11	(+) Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).	
G.C	Circles	
	Understand and apply theorems about circles.	
G.C.1	Prove that all circles are similar.	

	Illinois Learning Standards in Mathematics, High School	PreACT 9 Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
G.C.2	Identify and describe relationships among inscribed angles, radii, and chords. *Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.*	
G.C.3	Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.	
G.C.4	(+) Construct a tangent line from a point outside a given circle to the circle.	
	Find arc lengths and areas of sectors of circles.	
G.C.5	Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.	
G.GPE	**Expressing Geometric Properties with Equations**	
	Translate between the geometric description and the equation for a conic section.	
G.GPE.1	Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.	
G.GPE.2	Derive the equation of a parabola given a focus and directrix.	
G.GPE.3	(+) Derive the equations of ellipses and hyperbolas given the foci, using the fact that the sum or difference of distances from the foci is constant.	
	Use coordinates to prove simple geometric theorems algebraically.	
G.GPE.4	Use coordinates to prove simple geometric theorems algebraically. *For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point (1, √3) lies on the circle centered at the origin and containing the point (0, 2).*	Geometry: Coordinate Geometry
G.GPE.5	Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).	Geometry: Coordinate Geometry
G.GPE.6	Find the point on a directed line segment between two given points that partitions the segment in a given ratio.	

	Illinois Learning Standards in Mathematics, High School	PreACT 9 Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
G.GPE.7	Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.*	Geometry: Coordinate Geometry
G.GMD	Geometric Measurement and Dimension	
	Explain volume formulas and use them to solve problems.	
G.GMD.1	Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. *Use dissection arguments, Cavalieri's principle, and informal limit arguments.*	Geometry: Proof, Reasoning, and Constructions Geometric Measurement and Modeling
G.GMD.2	(+) Give an informal argument using Cavalieri's principle for the formulas for the volume of a sphere and other solid figures.	
G.GMD.3	Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.*	Geometry: Geometric Measurement and Modeling
	Visualize relationships between two-dimensional and three-dimensional objects.	
G.GMD.4	Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.	Geometry: Geometric Measurement and Modeling Integrating Essential Skills: Properties of Lines, Angles, and Shapes
G.MG	Modeling with Geometry	
	Apply geometric concepts in modeling situations.	
G.MG.1	Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).*	Geometry: Geometric Measurement and Modeling Integrating Essential Skills: Properties of Lines, Angles, and Shapes
G.MG.2	Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).*	Geometry: Geometric Measurement and Modeling Integrating Essential Skills: Properties of Lines, Angles, and Shapes
G.MG.3	Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).*	Geometry: Geometric Measurement and Modeling Integrating Essential Skills: Properties of Lines, Angles, and Shapes

	Illinois Learning Standards in Mathematics, High School	PreACT 9 Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
	Statistics and Probability	
S.ID	Interpreting Categorical and Quantitative Data	
	Summarize, represent, and interpret data on a single count or measurement variable.	
S.ID.1	Represent data with plots on the real number line (dot plots, histograms, and box plots).	Statistics & Probability: Univariate Data Analysis Integrating Essential Skills: Data Summaries and Displays
S.ID.2	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.	Statistics & Probability: Univariate Data Analysis Integrating Essential Skills: Data Summaries and Displays
S.ID.3	Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).	Statistics & Probability: Univariate Data Analysis Integrating Essential Skills: Data Summaries and Displays
S.ID.4	Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.	
S.ID.5	Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.	Statistics & Probability: Bivariate Data Analysis Scatterplots
S.ID.6	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. a. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. *Use given functions or choose a function suggested by the context. Emphasize linear and exponential models.* b. Informally assess the fit of a function by plotting and analyzing residuals. c. Fit a linear function for a scatter plot that suggests a linear association.	Statistics & Probability: Bivariate Data Analysis Scatterplots
	Interpret linear models.	
S.ID.7	Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.	Statistics & Probability: Bivariate Data Analysis

	Illinois Learning Standards in Mathematics, High School	PreACT 9 Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
S.ID.8	Compute (using technology) and interpret the correlation coefficient of a linear fit.	
S.ID.9	Distinguish between correlation and causation.	
S.IC	**Making Inferences and Justifying Conclusions**	
	Understand and evaluate random processes underlying statistical experiments.	
S.IC.1	Understand statistics as a process for making inferences about population parameters based on a random sample from that population.	Integrating Essential Skills: Informal Inferential Statistics
S.IC.2	Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation. *For example, a model says a spinning coin falls heads up with probability 0.5. Would a result of 5 tails in a row cause you to question the model?*	Integrating Essential Skills: Informal Inferential Statistics
	Make inferences and justify conclusions from sample surveys, experiments, and observational studies.	
S.IC.3	Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.	
S.IC.4	Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.	
S.IC.5	Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant.	
S.IC.6	Evaluate reports based on data.	
S.CP	**Conditional Probability and the Rules of Probability**	
	Understand independence and conditional probability and use them to interpret data.	
S.CP.1	Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or," "and," "not").	Statistics & Probability: Counting and Probability
S.CP.2	Understand that two events *A* and *B* are independent if the probability of *A* and *B* occurring together is the product of their probabilities, and use this characterization to determine if they are independent.	

	Illinois Learning Standards in Mathematics, High School	PreACT 9 Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
S.CP.3	Understand the conditional probability of *A* given *B* as *P*(*A* and *B*)/*P*(*B*), and interpret independence of *A* and *B* as saying that the conditional probability of *A* given *B* is the same as the probability of *A*, and the conditional probability of *B* given *A* is the same as the probability of *B*.	
S.CP.4	Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities. *For example, collect data from a random sample of students in your school on their favorite subject among math, science, and English. Estimate the probability that a randomly selected student from your school will favor science given that the student is in tenth grade. Do the same for other subjects and compare the results.*	
S.CP.5	Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. *For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer.*	
	Use the rules of probability to compute probabilities of compound events in a uniform probability model.	
S.CP.6	Find the conditional probability of *A* given *B* as the fraction of *B*'s outcomes that also belong to *A,* and interpret the answer in terms of the model.	
S.CP.7	Apply the Addition Rule, *P*(*A* or *B*) = *P*(*A*) + *P*(*B*) – *P*(*A* and *B*), and interpret the answer in terms of the model.	
S.CP.8	(+) Apply the general Multiplication Rule in a uniform probability model, *P*(*A* and *B*) = *P*(*A*)*P*(*B*|*A*) = *P*(*B*)*P*(*A*|*B*), and interpret the answer in terms of the model.	
S.CP.9	(+) Use permutations and combinations to compute probabilities of compound events and solve problems.	
S.MD	Using Probability to Make Decisions	
	Calculate expected values and use them to solve problems.	
S.MD.1	(+) Define a random variable for a quantity of interest by assigning a numerical value to each event in a sample space; graph the corresponding probability distribution using the same graphical displays as for data distributions.	

	Illinois Learning Standards in Mathematics, High School	PreACT 9 Secure Mathematics Reporting Categories and Skill Areas
Standard Number	**Standard**	
S.MD.2	(+) Calculate the expected value of a random variable; interpret it as the mean of the probability distribution.	
S.MD.3	(+) Develop a probability distribution for a random variable defined for a sample space in which theoretical probabilities can be calculated; find the expected value. For example, find the theoretical probability distribution for the number of correct answers obtained by guessing on all five questions of a multiple-choice test where each question has four choices, and find the expected grade under various grading schemes.	
S.MD.4	(+) Develop a probability distribution for a random variable defined for a sample space in which probabilities are assigned empirically; find the expected value. For example, find a current data distribution on the number of TV sets per household in the United States, and calculate the expected number of sets per household. How many TV sets would you expect to find in 100 randomly selected households?	
	Use probability to evaluate outcomes of decisions.	
S.MD.5	(+) Weigh the possible outcomes of a decision by assigning probabilities to payoff values and finding expected values. a. Find the expected payoff for a game of chance. For example, find the expected winnings from a state lottery ticket or a game at a fast food restaurant. b. Evaluate and compare strategies on the basis of expected values. For example, compare a high-deductible versus a low-deductible automobile insurance policy using various, but reasonable, chances of having a minor or a major accident.	
S.MD.6	(+) Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).	
S.MD.7	(+) Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).	

Table 8. Illinois Learning Standards: Science, High School – Aligned to PreACT 9 Secure

	Illinois Learning Standards in Science, High School	The PreACT 9 Secure Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
	Physical Science	
	Structure and Properties of Matter	
HS-PS1-1	Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms.	Interpretation of Data: Locating and Understanding Inferring and Translating Extending and Reevaluating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-PS1-3	Plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles.	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-PS1-8	Develop models to illustrate the changes in the composition of the nucleus of the atom and the energy released during the processes of fission, fusion, and radioactive decay.	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-PS2-6	Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials.	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
	Chemical Reactions	
HS-PS1-2	Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The PreACT 9 Secure Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
HS-PS1-4	Develop a model to illustrate that the release or absorption of energy from a chemical reaction system depends upon the changes in total bond energy	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-PS1-5	Apply scientific principles and evidence to provide an explanation about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-PS1-6	Refine the design of a chemical system by specifying a change in conditions that would produce increased amounts of products at equilibrium	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-PS1-7	Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
	Forces and Interactions	
HS-PS2-1	Analyze data to support the claim that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-PS2-2	Use mathematical representations to support the claim that the total momentum of a system of objects is conserved when there is no net force on the system	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The PreACT 9 Secure Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
HS-PS2-3	Apply scientific and engineering ideas to design, evaluate, and refine a device that minimizes the force on a macroscopic object during a collision	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-PS2-4	Use mathematical representations of Newton's Law of Gravitation and Coulomb's Law to describe and predict the gravitational and electrostatic forces between objects	Interpretation of Data: Locating and Understanding Inferring and Translating Extending and Reevaluating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-PS2-5	Plan and conduct an investigation to provide evidence that an electric current can produce a magnetic field and that a changing magnetic field can produce an electric current	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
	Energy	
HS-PS3-1	Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-PS3-2	Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative position of particles (objects)	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The PreACT 9 Secure Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
HS-PS3-3	Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-PS3-4	Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperature are combined within a closed system results in a more uniform energy distribution among the components in the system (second law of thermodynamics)	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-PS3-5	Develop and use a model of two objects interacting through electric or magnetic fields to illustrate the forces between objects and the changes in energy of the objects due to the interaction	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
	Waves and Electromagnetic Radiation	
HS-PS4-1	Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-PS4-2	Evaluate questions about the advantages of using a digital transmission and storage of information	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Designing and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The PreACT 9 Secure Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
HS-PS4-3	Evaluate the claims, evidence, and reasoning behind the idea that electromagnetic radiation can be described either by a wave model or a particle model, and that for some situations one model is more useful than the other	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-PS4-4	Evaluate the validity and reliability of claims in published materials of the effects that different frequencies of electromagnetic radiation have when absorbed by matter	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-PS4-5	Communicate technical information about how some technological devices use the principles of wave behavior and wave interactions with matter to transmit and capture information and energy	Interpretation of Data: Locating and Understanding; Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
	Life Science	
	Structure and Function	
HS-LS1-1	Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells	Interpretation of Data: Locating and Understanding; Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results Evaluating and Extending
HS-LS1-2	Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-LS1-3	Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The PreACT 9 Secure Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
	Matter and Energy in Organisms and Ecosystems	
HS-LS1-5	Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-LS1-6	Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-LS1-7	Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-LS2-3	Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-LS2-4	Use mathematical representations to support claims for the cycling of matter and flow of energy among organisms in an ecosystem	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-LS2-5	Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The PreACT 9 Secure Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
	Interdependent Relationships in Ecosystems	
HS-LS2-1	Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-LS2-2	Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-LS2-6	Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-LS2-7	Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-LS2-8	Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing

	Illinois Learning Standards in Science, High School	The PreACT 9 Secure Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
HS-LS4-6	Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
	Inheritance and Variation of Traits	
HS-LS1-4	Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-LS3-1	Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Designing and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-LS3-2	Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The PreACT 9 Secure Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
HS-LS3-3	Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
	Natural Selection and Evolution	
HS-LS4-1	Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-LS4-2	Construct an explanation based on evidence that the process of evolution primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-LS4-3	Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-LS4-4	Construct an explanation based on evidence for how natural selection leads to adaptation of populations	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The PreACT 9 Secure Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
HS-LS4-5	Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
	Earth and Space Science	
	Space Systems	
HS-ESS1-1	Develop a model based on evidence to illustrate the life span of the sun and the role of nuclear fusion in the sun's core to release energy that eventually reaches Earth in the form of radiation	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-ESS1-2	Construct an explanation of the Big Bang theory based on astronomical evidence of light spectra, motion of distant galaxies, and composition of matter in the universe	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-ESS1-3	Communicate scientific ideas about the way stars, over their life cycle, produce elements	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-ESS1-4	Use mathematical or computational representations to predict the motion of orbiting objects in the solar system	Interpretation of Data: Locating and Understanding Inferring and Translating Extending and Reevaluating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The PreACT 9 Secure Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
	History of Earth	
HS-ESS1-5	Evaluate evidence of the past and current movements of continental and oceanic crust and the theory of plate tectonics to explain the ages of crustal rocks	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-ESS1-6	Apply scientific reasoning and evidence from ancient Earth materials, meteorites, and other planetary surfaces to construct an account of Earth's formation and early history	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-ESS2-1	Develop a model to illustrate how Earth's internal and surface processes operate at different spatial and temporal scales to form continental and ocean-floor features	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
	Earth's Systems	
HS-ESS2-2	Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-ESS2-3	Develop a model based on evidence of Earth's interior to describe the cycling of matter by thermal convection	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-ESS2-5	Plan and conduct an investigation of the properties of water and its effects on Earth materials and surface processes	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing

	Illinois Learning Standards in Science, High School	The PreACT 9 Secure Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
HS-ESS2-6	Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-ESS2-7	Construct an argument based on evidence about the simultaneous coevolution of Earth's systems and life on Earth	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
	Weather and Climate	
HS-ESS2-4	Use a model to describe how variations in the flow of energy into and out of Earth's systems result in changes in climate	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
HS-ESS3-5	Analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth systems	Interpretation of Data: Locating and Understanding Inferring and Translating Extending and Reevaluating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending
	Human Sustainability	
HS-ESS3-1	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The PreACT 9 Secure Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
HS-ESS3-2	Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-ESS3-3	Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-ESS3-4	Evaluate or refine a technological solution that reduces impacts of human activities on natural systems	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-ESS3-6	Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity	Interpretation of Data: Locating and Understanding Inferring and Translating Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
	Engineering Design	
HS-ETS1-1	Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Designing and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending

	Illinois Learning Standards in Science, High School	The PreACT 9 Secure Science Reporting Categories and Skill Areas
Standard Number	**Standard**	
HS-ETS1-2	Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-ETS1-3	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts	Interpretation of Data: Locating and Understanding Inferring and Translating Scientific Investigation: Locating and Comparing Designing and Implementing Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending
HS-ETS1-4	Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem	Interpretation of Data: Locating and Understanding Inferring and Translating Extending and Reevaluating Scientific Investigation: Locating and Comparing Designing and Implementing Extending and Implementing Evaluation of Models, Inferences, and Experimental Results: Inferences and Results – Evaluating and Extending Models – Understanding and Comparing Models – Evaluating and Extending

VII. Educator Tips

This section is designed to help you use the following elements of this guide:

- The ACT, PreACT Secure, and PreACT 9 Secure Content and Reporting Category Descriptions
- CROSSWALK tables showing Illinois Learning Standards aligned to the ACT, PreACT Secure, and PreACT 9 Secure

Tips are provided for three groups of educators:

- District leaders
- School leaders
- Classroom teachers

Some tips are repeated, as they apply to more than one group or element. Tips fall into the following categories:

- Best practices
- Consistency of emphases
- Content coverage
- Curriculum and assessment design support
- Data for improvement
- Professional development planning
- Response opportunity
- Sharing with students and families
- Skills language
- Test frequency and design model

FOR DISTRICT LEADERS

PreACT 9 Secure, PreACT Secure, and the ACT Content Descriptions

- *Curriculum and assessment design support* – The information on the structure of the ACT assessment, plus the test blueprints, can be used to plan district supports for curriculum and assessment designs. Note that the ACT assessments are based on empirical research indicating the knowledge and skills needed for college and career readiness. For that reason, make sure the curriculum includes sufficient opportunity for students to learn what is measured on the ACT assessments.
- *Content coverage* – Look closely at the test blueprints to gauge the emphases of knowledge and skills. Use the emphases to help decide expectations for mastery levels of each content area

measured. Consult the ACT College and Career Readiness Standards (CCRS) to understand how student performance with the different knowledge areas and skills assessed varies across the ACT score range.
- *Consistency of emphases* – Review district high school course syllabi to check consistency in emphases of ACT reporting categories content. For inconsistencies, consider how the ACT test blueprints might inform and help standardize content emphases.
- *Test frequency and design model* – Consider using the test blueprints to determine frequency and design of local assessments. For example, for end-of-course assessments in high school English courses, you might use reporting categories and emphases similar to those in the relevant ACT assessments.
- *Response opportunity* – Be sure to provide school leaders and classroom educators with an opportunity to read, review, and discuss the ACT content descriptions in this guide.

PreACT 9 Secure, PreACT Secure, and the ACT Reporting Category Descriptions

- *Curriculum and assessment design support* – Like the test content descriptions, the reporting category descriptions can be used to plan district supports for curriculum and assessment designs. Per the test content description tip, make sure the curriculum includes sufficient opportunity for students to learn what is measured on each ACT assessment.
- *Skills language* – Consider using the reporting category tables to spark dialogue about skills language. Talk with school leaders, instructional coaches, and teachers about how educators describe their college and career preparation instruction. Suggest organizing a professional development activity on skills understanding and skills language consistency.
- *Skills language* – Look closely at the informal educator observation and coaching tools used in your district. Think about how the language used in the ACT content descriptions can help yield greater specificity in next-steps coaching (for example, using ACT language to observe students working effectively to "manipulate and analyze scientific data presented in tables, graphs, and diagrams" rather than a broad focus on "improving student interpretations of data").
- *Response opportunity* – Be sure to provide school leaders and classroom educators with an opportunity to read, review, and discuss the ACT reporting category descriptions in this guide.

CROSSWALK: Illinois Learning Standards to PreACT 9 Secure, PreACT Secure, and the ACT

- *Content coverage* – Does your district provide sufficient depth and breadth of content to meet both your state standards and ACT assessment reporting categories? Consider reviewing curriculum, assessments, and instructional materials across the district to check that. The crosswalk alignment tables may help leaders identify strengths, redundancies, and gaps in programming by noting emphasis, duplication, and missing skills in the intersections of state standards and the ACT content.
- *Skills language* – You may wish to provide school leaders and classroom educators with an opportunity to review the academic language represented in both your state standards and the ACT assessment reporting categories. Suggest developing a glossary to ensure consistency in interpretation of core skills instruction.
- *Response opportunity* – Be sure to provide school leaders and classroom educators with an opportunity to read, review, and discuss the ACT assessment content descriptions in this guide.

FOR SCHOOL LEADERS

PreACT 9 Secure, PreACT Secure, and the ACT Content Descriptions

- *Consistency of emphases* – Review district high school course syllabi to check consistency in emphases of ACT reporting categories content. For inconsistencies, consider how the blueprints of the ACT assessments might inform and help standardize content emphases.
- *Frequency and design model* – Consider coaching classroom teachers on using the test blueprints to determine frequency and design of local assessments. For example, for end-of-course assessments in high school English courses, you might use reporting categories and emphases similar to those in the relevant ACT assessments.
- *Sharing with students and families* – Consider excerpting sections of the test content descriptions information to share with students who are preparing to take each ACT assessment, as well as with the families of those students.

PreACT 9 Secure, PreACT Secure, and the ACT Reporting Category Descriptions

- *Skills language* – As you observe classroom teaching, examine how educators define knowledge and skills. Consider coaching on how to build a consistent academic vocabulary across

classrooms. This supports consistency in expectations and student understanding of core content. You may wish to provide classroom educators with an opportunity to review the academic language in both your state standards and the ACT assessment reporting categories. Suggest developing a glossary to ensure consistency in interpretation of core skills instruction.

- *Best practices* – Provide time for educators to review the reporting category descriptions relevant to the content they teach. Then start a dialogue on the "best" instructional practices they use to support learning for each relevant reporting category. Encourage them to share these practices via a research-based "best practices playbook."

CROSSWALK: Illinois Learning Standards to PreACT 9 Secure, PreACT Secure, and the ACT

- *Content coverage* – Does your district provide sufficient depth and breadth of content to meet both your state standards and the ACT assessment reporting categories? Consider reviewing curriculum, assessments, and instructional materials across the district to check that. The crosswalk alignment tables may help leaders identify strengths, redundancies, and gaps in programming.
- *Skills language* – As you observe classroom teaching, examine how educators define knowledge and skills. Consider coaching on how to build a consistent academic vocabulary across classrooms. This supports consistency in expectations and student understanding of core content. You may wish to provide classroom educators with an opportunity to review the academic language in both your state standards and the ACT assessment reporting categories.
- *Professional development planning* – While planning professional development and next steps in coaching, examine the crosswalk tables. Consider strengthening educator knowledge of research-based strategies to teach skills represented by both your state standards and the ACT assessment reporting categories. This is especially important for needs based on student performance data.

FOR CLASSROOM TEACHERS

PreACT 9 Secure, PreACT Secure, and the ACT Content Descriptions

- *Test prep for students* – Review your course syllabi to determine if there are ways to build student understanding of the ACT assessment reporting categories relevant to each course. Look for ways to show students who plan to take the ACT assessments how the course content will prepare them for success on that assessment, as well as in meeting your state standards.
- *Content coverage* – Consider the emphases of content in the courses you teach: How do they compare to the emphases of content in relevant ACT subject test blueprints? Do you have sufficient time devoted to core skills? Time-on-task for core skills in the course and curriculum may be informed by the blueprints. Look specifically at the number of items and percentage of time for each relevant reporting category. For example, nearly one-third of the ACT mathematics test measures student performance in modeling, a higher-order skill that requires integration of content across multiple domains. This may prompt you to see if there is sufficient time devoted to instruction on modeling.
- *Sharing with students and families* – Consider excerpting sections of the test content descriptions information to share with students who are preparing to take each ACT assessment, as well as with the families of those students.

PreACT 9 Secure, PreACT Secure, and the ACT Reporting Category Descriptions

- *Content coverage* – Review your course syllabi to determine if all relevant skills assessed on the ACT assessments are represented in the plan for instruction. Also consider the emphases of course content in relation to the emphases of content in the related test blueprints. Depth and breadth of content coverage as well as time-on-task for core skills in the course syllabi and curriculum may be informed by the reporting categories descriptions.
- *Data for improvement* – Review the skills you measure in relation to each reporting category. Where you have data for your students (as individuals or as groups), think about strengths and opportunities for improvement represented by each reporting category. Which knowledge areas and skills are likely most in need of intervention and/or extension?
- *Skills language* – You can introduce skills language as you teach, so all students can grow their academic vocabulary in relation to your content. For consistency, consider working with other teachers at your school who teach the same content as you to develop a glossary of academic language. Use the language in

reporting categories, along with the language in your curriculum and state standards to create this glossary.

CROSSWALK: Illinois Learning Standards to PreACT 9 Secure, PreACT Secure, and the ACT

- *Content coverage* – Review your course syllabi to determine if all the relevant state standards and ACT assessment reporting categories are represented in the plan for instruction. Also consider the emphases of content in relation to the emphases of content in the related test blueprints.
- *Data for improvement* – Review the skills where there is overlap in your state standards and the ACT assessment reporting categories. Note where you have data on student performances linked to these skills and where you do not. Shape formative assessment to gather missing data. This will help you plan effectively to meet student needs linked to these critical content knowledge and skills.
- *Professional development planning* – As you review the intersections of concepts between your state standards and ACT assessment reporting categories, reflect on professional learning goals. Consider setting goals to strengthen knowledge of research-based strategies to teach these intersection skills.