

Career Preparation and Development Performance Descriptors

- **English Language Arts (Intermediate-Advanced)**
- **Mathematics (Intermediate-Advanced)**
- **Social Sciences (Intermediate-Advanced)**

ENGLISH LANGUAGE ARTS

GOAL 1: Read with understanding and fluency.

Standard A. Apply word analysis and vocabulary skills to comprehend selections.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Use word origins and derivations to understand meanings of new words. • Apply knowledge of structural analysis to construct meaning of difficult or unfamiliar words. • Infer the appropriate meaning of a word in context when the word has multiple meanings. • Interpret idioms, similes, analogies and metaphors to express implied meanings. • Identify the effect of literary devices (e.g., allusion, diction, figurative language, imagery) in text. • Interpret the effect of authors' decisions regarding word choice, content and literary elements upon the text. • Recognize specialized vocabulary/terminology. 	<ul style="list-style-type: none"> • Expand knowledge of word origins and derivations. • Use idioms, analogies, metaphors and similes to extend vocabulary development. • Apply knowledge of roots and affixes to comprehend the meaning of unfamiliar or difficult words, terms or phrases. • Identify and analyze the meanings of specialized vocabulary/terminology. • Analyze the structure and function of words in context. • Analyze and interpret word usage in traditional and contemporary sources (e.g., books, lyrics, speeches). • Interpret American idioms to strengthen comprehension. • Identify analogy in text and use analogy to explain a relationship. 	<ul style="list-style-type: none"> • Analyze and interpret specialized vocabulary/terminology. • Apply knowledge of word origins and derivations in a variety of practical settings. • Determine the relationship(s) between pairs of words in analogous statements. • Extend ideas and enrich vocabulary through independent exploration of words. • Select/use strategies to analyze the meaning of abstract concepts to facilitate comprehension.
Grade 9-10 (H-I-J)	Grade 11-12 (I-J)	

ENGLISH LANGUAGE ARTS

GOAL 1: Read with understanding and fluency.

Standard B. Apply reading strategies to improve understanding and fluency.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Preview reading materials using pre-reading strategies (e.g., skimming, scanning, predicting, SQ3R). • Relate literature selections and informational text to self, world and other texts. • Identify text structure and create a mental/visual representation (e.g., graphic organizer, outline, drawing) to use while reading. • Apply self-monitoring and self-correcting strategies continuously to clarify understanding (e.g., in addition to previous skills, draw comparisons to other readings). • Demonstrate an accurate understanding of important information in the text by focusing on the key ideas presented explicitly or implicitly. • Build, evaluate and extend text interpretations through collaboration with others. • Identify how different content areas require different organizational structures (e.g., lists/sequence, comparison, cause/effect, problem/solution, classification). • Read aloud fluently (with accuracy and appropriate speed). • Select and read books for recreation. 	<ul style="list-style-type: none"> • Use previewing and predicting before reading, and questioning during reading. • Relate reading with information from other sources (e.g., prior knowledge, personal experience, other reading) using a variety of strategies. • Analyze a variety of texts for purpose, structure, content, detail and effect. • Interpret and compare a variety of texts for purpose, structure, content, detail and effect. • Analyze overall themes and discover coherence. • Clarify meaning of text by focusing on the key ideas presented explicitly or implicitly. • Identify how different content areas require different organizational structures (e.g., science text, literary text). • Demonstrate fluency by reading aloud a variety of materials (e.g., dialogue, dramatizations). • Select and read books for recreation. 	<ul style="list-style-type: none"> • Relate reading to self, world and other texts and experiences and make connections to related information. • Use both implicit and explicit information to form an interpretation of text. • Define the characteristics and structures of a variety of complex literary genres and analyze how genre affects the meaning and function of the texts. • Compare the author's strategies and organizational patterns in a variety of compositions. • Analyze and compare a variety of texts for purpose, structure, content, detail and effect. • Demonstrate fluency with age-appropriate materials. • Select and read books for recreation.
Grade 9-10 (H-I-J)		Grade 11-12 (I-J)

ENGLISH LANGUAGE ARTS

GOAL 1: Read with understanding and fluency.

Standard C. Comprehend a broad range of reading materials.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Use information from text to form, explain and support questions and predictions. • Generate and respond to questions that reflect higher level thinking skills (e.g., analysis, synthesis, evaluation). • Ask open-ended questions to improve critical thinking skills. • Summarize and make generalizations from content and relate them to the purpose of the material. • Explain how the story elements, point of view and theme contribute to reader understanding of the text. • Select reading strategies for text appropriate to the reader's purpose. • Interpret concepts or make connections through analysis, evaluation, inference and/or comparison. • Compare story elements. • Analyze and evaluate author's word choice. • Connect, relate, interpret and integrate information from various sources and genres (e.g., content area textbooks, novels, newspapers, magazines, poetry, drama, reference materials). • Synthesize key points and supporting details to form conclusions. • Recognize how illustrations reflect, interpret and enhance the text. • Draw conclusions based on information found in visual information and data. • Explain how visual information and data support written text. • Apply appropriate reading strategies to fiction and non-fiction texts within and across content areas. 	<ul style="list-style-type: none"> • Ask questions before, during and after reading which demonstrate that understanding of the reading has progressed. • Use topic, theme, organizational patterns, context and point of view to guide interpretation. • Interpret concepts or make connections through analysis, evaluation, inference and/or comparisons. • Analyze how authors and illustrators use text and art to express and emphasize their ideas (e.g., imagery, multiple points of view). • Identify and use criteria for evaluating the accuracy of text information. • Summarize and make generalizations from content and relate them to the purpose of the material. • Recognize kinds of writing (e.g., expository, persuasive, narrative). • Explain and justify an interpretation of the text using relevant, accurate references. • Challenge ideas presented in a text through questions about specific parts of the text. • Interpret tables, graphs, diagrams and maps in conjunction with related text by drawing conclusions to support text. 	<ul style="list-style-type: none"> • Use preview questions and predictions to guide reading across complex materials and confirm or deny predictions. • Use topic, theme, organizational pattern, context and point of view to guide interpretation. • Analyze and defend an interpretation of text by integrating interpretation with text-based support. • Evaluate how authors and illustrators use text and art to express their ideas. • Critically evaluate information from multiple sources. • Summarize and make generalizations from content and relate them to the purpose of the material. • Analyze the techniques and effects of writing strategies. • Synthesize key points and supporting detail to form conclusions. • Analyze tables, graphs, diagrams and/or maps for accuracy and relevancy for text support. • Construct tables, graphs and/or maps that are accurate and support written text. • Recognize types of writing (e.g., expository, persuasive, narrative).
Grade 9-10 (H-I-J)	Grade 11-12 (I-J)	

ENGLISH LANGUAGE ARTS

GOAL 2: Read and understand literature representative of various societies, eras and ideas.

Standard A. Understand how literary elements and techniques are used to convey meaning.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Read extensively. • Determine which literacy elements/techniques are dominant and subordinate in text. • Explain how an author uses specific techniques to achieve intended effect. • Explain how specific elements and techniques (e.g., dialect, setting, vocabulary) enhance characterization. • State how changes in technique might affect aspects of the story. • Analyze nonfiction (e.g., 5 w's). • Identify details that reveal the genre (e.g., short stories, novels, dramas, poetry, biographies). • Use textual structure, word choice and style to identify detail that reveals the author's viewpoint. • Evaluate how a text reflects a culture, society or historical period. 	<ul style="list-style-type: none"> • Explain how the author uses literary techniques to achieve the intended effect. • Support assertions with evidence from the text. • Explain how the author uses literary elements (e.g., point of view, character) to achieve an intended effect. • Identify details that reveal the author's style. • Evaluate the impact of the author's word choice, language structure and syntax. • Identify the details that reveal the genre (e.g., short stories, novels, dramas, fables, biographies). • Demonstrate an understanding of the interrelationships among reader, author, form and text. • Evaluate how a text reflects a culture, society or historical period. 	<ul style="list-style-type: none"> • Evaluate how the author uses literary elements and techniques to achieve the intended effect. • Support assertions with evidence from the text. • Critique the author's style or form. • Evaluate an understanding of the interrelationships among reader, author, form and text. • Evaluate how a text reflects a culture, society or historical period.
Grade 9-10 (H-I-J)	Grade 11-12 (I-J)	

ENGLISH LANGUAGE ARTS

GOAL 2: Read and understand literature representative of various societies, eras and ideas.

Standard B. Read and interpret a variety of literary works.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Respond to text. • Make connections from text to text, text to self and text to world. • Paraphrase, summarize, synthesize and evaluate information from a variety of texts and genres. • Make connections between text and its culture. • Use literary themes to connect recurring problems over time and across cultures. • Investigate how attitudes toward a situation or problem change in different periods of history or in different cultures. • Engage in literary discussions (e.g., conflict, resolutions, relevance, background, effectiveness, realism). 	<ul style="list-style-type: none"> • Identify ideas and impressions communicated through a variety of literary works. • Respond to text by evaluating key ideas. • Support an evaluation of the text using content from the media. • Make connections between a text and its cultural environment. • Evaluate how attitudes toward a situation or problem (e.g., attitudes concerning environment, immigrants, poverty, parent-child relationships) change in different periods of history or indifferent cultures. • Evaluate a character's behavior. • Engage in literary discussions (e.g., conflict, resolutions, relevance, background, effectiveness, realism). 	<ul style="list-style-type: none"> • Analyze and compare ideas and impressions communicated through a variety of literary works. • Evaluate an interpretation by linking the interpretation to specific aspects of the text. • Demonstrate how a text reflects its time, place and circumstances. • Construct connections to relevant aspects of contemporary and historical human experience. • Evaluate the treatment of issues in works from varying historical periods and cultural perspectives. • Engage in literary discussions (e.g., conflict, resolutions, relevance, background, effectiveness, realism).
Grade 9-10 (H-I-J)	Grade 11-12 (I-J)	

ENGLISH LANGUAGE ARTS

GOAL 3: Write to communicate for a variety of purposes.

Standard A. Use correct grammar, spelling, punctuation, capitalization and structure.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Develop compositions that contain complete sentences and effective paragraphs. • Use effective transition words and phrases within and between paragraphs. • Use appropriate sentence structure (i.e., simple, compound, complex, compound/complex) and sentence types (i.e., interrogative, imperative, declarative, exclamatory). • Proofread for correct English conventions. 	<ul style="list-style-type: none"> • Compose and edit using Standard English (e.g., clarity, subject/verb agreement, adverb/adjective agreement, verb tense, audience, purpose for writing). • Format documents in final form for submission and/or publication. • Proofread for correct English conventions. 	<ul style="list-style-type: none"> • Edit/revise draft documents to more effectively communicate the intended message. • Produce grammatically correct document using standard manuscript specification for a variety of purposes and audiences. • Use appropriate style manuals and guides (e.g., MLA, APA). • Format documents in final form for submission and/or publication. • Proofread for correct English conventions.
Grade 9-10 (H-I-J)		Grade 11-12 (I-J)

ENGLISH LANGUAGE ARTS

GOAL 3: Write to communicate for a variety of purposes.

Standard B. Compose well-organized and coherent writing for specific purposes and audiences.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Select and apply appropriate pre-writing strategies (e.g., webbing, brainstorming, listing, note taking, outlining, research). • Compose a clear thesis/claim that contains the main idea in an essay. • Choose the appropriate form for the purpose of writing (e.g., letters, essays, poems, reports, narratives), voice and style appropriate to the audience, and purpose. • Use an effective, coherent organizational pattern (e.g., sequence, cause/effect, comparison, classification). • Write using organization (e.g., introduction, body, conclusion) and elaboration (first and second level support) that demonstrate coherence. • Use figurative language. • Use appropriate transitional words, phrases and devices to connect and unify key ideas and claims. • Edit and revise to maintain a consistent voice, tone and focus throughout a piece of writing. • Select effective formats for publication of final product. • Use available technology. 	<ul style="list-style-type: none"> • Use writing process of prewriting, drafting, revision, editing and publication to produce work. • Compose a clear thesis/claim that contains the main idea in an essay. • Defend word and/or technique choice appropriate for specific audiences. • Alter a document to address a different audience and/or purpose. • Use a variety of genres (e.g., essay, poetry, short story). • Evaluate and use figurative language. • Identify and use analogy in writing. • Use a variety of revision strategies to improve clarity of work. 	<ul style="list-style-type: none"> • Organize around a structure appropriate to purpose, audience and context. • Compose a clear thesis/claim that contains the main idea in an essay. • Communicate the intended message. • Elaborate ideas. • Employ appropriate editing and revision strategies. • Evaluate and demonstrate the use of figurative language. • Critique word and/or technique choices. • Publish writing using an appropriate format.
Grade 9-10 (H-I-J)		Grade 11-12 (I-J)

ENGLISH LANGUAGE ARTS

GOAL 3: Write to communicate for a variety of purposes.

Standard C. Communicate ideas in writing to accomplish a variety of purposes.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Use appropriate language, details and format for a specified audience. • Write creatively for a specified purpose and audience (e.g., short story, poetry, radio scripts, play, TV commercial). • Write a narrative account that establishes a context, creates a point of view and develops a focused, powerful impression. • Compose a multi-paragraph piece of expository writing. • Compose a multi-paragraph persuasive piece which presents one position of an issue that offers sufficient support through multiple strategies (e.g., cause/effect, compare/contrast). • Use available technology (e.g., web pages, presentations, speeches) to design, produce, revise and present compositions and multi-media works. 	<ul style="list-style-type: none"> • Compose informational writing (e.g., narrative, expository, persuasive, argumentative) that supports a topic or thesis statement with well-articulated evidence. • Compose an argumentative paper that objectively evaluates two or more positions on an issue and selects the best position, based on the evidence presented. • Complete a sample application accurately using standard grammatical conventions. • Adjust voice, tone, vocabulary and grammatical conventions according to both purpose and audience. • Demonstrate the proper format/conventions for business letters. • Convert a formal letter into an informal one (or vice versa). • Develop a cover letter and resume for a particular job title. • Write creatively for a specified purpose and audience. • Use available technology to draft, design, produce, revise and present compositions and multimedia works for specified audiences. 	<ul style="list-style-type: none"> • Write on one topic for different audiences by adjusting tone, voice, vocabulary and grammar conventions. • Compose an argumentative paper that objectively evaluates two or more positions on an issue and selects the best position, based on the evidence presented. • Accomplish the assumed purpose (e.g., job application, resume, petition). • Apply appropriate format and structure that effectively address a variety of real-life situations. • Adjust voice, tone, vocabulary and grammatical conventions according to purpose and audience. • Evaluate a variety of compositions for purpose, structure, content and details.
Grade 9-10 (H-I-J)	Grade 11-12 (I-J)	

ENGLISH LANGUAGE ARTS

GOAL 4: Listen and speak effectively in a variety of situations.

Standard A. Listen effectively in formal and informal situations.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Appraise the situation and assume the appropriate listening mode. • Separate main ideas, supporting facts and details while listening. • Record appropriate notes and rough outlines with editorial comments. • Critique the relationship between a speaker's verbal communication skills (e.g., word choice, pitch, feelings, tone, voice) and nonverbal messages (e.g., eye contact, gestures, facial expressions, posture, spatial proximity). • Determine meaning from speaker's denotations and connotations. • Differentiate between the speaker's factual and emotional content. • Infer speaker's bias and purpose. • Analyze, paraphrase and summarize information, in both oral and written form, information in formal/informal presentations. • Formulate probing, idea-generation questions to clarify meaning. • Follow a multi-step set of instructions to complete a task. • Modify, control, block out both internal and external distractions. 	<ul style="list-style-type: none"> • Demonstrate understanding of material, concepts and ideas in formal/informal presentations. • Analyze, synthesize and evaluate information from recorded materials and live presentations. • Paraphrase and summarize, with appropriate editorial comments, information from formal, informal and media presentations. • Ask probing, idea-generating questions and make appropriate statements to clarify and add to meaning. • Analyze and evaluate verbal and nonverbal cues. • Critique the relationship between a speaker's verbal communication skills (e.g., word choice, pitch, feelings, tone, voice) and nonverbal messages (e.g., eye contact, gestures, facial expressions, posture, spatial proximity). • Modify, control, block out both internal and external distractions. 	<ul style="list-style-type: none"> • Demonstrate understanding of materials, concepts and ideas. • Analyze, synthesize and evaluate information. • Analyze possible alternative viewpoints related to the content of verbal presentations (e.g., debates). • Develop and ask questions related to the content and purpose of oral/media presentations. • Paraphrase and/or summarize information with appropriate editorial comment. • Critique the relationship between a speaker's verbal communication skills (e.g., word choice, pitch, feelings, tone, voice) and nonverbal messages (e.g., eye contact, gestures, facial expressions, posture, spatial proximity).
Grade 9-10 (H-I-J)	Grade 11-12 (I-J)	

ENGLISH LANGUAGE ARTS

GOAL 4: Listen and speak effectively in a variety of situations.

Standard B. Speak effectively using language appropriate to the situation and audience.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Align content, vocabulary, rate, volume and style with the characteristics of the audience and intent of the message. • Employ an engaging introduction, appropriate organization and an effective conclusion. • Use verbal and nonverbal cues to engage the audience. • Use language that is clear, audible and appropriate. • Use appropriate grammar, word choice and pacing. • Utilize available technological resources (e.g., Internet, video, overhead, pictures, maps, diagrams). • Incorporate feedback to make impromptu modifications. • Manage use of note cards, graphic organizers, various forms of outlining and/or other visual aids in oral presentations. • Discuss a problem, list possible solutions and analyze and evaluate solutions to arrive at a group consensus. • Evaluate and provide evidence to support synthesis of other people's content or feelings. • Rehearse presentations to overcome communication anxiety and apprehension. • Demonstrate composure while confronting and rebutting opposing viewpoints. 	<ul style="list-style-type: none"> • Communicate effectively the intended message. • Use effective verbal and nonverbal feedback (response) strategies to adjust message. • Use a variety of verbal and nonverbal cues (e.g., pauses, posture change, location, tone of voice). • Use language that is clear, audible and appropriate. • Use appropriate grammar, word choice and pacing. • Demonstrate effective use of visual aids and available technology. • Rehearse presentations to overcome communication anxiety and apprehension. • Demonstrate composure while confronting or rebutting opposing views. • Recognize and assume differing roles within a group. • Discuss a problem within a group setting, list and evaluate possible solutions to attempt consensus. 	<ul style="list-style-type: none"> • Communicate effectively the intended message. • Use effective non-verbal feedback (response) strategies. • Use a variety of verbal and non-verbal cues. • Speak clearly and confidently (e.g., use good volume, eye contact, body language). • Use appropriate grammar, word choice and pacing. • Demonstrate effective use of visual aids and available technology. • Analyze possible discussion roles; select, evaluate and reselect as appropriate. • Analyze information to make appropriate predictions and judgments.
Grade 9-10 (H-I-J)		Grade 11-12 (I-J)

ENGLISH LANGUAGE ARTS

GOAL 5: Use the language arts to acquire, assess and communicate information.

Standard A. Locate, organize and use information from various sources to answer questions, solve problems and communicate ideas.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Survey, with appropriate guidance, a subject and select a topic. • Identify steps that need to be taken to present an idea or solve a problem using multiple sources. • Choose a variety of sources to gain new information or solve a problem. • Identify accurate, current and credible sources to solve problems or answer questions through research. • Arrange information in an orderly manner (e.g., outlining, sequencing). • Follow appropriate style manual accurately (e.g., APA, MLA). 	<ul style="list-style-type: none"> • Survey, with minimal guidance, a subject and select a topic. • Distinguish among kinds of information needed to solve a problem, present possible solutions or extend information about a topic or problem (e.g., fact/opinion, example/evidence). • Apply criteria for determining the credibility of multiple sources of information. • Organize information for different formats (e.g., narrative report, data analysis). • Follow appropriate style manual accurately (e.g., APA, MLA). 	<ul style="list-style-type: none"> • Survey a subject and select a topic. • Distinguish among kinds of data needed to solve a problem, present possible solutions or extend information about a topic or problem (e.g., fact/opinion, example/evidence). • Evaluate a number of informational sources for relevancy and accuracy. • Develop, collect and analyze various kinds of information related to a topic. • Organize information for a presentation. • Follow appropriate style manual accurately (e.g., APA, MLA).
Grade 9-10 (H-I-J)	Grade 11-12 (I-J)	

ENGLISH LANGUAGE ARTS

GOAL 5: Use the language arts to acquire, assess and communicate information.

Standard B. Analyze and evaluate information acquired from various sources.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Analyze information from primary and secondary print and non-print sources. • Develop a bibliography/ source(s) cited from identified and evaluated information. • Cite the source(s) of all direct quotations and paraphrased/summarized information. • Recognize how to develop source(s) cited page from only the sources used in paper. 	<ul style="list-style-type: none"> • Analyze and evaluate information. • Use criteria (e.g., accuracy, currency, reliability) to evaluate primary and secondary sources (e.g., juried article, edited text, reputation of author/ publisher). • Select source(s) and identify the reasoning strategies (e.g., inductive, deductive) that support major ideas developed by the writer. • Cite the source(s) of all direct quotations and paraphrased/ summarized information. • Develop a bibliography and a source(s) cited page using an appropriate format. 	<ul style="list-style-type: none"> • Identify information most pertinent to task. • Develop simple conclusions based on inductive and/or deductive reasoning. • Defend relevant information by linking it to the problem and/or area requiring clarification. • Cite all source(s) of quoted and borrowed information. • Develop a bibliography and a works/sources cited page using an appropriate format.
Grade 9-10 (H-I-J)	Grade 11-12 (I-J)	

ENGLISH LANGUAGE ARTS

GOAL 5: Use the language arts to acquire, assess and communicate information.

Standard C. Apply acquired information, concepts and ideas to communicate in a variety of formats.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Analyze, evaluate and synthesize original work and researched information. • Use effective print and non-print documents. • Justify adaptations in format to accommodate characteristics of audiences (e.g., age, background, interest level, group size) and purposes of the presentation (e.g., inform, persuade, entertain). • Design and present a project (e.g., written report, graphics, visuals, multimedia presentations) that: <ul style="list-style-type: none"> ○ Effectively communicates the intended message; ○ Engages the audience's interest; ○ Establishes and maintains a focus; ○ Organizes around a structure appropriate to purpose, audience and context; ○ Elaborates ideas through facts, details, description, analysis and narration; ○ Cites or credits sources appropriately; and uses self, peer or teacher feedback where appropriate. 	<ul style="list-style-type: none"> • Match the method of inquiry to the question or problem. Use multiple, reliable sources to develop and support major ideas. • Revise, edit and proofread. • Design and present, as an individual or group, a written, oral, video or multimedia project that: <ul style="list-style-type: none"> ○ Effectively communicates the intended message; ○ Engages the audience's interest; ○ Establishes and maintains a focus; ○ Organizes around a structure appropriate to purpose, audience and context; ○ Elaborates ideas through facts, details, description, analysis and narration; ○ Cites or credits sources appropriately; and uses self, peer or teacher feedback where appropriate. • Critique an individual or group project (e.g., written, oral, video, multimedia). 	<ul style="list-style-type: none"> • Use multiple, reliable sources to develop and support major ideas in an oral or multimedia presentation. • Choose, evaluate and use multiple primary and secondary sources. • Organize, edit and revise information for presentation to an audience. • Design and present an individual and/or group written, oral, video or multimedia project that: <ul style="list-style-type: none"> ○ Effectively communicates the intended message; ○ Engages the audience's interest; ○ Establishes and maintains a focus; ○ Organizes around a structure appropriate to purpose, audience and context; ○ Elaborates ideas through facts, details, description, analysis and narration; ○ Cites or credits sources appropriately; and uses self, peer or teacher feedback where appropriate; ○ Shows synthesis of multiple sources with new ideas/concepts generated. • Critique an individual or group project (e.g., written, oral, video, multimedia).
Grade 9-10 (H-I-J)	Grade 11-12 (I-J)	

MATHEMATICS

GOAL 6: Demonstrate and apply a knowledge and sense of numbers, including numeration and operations (addition, subtraction, multiplication, division), patterns, ratios and proportions.

Standard A. Demonstrate knowledge and use of numbers and their many representations in a broad range of theoretical and practical settings. (*Representations*)

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Recognize and use exponential, scientific and calculator notation.** • Represent, order and compare rational numbers using a variety of methods and materials. • Place rational numbers on a number line. 	<ul style="list-style-type: none"> • Illustrate the relationship between second and third roots and powers of a number. • Organize problem situations using matrices. • Represent, order and compare real numbers. • Place real numbers on a number line. 	<ul style="list-style-type: none"> • Represent numbers in equivalent forms (e.g., exponential/logarithmic, radical/rational exponents). • Graph or interpret the graph of a complex number in rectangular and vector forms. • Represent numerical intervals using correct notation.
Grade 9-10 (H-I-J)		Grade 11-12 (I-J)

* National Council of Teachers of Mathematics. *Principles and Standards for School Mathematics*. Reston, VA: National Council of Teachers of Mathematics, 2000.

** Adapted from: National Council of Teachers of Mathematics. *Principles and Standards for School Mathematics*. Reston, VA: National Council of Teachers of Mathematics, 2000.

MATHEMATICS

GOAL 6: Demonstrate and apply a knowledge and sense of numbers, including numeration and operations (addition, subtraction, multiplication, division), patterns, ratios and proportions.

Standard B. Investigate, represent and solve problems using number facts, operations and their properties, algorithms and relationships.
(Operations and properties)

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Determine the least common multiple and greatest common factor of a set of numbers using prime factorization containing exponents. • Determine and describe the effects of arithmetic operations with decimals and integers (e.g., multiply by a decimal between zero and one, divide by a negative integer). • Simplify arithmetic expressions containing integers using the field properties and order of operations. • Describe and use the inverse relationships of squaring and finding square roots to simplify computations and solve problems.** • Justify divisibility rules for 3, 4, 6, 8 and 9. 	<ul style="list-style-type: none"> • Compare and contrast the properties of numbers and number systems, including the rational and the real numbers.** • Determine an appropriate numerical representation of a problem solution, including roots and powers, if applicable. • Judge the effects of such operations as multiplication, division and computing powers and roots on the magnitudes of quantities.* • Solve problems using simple matrix operations (addition, subtraction, scalar multiplication). • Develop fluency in operations with real numbers using mental computation or paper-and-pencil calculations for simple cases and technology for more-complicated cases.** • Judge the reasonableness of numerical computations and their results.* 	<ul style="list-style-type: none"> • Compare and contrast the properties of numbers and number systems, including the complex numbers as solutions to quadratic equations that do not have real solutions.** • Simplify expressions using the field properties, order properties and properties of equality for the set of real numbers. • Use the field properties and properties of equality for the set of complex numbers. • Determine the opposite, reciprocal, absolute values and positive integral powers of a complex number. • Identify, represent and solve problems with numbers expressed in exponential, logarithmic and scientific notations using technology. • Solve problems using exponents and logarithms. • Solve problems using complex numbers and their various representations. • Explain that vectors and matrices are systems that have some of the properties of the real-number system.** • Solve problems using matrices. • Develop fluency in operations with real numbers, vectors and matrices using mental computation or paper-and-pencil calculations for simple cases and technology for more-complicated cases.*
Grade 9-10 (H-I-J)	Grade 11-12 (I-J)	

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MATHEMATICS

GOAL 6: Demonstrate and apply a knowledge and sense of numbers, including numeration and operations (addition, subtraction, multiplication, division), patterns, ratios and proportions.

Standard C. Compute and estimate using mental mathematics, paper-and-pencil methods, calculators and computers. (*Choice of method*)

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Select, use and justify appropriate operations, methods and tools to compute or estimate with real numbers.** • Analyze algorithms for computing with real numbers and develop fluency in their use.** 	<ul style="list-style-type: none"> • Develop fluency in operations with real numbers and matrices using mental computation or paper-and-pencil calculations for simple cases and technology for more-complicated cases.** • Determine and explain whether exact values or approximations are needed in a variety of situations. • Determine an appropriate number of digits to represent an outcome. 	<ul style="list-style-type: none"> • Determine the level of accuracy needed for computations involving measurement and irrational numbers. • Use the correct number of digits in computation to achieve an appropriate unit or level of accuracy when solving problems. • Estimate an appropriate answer for a given term of a sequence. • Describe the role of rounding error in calculations.
Grade 9-10 (H-I-J)		Grade 11-12 (I-J)

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MATHEMATICS

GOAL 6: Demonstrate and apply a knowledge and sense of numbers, including numeration and operations (addition, subtraction, multiplication, division), patterns, ratios and proportions.

Standard D. Solve problems using comparison of quantities, ratios, proportions and percents.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Develop, use, analyze and explain methods for solving number sentences or word problems involving proportions with rational numbers.** • Solve problems that involve percents, including percent increase and decrease, regardless of the piece of information that is missing. 	<ul style="list-style-type: none"> • Explain how ratios and proportions can be used to solve problems of percent, growth and error tolerance. • Set up and solve proportions for direct and inverse variation of simple quantities. 	<ul style="list-style-type: none"> • Explain the connection of percents to growth patterns, error and probability. • Set up and solve proportions for direct, inverse and compound variations of quantities involving powers and multiple variables.
Grade 9-10 (H-I-J)		Grade 11-12 (I-J)

* National Council of Teachers of Mathematics. *Principles and Standards for School Mathematics*. Reston, VA: National Council of Teachers of Mathematics, 2000.

** Adapted from: National Council of Teachers of Mathematics. *Principles and Standards for School Mathematics*. Reston, VA: National Council of Teachers of Mathematics, 2000.

MATHEMATICS

GOAL 7: Estimate, make and use measurements of objects, quantities and relationships and determine acceptable levels of accuracy.

Standard A. Measure and compare quantities using appropriate units, instruments and methods. (*Performance and conversion of measurements*)

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Solve simple scale conversions, contractions and dilations (e.g., maps and diagrams). 	<ul style="list-style-type: none"> • Select units and scales that are appropriate for problem situations involving measurement.** • Convert between the U.S. customary and metric systems given the conversion factor. 	<ul style="list-style-type: none"> • Convert angle measures between degrees and radians. • Set up and solve measurement conversions using multiple rates and conversion factors.
Grade 9-10 (H-I-J)		Grade 11-12 (I-J)

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MATHEMATICS

GOAL 7: Estimate, make and use measurements of objects, quantities and relationships and determine acceptable levels of accuracy.

Standard B. Estimate measurements and determine acceptable levels of accuracy. (*Estimation*)

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Measure any quantity to the greatest degree of accuracy determined by the tool. • Determine the maximum error in measurements. 	<ul style="list-style-type: none"> • Estimate the magnitude and directions of physical quantities (e.g., velocity, force, slope). • Determine answers to an appropriate degree of accuracy using significant digits. 	<ul style="list-style-type: none"> • Analyze precision, accuracy and approximate error in measurement situations. • Determine a reasonable estimate of measure for more complex problem situations. • Solve problems to a desired interval of accuracy. • Apply informal concepts of successive approximation, upper and lower bounds and limit in measurement situations.
Grade 9-10 (H-I-J)		Grade 11-12 (I-J)

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MATHEMATICS

GOAL 7: Estimate, make and use measurements of objects, quantities and relationships and determine acceptable levels of accuracy.

Standard C. Select and use appropriate technology, instruments and formulas to solve problems, interpret results and communicate findings. *(Progression from selection of appropriate tools and methods to application of measurements to solve problems)*

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Solve simple problems involving rates and other derived measurements such as velocity and density.** • Solve problems involving angle measurement in polygons and circles. • Develop and describe surface area and volume formulas for cones and cylinders by relating pyramids to cones and prisms to cylinders. • Solve problems involving time, temperature, mass, speed, distance, density and monetary values. • Solve problems involving scale drawings, models, maps or blueprints. • Determine derived measurements. • Determine the surface area of three-dimensional figures. • Determine the volume of a sphere. 	<ul style="list-style-type: none"> • Solve problems using indirect measurement by choosing appropriate technology, instruments and/or formulas. • Check measurement computations using unit analysis.** • Describe the general trends of how the change in one measure affects other measures in the same figure (e.g., length, area, volume). • Determine linear measures, perimeters, areas, surface areas and volumes of similar figures using the ratio of similitude. • Determine the ratio of similar figure perimeters, areas and volumes using the ratio of similitude. 	<ul style="list-style-type: none"> • Solve practical problems using non-linear scales. • Calculate by an appropriate method the length, width, height, perimeter, area, volume, surface area, angle of measures or sums of angle measures of common geometric figures or combinations of common geometric figures. • Solve problems involving multiple rates, measures and conversions.
Grade 9-10 (H-I-J)	Grade 11-12 (I-J)	

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MATHEMATICS

GOAL 8: Use algebraic and analytical methods to identify and describe patterns and relationships in data, solve problems and predict results.

Standard A. Describe numerical relationships using variables and patterns. (*Representations and algebraic manipulations*)

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Investigate and describe linear, quadratic and exponential patterns recursively.** • Investigate and write algebraic expressions to describe the <i>n</i>th term of a simple linear, power or exponential sequence. • Determine a specific term of a pattern of numbers or drawings. • Create arithmetic and geometric sequences to fit a given set of conditions. • Recognize and generate equivalent forms for linear equations, including transforming linear equations into standard and slope-intercept form.** 	<ul style="list-style-type: none"> • Write equivalent forms of equations, inequalities and systems of equations.** • Represent and explain mathematical relationships using symbolic algebra.** • Model and describe slope as a constant rate of change. • Explain the difference between constant and non-constant rate of change. • Create an equation of a line of best fit from a set of ordered pairs or set of data points. • Simplify algebraic expressions using a variety of methods, including factoring. • Justify the results of symbol manipulations, including those carried out by technology.** • Identify essential quantitative relationships in a situation and determine the class or classes of functions (e.g., linear, quadratic) that might model the relationships.** • Represent relationships arising from various contexts using algebraic expression. • Rewrite absolute value inequalities in terms of two separate equivalent inequalities with the appropriate connecting phrase of “AND” or “OR.” 	<ul style="list-style-type: none"> • Generalize patterns using explicitly defined and recursively-defined sequences.** • Translate between explicit and recursive forms of sequences where possible. • Represent relationships arising from various contexts using symbolic expressions, including iterative and recursive forms. • Symbolize growth patterns using variables. • Explain the differences and similarities of different forms of growth formulas. • Describe the limiting process using numerical analysis, graphs and algebra. • Simplify algebraic expressions using exponential, logarithmic and rational number techniques, including more advanced factoring.
Grade 9-10 (H-I-J)		Grade 11-12 (I-J)

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MATHEMATICS

GOAL 8: Use algebraic and analytical methods to identify and describe patterns and relationships in data, solve problems and predict results.

Standard B. Interpret and describe numerical relationships using tables, graphs and symbols. (*Connections of representations including the rate of change*)

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Graph linear equations and inequalities on the Cartesian plane. • Graph a set of points and describe the relationship as linear or nonlinear. • Describe the relationships between symbolic expressions and graphs of lines using the appropriate vocabulary for the intercepts and slope of the line.** • Graph absolute values on a number line. • Determine the slope of a line from a graph. 	<ul style="list-style-type: none"> • Describe the relationships of the independent and dependent variables from a graph. • Interpret the role of the coefficients and constants on the graph of linear and quadratic functions given a set of equations. • Relate the effect of translations on linear graphs and equations. • Create and connect representations that are tabular, graphical, numeric and algebraic from a set of data. • Recognize and describe the general shape and properties of the graphs of linear, absolute value and quadratic functions. • Approximate and interpret rates of change from graphical and numerical data.* • Identify slope in an equation and from a table of values. • Graph absolute values of linear functions on the Cartesian plane. • Recognize direct variation, inverse variation, linear and exponential curves from their graphs, a table of values or equations.** • Interpret and use functions as a geometric representation of linear and non-linear relationships. 	<ul style="list-style-type: none"> • Fit an equation to data using a calculator. • Interpret the overall relationship of two variables and connect it to one of the function families (linear, exponential, logarithmic or power) from a graph. • Relate the effect of transformations on graphs and equations. • Analyze functions by investigating domain, range, rates of change, intercepts, zeros, asymptotes and local and global behavior.** • Describe the properties and features of any non-degenerate conic section from an equation or graph. • Describe and perform transformations such as arithmetically combining, composing and inverting commonly used functions using technology to perform operations on more complicated symbolic expressions. • Relate the situation to the graph and the function values for direct, inverse and joint variations. • Relate functions to their inverses and their reflections over the line $y = x$. • Write an equation for conic section from a graph. • Analyze functions and their graphs for symmetries. • Use a variety of symbolic representations for functions and relations, including piecewise functions.
Grade 9-10 (H-I-J)	Grade 11-12 (I-J)	

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MATHEMATICS

GOAL 8: Use algebraic and analytical methods to identify and describe patterns and relationships in data, solve problems and predict results.

Standard C. Solve problems using systems of numbers and their properties. (*Problem solving*)

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Solve arithmetic and simple algebraic equations using properties of real numbers, equality and inequality and justify the procedures. • Solve simple algebraic equations for a given variable using inverse operations. 	<ul style="list-style-type: none"> • Describe and compare the properties of linear and quadratic functions.** • Solve problems by recognizing how an equation changes when parameters change. • Interpolate and extrapolate to solve problems using systems of numbers. • Solve problems using translations and dilations on basic functions. 	<ul style="list-style-type: none"> • Describe and compare the properties of classes of functions, including exponential, polynomial, rational, logarithmic and periodic functions.* • Identify and explain the relationship between arithmetic/geometric sequences and linear/exponential functions. • Describe the relationship of a model of a problem to the real problem. • Apply sequences and their properties to solve real problems. • Model and solve real problems using mathematical functions and relations. • Identify essential quantitative relationships in a situation and determine the class or classes of functions (e.g., power, exponential, logarithmic) that might model the relationships.** • Explain and apply relationships of x, y and t in parametric equations.
Grade 9-10 (H-I-J)		Grade 11-12 (I-J)

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MATHEMATICS

GOAL 8: Use algebraic and analytical methods to identify and describe patterns and relationships in data, solve problems and predict results.

Standard D. Use algebraic concepts and procedures to represent and solve problems. (*Connection of 8A, 8B, 8C to solve problems*)

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Solve algebraic equations or word problems that involve linear equations or inequalities using algebraic or graphical representations.** • Solve absolute value equations or inequalities in one variable using algebraic or graphical representations. • Create word problems that meet given conditions and represent linear relationships. 	<ul style="list-style-type: none"> • Solve equivalent forms of equations, inequalities and systems of equations with fluency—mentally or with paper-and-pencil in simple cases and using technology in all cases.** • Create word problems that meet given conditions and represent simple power or exponential relationships, or direct or inverse variation situations. • Solve simple quadratic equations using algebraic or graphical representations. • Solve problems of direct variation situations using a variety of methods. 	<ul style="list-style-type: none"> • Solve problems using linear programming. • Solve problems using equations of exponential and logarithmic growth. • Solve problems using direct, inverse and mixed variation. • Apply solutions of real problems to similar situations with appropriate adaptation. • Solve problems using rational equations and inequalities. • Set up and solve problems of non-linear growth.
Grade 9-10 (H-I-J)		Grade 11-12 (I-J)

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MATHEMATICS

GOAL 9: Use geometric methods to analyze, categorize and draw conclusions about points, lines, planes and space.

Standard A. Demonstrate and apply geometric concepts involving points, lines, planes and space. (*Properties of single figures, coordinate geometry and constructions*)

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Represent and analyze the properties of geometric shapes using coordinate geometry.** • Draw the image of an object after a combination of transformations. • Identify possible types of two- or three-dimensional figures that would match a set of given conditions. • Determine if a triangle is possible using side lengths and the triangle inequality. • Solve pictorial or word problems that involve geometric relationships within a single geometric shape or figure, including the Pythagorean theorem. • Analyze the results of a combination of reflections, rotations and translations of a figure, and determine alternate motions that could produce the same results. • Combine simple construction techniques to construct squares, equilateral triangles or other simple combinations of equal segments, angles, etc. • Analyze properties of a shape that enable it to tessellate the plane. 	<ul style="list-style-type: none"> • Describe and apply properties of a polygon or a circle in a problem-solving situation. • Classify angle relationships for two or more parallel lines crossed by a transversal. • Analyze geometric situations using Cartesian coordinates.** • Represent transformations of objects in the plane using sketches, coordinates and vectors. • Design a net that will create a given figure when folded. • Solve problems using constructions. • Gain insights into, and answer questions in, other areas of mathematics using geometric models.** • Calculate distance, midpoint coordinates and slope using coordinate geometry. • Visualize three-dimensional objects from different perspectives and describe their cross sections.** • Identify and apply properties of medians, altitudes, angle bisectors, perpendicular bisectors and midlines of a triangle. 	<ul style="list-style-type: none"> • Analyze geometric situations using Cartesian coordinates and other coordinate systems such as navigational, polar or spherical systems.** • Represent transformations of an object in the plane using function notation and matrices. • Represent and describe with the language of geometry real-life objects, paths and regions in space. • Apply properties of two- and three-dimensional models to solve problems.
Grade 9-10 (H-I-J)		Grade 11-12 (I-J)

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MATHEMATICS

GOAL 9: Use geometric methods to analyze, categorize and draw conclusions about points, lines, planes and space.

Standard B. Identify, describe, classify and compare relationships using points, lines, planes and solids. (*Connections between and among multiple geometric figures*)

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Create and analyze scale models using proportional reasoning. • Solve problems involving similar figures. • Examine the congruence or similarity of objects using transformations.** • Analyze properties of a combination of shapes that enable them to tessellate the plane. 	<ul style="list-style-type: none"> • Solve problems using triangle congruence and similarity of figures. • Extend knowledge of plane figure relationships to relationships within and between geometric solids. • Identify relationships among circles, arcs, chords, tangents and secants. • Solve problems in, and gain insight into, other disciplines and other areas of interest such as art and architecture using geometric ideas.** • Analyze and describe the transformations that lead to successful tessellations of one or more figures. 	<ul style="list-style-type: none"> • Solve problems using relationships between and among figures. • Represent and describe with the language of geometry intersections and cross sections of three-dimensional objects.
Grade 9-10 (H-I-J)		Grade 11-12 (I-J)

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MATHEMATICS

GOAL 9: Use geometric methods to analyze, categorize and draw conclusions about points, lines, planes and space.

Standard C. Construct convincing arguments and proofs to solve problems. (*Justification of conjectures and conclusions*)

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Create and critique arguments concerning geometric ideas and relationships such as congruence, similarity, the Pythagorean relationship or formulas for surface areas or volume of simple three-dimensional objects.** • Justify the simple construction methods used to produce angle bisectors, perpendicular lines and equilateral triangles. • Represent, solve and explain numerical and algebraic relationships using geometric concepts. • Provide examples or counter-examples to either illustrate or disprove conjectures about geometric characteristics. 	<ul style="list-style-type: none"> • Create and critique arguments concerning geometric ideas and relationships such as properties of circles, triangles and quadrilaterals. • Develop a formal proof for a given geometric situation on the plane • Provide a counter-example to disprove a conjecture. • Develop conjectures about geometric situations with and without technology. • Justify constructions using geometric properties. • Describe the difference between an inductive argument and a deductive argument. 	<ul style="list-style-type: none"> • Prove conjectures about geometric figures on the plane or in space using coordinate geometry. • Extend the ideas of formal and informal proof to non-geometric situations. • Develop formal and informal proofs for three-dimensional figures.
Grade 9-10 (H-I-J)		Grade 11-12 (I-J)

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MATHEMATICS

GOAL 9: Use geometric methods to analyze, categorize and draw conclusions about points, lines, planes and space.

Standard D. Use trigonometric ratios and circular functions to solve problems.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Recognize Pythagorean Triples. • Identify the basic trigonometric ratios in terms of lengths of the sides of a right triangle and an acute angle. • Solve for missing side lengths using the trigonometric ratios in right triangles. • Determine and justify the side length relationships present in $45^\circ-45^\circ-90^\circ$ triangles and $30^\circ-60^\circ-90^\circ$ triangles. • Determine the ratio of lengths of sides of a right triangle with given measures for its acute angles using appropriate technologies. 	<ul style="list-style-type: none"> • Determine distances and angle measures using indirect measurement and properties of right triangles. • Solve problems using $45^\circ-45^\circ-90^\circ$ and $30^\circ-60^\circ-90^\circ$ triangles. 	<ul style="list-style-type: none"> • Solve problems using the Law of Sines and Law of Cosines. • Relate vector representation and trigonometric functions. • Solve problems using vectors. • Relate circular functions, arcs and radian measure to triangle trigonometry and degree measure. • Simplify expressions and solve problems using trigonometric identities. • Solve trigonometric equations using circular functions. • Rotate conic sections using trigonometric functions. • Identify key characteristics of graphs of trigonometric functions and their inverses. • Graph trigonometric functions using translations and dilations. • Graph a given trigonometric function using its characteristics (e.g., period, amplitude).
Grade 9-10 (H-I-J)		Grade 11-12 (I-J)

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MATHEMATICS

GOAL 10: Collect, organize and analyze data using statistical methods; predict results; and interpret uncertainty using concepts of probability.

Standard A. Organize, describe and make predictions from existing data.
(*Data analysis*)

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Construct, read, interpret, infer, predict, draw conclusions and evaluate data from various displays, including histograms and scatter plots.** • Determine the best measure of central tendency from mean, median or mode. • Discuss how data can be manipulated to represent different points of view based on the use of different measures of central tendency and based on different graphical displays. • Discuss biased reporting of data and questions that should be asked when data is viewed. • Analyze graphical displays of data for possible misleading characteristics. • Make conjectures about the possible correlation between two characteristics of a sample on the basis of scatter plots of the data and approximate lines of fit.* 	<ul style="list-style-type: none"> • Describe the meaning of measurement data and categorical data, of univariate and bivariate data and of the term variable.** • Display a scatter plot, describe its shape and determine regression coefficients, regression equations and correlation coefficients for bivariate measurement data using technological tools. • Evaluate published reports that are based on data by examining the design of the study, the appropriateness of the data analysis and the validity of conclusions.* • Analyze two-variable data for linear or quadratic fit. • Make decisions based on data, including the relationships of correlation and causation. 	<ul style="list-style-type: none"> • Describe the differences among various kinds of studies and which types of inferences can legitimately be drawn from each.** • Recognize how linear transformations of univariate data affect shape, center and spread. • Describe how sample statistics reflect the values of population parameters and use sampling distributions as the basis for informal inference.** • Present results and conclusions from given data using basic statistics (e.g., measures of central tendencies, standard deviation). • Interpolate, extrapolate and make predictions from given information. • Evaluate survey results for conformity to simple distributions.
Grade 9-10 (H-I-J)		Grade 11-12 (I-J)

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MATHEMATICS

GOAL 10: Collect, organize and analyze data using statistical methods; predict results; and interpret uncertainty using concepts of probability.

Standard B. Formulate questions, design data collection methods, gather and analyze data and communicate findings. (*Data collection*)

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Formulate questions, design a study to answer the question and collect data.** • Analyze potential methods of collecting information and decide which methods would produce the most reliable and accurate data. • Analyze instruments used for surveys for errors and bias. • Analyze potential experiments or simulations for errors and bias. 	<ul style="list-style-type: none"> • Describe the characteristics of well-designed studies, including the role of randomization in surveys and experiments.** • Discuss informally different populations and sampling techniques. • Decide if a survey was “successful” in gathering the intended data and justify the decision. 	<ul style="list-style-type: none"> • Explore the variability of sample statistics from a known population and construct sampling distributions using simulations.** • Describe how sample statistics reflect the values of population parameters and use sampling distributions as the basis for informal inference.** • Create a survey from a critical question and decide which sampling technique to use for the survey. • Evaluate surveys for clarity, bias, return rate and specialized audiences.
Grade 9-10 (H-I-J)		Grade 11-12 (I-J)

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MATHEMATICS

GOAL 10: Collect, organize and analyze data using statistical methods; predict results; and interpret uncertainty using concepts of probability.

Standard C. Determine, describe and apply the probabilities of events.
(Probability, including counting techniques)

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Describe and explain complementary and mutually exclusive events using appropriate terminology.** • Design and conduct experiments or simulations for probability, including the possible use of technology to simulate events. • Discuss the difference in empirical and theoretical probability. • Compute probabilities for simple compound events using a variety of methods, including area models. • Identify situations where dependent and independent events occur. • Determine probabilities using simple counting techniques. • Discuss situations where permutations and combinations should be used in counting outcomes. 	<ul style="list-style-type: none"> • Determine geometric probability based on area. • Calculate probability using Venn diagrams. • Determine simple probabilities using frequency tables. • Construct empirical probability distributions using simulations.** • Describe the concepts of conditional probability. • Develop an understanding of permutations and combinations as counting techniques.* 	<ul style="list-style-type: none"> • Determine the theoretical probability for a chance event using the binomial probability model. • Describe the normal curve and use its properties to answer questions about sets of data that are assumed to be normally distributed. • Identify patterns from a sample space. • Describe a simulation for a more advanced experiment. • Carry out a simulation to estimate probabilities and, if possible, compare it to the theoretical probability. • Compute and interpret the expected value of random variables in simple cases.* • Apply advanced counting techniques to determine probability.
Grade 9-10 (H-I-J)	Grade 11-12 (I-J)	

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SOCIAL SCIENCE

GOAL 14: Understand political systems, with an emphasis on the United States.

Standard A. Understand and explain basic principles of the United States government.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Evaluate the rights and responsibilities of the individual within their family, social groups, community or nation. • Categorize programs and services provided by governments into local, state and federal levels. • Compare the similarities and differences in the state of Illinois and the national government's attempts to protect individual rights and still promote the common good. • Explain the influence of the Supreme Court and significant court decisions on the rights and responsibilities of citizens (e.g., defining, expanding, and limiting individual rights). • Analyze the efforts of our court system to take into account the rights of both those accused of crimes and their victims. 	<ul style="list-style-type: none"> • Analyze how local, state and national governments serve the purposes for which they were created. • Summarize the historical development of rights and responsibilities contained within the Bill of Rights and later amendments to the U.S. Constitution. • Analyze how public policy issues are influenced by government actions (e.g., transportation, the environment). • Recognize the responsibilities of some of the departments and regulatory agencies of the federal government (e.g., the Treasury, NASA, EPA, FCC). • Identify sources of revenue and funding used to support government services at the local, state and national levels. • Categorize major sources of revenue for local, state and federal governments. • Predict potential changes in contemporary interpretations of the Bill of Rights. 	<ul style="list-style-type: none"> • Describe how changing interpretations of the powers and limitations of our Constitution have affected rights and responsibilities of groups and individuals. • Evaluate the relationship that can exist between local, state and national governments concerning majority rule and minority rights. • Describe contemporary controversies regarding the principle of federalism and states rights. • Analyze the fundamental principles of our political system that often come into conflict (e.g., rule of law, liberty and equality, individual rights and the common good, separation of powers, majority rule and minority rights). • Evaluate how fundamental political principles (e.g., separation of powers, checks and balances, individual rights and federalism) led to the development of democratic government in the United States and Illinois. • Evaluate the equity of forms of taxation. • Analyze significant U.S. Supreme Court decisions that address equal protection and due process issues.
Grade 9-10 (H-I-J)		Grade 11-12 (I-J)

SOCIAL SCIENCE

GOAL 14: Understand political systems, with an emphasis on the United States.

Standard B. Understand the structures and functions of the political systems of Illinois, the United States and other nations.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Compare the powers and responsibilities of the members of the House of Representatives and Senate within the United States Congress. • Explain the advantages and disadvantages of our federal system's separation of powers. • Differentiate among the powers, limitations and responsibilities of the state government of Illinois and the federal government. • Distinguish between the powers and responsibilities of our state and federal courts as outlined in our state and national constitutions. • Illustrate the organization of the three branches of the state government of Illinois. • Justify why the Illinois Constitution cannot violate the United States Constitution. 	<ul style="list-style-type: none"> • Describe how various nations have pursued, established and maintained democratic forms of government over time. • Compare executive and legislative branches of our federal government with those of a parliamentary government (e.g., the United Kingdom). • Categorize the similarities and differences among world political systems (e.g., democracy, socialism, communism). • Analyze how cultural characteristics influence political practices (e.g., voting procedures, types of political campaigning). • Compare the political parties found in the United States with those found in other democratic societies. 	<ul style="list-style-type: none"> • Compare the government under the Articles of Confederation and contemporary confederated governments and organizations (e.g., the United Nations, Organization of American States, Organization of African States and the European Union). • Compare and contrast the constitutional democracy of the United States with those of similar governments (e.g., United Kingdom, Japan, Australia). • Hypothesize about the changes that may occur within representative democracies in an increasingly diverse ethnic population. • Critique how different forms of political systems throughout the world have tended to protect or violate basic human rights of people. • Evaluate how cultural beliefs affect citizenship.
Grade 9-10 (H-I-J)		Grade 11-12 (I-J)

SOCIAL SCIENCE

GOAL 14: Understand political systems, with an emphasis on the United States.

Standard C. Understand election processes and responsibilities of citizens.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Describe responsibilities that citizens share during an election. • Compare/contrast the historical positions of political parties in elections. • Compare historical examples of issues in local, state or national elections affecting the civil rights of various groups. • Describe how voting barriers have been removed to allow greater participation in elections (e.g., common people gaining the right to vote, minority voting status). • Analyze an example of a government denying voting rights to individuals or groups. • Describe the election process at local, state and national levels (e.g., campaigns, primaries, conventions). 	<ul style="list-style-type: none"> • Analyze voting patterns in local, state or national elections. • Describe examples of individuals and groups whose volunteerism has benefited their local community, state or nation. • Compare historical and contemporary principles and values that motivated people toward volunteerism in their community, state and/or nation. • Define the concept “civic virtue.” 	<ul style="list-style-type: none"> • Explain the voter registration process. • Describe how the right to vote has changed for individuals and groups in the State of Illinois. • Critique the advantages and disadvantages of maintaining the electoral college system for the election of the President of the United States. • Analyze the political campaign commercials in terms of the tactics politicians, political parties and political interest groups use to appeal to voters. • Evaluate the consequences of participation and non-participation in the electoral process (e.g., women’s suffrage, voter registration, effects of media). • Evaluate the impact of propaganda on the role of decision-making within the political process. • Predict how technology will impact our present electoral process (e.g., voting over the Internet to increase voter participation). • Evaluate the strengths and weaknesses of the election process within a specific level of government and suggest changes that will improve that system.
Grade 9-10 (H-I-J)	Grade 11-12 (I-J)	

SOCIAL SCIENCE

GOAL 14: Understand political systems, with an emphasis on the United States.

Standard D. Understand the roles and influences of individuals and interest groups in the political systems of Illinois, the United States and other nations.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Summarize the actions of an individual's or group's effort to influence current public policy in their community, state or nation. • Compare and contrast the roles and influence of various individuals, groups and media in shaping current public policy issues in the community, state or nation. • Measure political interest or activity in a civic or social cause. • Predict how technology and social change will impact the conduct of political parties. 	<ul style="list-style-type: none"> • Analyze the role of individuals, groups and the media in shaping contemporary debate on local, state and national government. • Evaluate editorial positions in the print or electronic media in terms of their strength, accuracy and persuasive influence. • Evaluate influences upon elections (e.g., editorials, television and radio commercials, public opinion polls, web sites). • Trace the evolution of movements to secure rights (e.g., people with disabilities, ethnic groups, women). • Defend a position on a political issue related to current events or national policies. 	<ul style="list-style-type: none"> • Evaluate a public policy issue in terms of the costs and benefits from the perspective of different political and public interest groups. • Critique the impact of changing technology (e.g., the Internet) on civic activity and the understanding of public policy issues. • Evaluate the impact of individual and group lobbying upon legislative decision-making. • Explain the impact of a third party candidate or issue that had the effect of reforming an existing major political party. • Trace the historical evolution of an association or political party that was created to affect a local, state or national issue (e.g., Populist Party, Sierra Club, a temperance society). • Analyze the platform of a political candidate or party. • Summarize how past and present American political parties have gained or lost influence on political decision-making and voting behavior.
Grade 9-10 (H-I-J)		Grade 11-12 (I-J)

SOCIAL SCIENCE

GOAL 14: Understand political systems, with an emphasis on the United States.

Standard E. Understand United States foreign policy as it relates to other nations and international issues.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Identify situations in which United States diplomacy favors one nation over another (e.g., trade, military protection). • Compare the interests of the United States and other nations in making foreign policy decisions (e.g., defense, trade, environmental protection, communications). • Compare/contrast the ideals and interests of the United States in participating in international organizations. • Analyze cases of changing diplomatic relations between the United States and other people or nations (e.g., changing relations with Native American tribes, changing relations with the Soviet Union during and after World War II). • Predict the effects of technology on foreign policy decision-making. 	<ul style="list-style-type: none"> • Describe the development of the United States as world leader in international relations (e.g., finance, defense, trade). • Relate historical trends within the United States and the world that have influenced international relations (e.g., nationalism, revolutionary ideals). • Compare the conduct of different presidents in handling of similar diplomatic or foreign policy issues. • Summarize an historical event in which the United States played a significant role in the foreign policy of another nation or region (e.g., the Cold War policy of containment upon the Soviet Union and the region of Southeast Asia in the 1950s to 1970s). 	<ul style="list-style-type: none"> • Analyze the effectiveness of U.S. foreign policy within an historical or contemporary context. • Evaluate the actions of the United States government in the acquisition of territories and the growth of American influence over other nations. • Evaluate the costs and benefits of the United States government in maintaining relationships with international organizations (e.g., the United Nations, NATO). • Explain the influence of contemporary international organizations on world affairs. • Compare how different political systems in other countries define and protect human rights. • Analyze patterns of conflict and compromise related to international affairs (e.g., examples of nations that have fought wars or settles disagreements through treaties over such matters as disputed borders and the resources and land along such lines of conflict).
Grade 9-10 (H-I-J)	Grade 11-12 (I-J)	

SOCIAL SCIENCE

GOAL 14: Understand political systems, with an emphasis on the United States.

Standard F. Understand the development of United States political ideas and traditions.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Summarize the historical influences on the development of political ideas and practices as listed in the Declaration of Independence, the United States Constitution, the Bill of Rights and the Illinois Constitution. • Give examples of how United States political ideas and traditions have either included or denied additional amendments respecting or extending the rights of its citizens. • Analyze an influential U.S. Supreme Court case decision and the impact it had in promoting or limiting civil rights. • Compare arguments for expanding or limiting freedoms and protection for citizens outlined in the Bill of Rights. 	<ul style="list-style-type: none"> • Describe significant historical events and processes that brought about changes in the political ideas and traditions of the United States (e.g., Civil War, the New Deal). • Trace the ideology, events, individuals and groups that influenced the adoption of amendments to the U.S. Constitution. • Evaluate the effect an historic speech had in changing people's ideas about political involvement or their rights (e.g., John Kennedy's Inaugural Speech, "Ask not"). • Hypothesize about the impact of the extension of greater voting rights through such steps as motor-voter registration, registration and voting over the Internet, etc. • Analyze the evolution of a particular political tradition that still influences modern political discourse. • Distinguish between the advantages and disadvantages of federal, confederate and unitary systems of government found across the course of United States History within the United States. • Analyze the changing role of the judiciary in defining citizen's rights and responsibilities. • Describe the evolution of criminals and victims' rights within our judicial system. 	<ul style="list-style-type: none"> • Describe the ideological origins of representative democracy within the cultural traditions of ancient Greece and Rome. • Analyze the historical evolution of a political tradition and how it was transformed by varying geographical, economic, technological and social forces (e.g., political caucus, voting patterns for political parties within different regions of the United States). • Assess the advantages and disadvantages of the establishment of a free press. • Describe the impact of the Northwest Ordinance of 1787 on the political development of the United States, the Midwest and specifically Illinois. • Evaluate the advantages and disadvantages of negative rights (inherent rights that the government cannot take away) and positive rights (a right provided by the government) (e.g., Congress cannot make a law that denies freedom of religion; the right to vote extended to women). • Analyze examples of the success or failure of individuals or groups to influence change or maintain continuity within a political party or government system. • Evaluate how changing geographical, economic, technological and social forces affect United States political ideas and traditions (e.g., freedom, equality and justice, individual rights).
Grade 9-10 (H-I-J)		Grade 11-12 (I-J)

SOCIAL SCIENCE

GOAL 15: Understand economic systems, with an emphasis on the United States.

Standard A. Understand how different economic systems operate in the exchange, production, distribution and consumption of goods and services.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Explain how the price of productive resources in a market economy would influence producer decisions about how, how much and what to produce. • Analyze the relationship between productivity and wages. • Demonstrate the circular flow of interaction among households, businesses and government in the economy. • Describe the role of financial institutions in the economy. • Identify the causes of unemployment. • Define GDP. 	<ul style="list-style-type: none"> • Analyze the differences between a market and command economy (i.e., private ownership, methods of allocation). • Demonstrate how GDP can be used as a measurement of a country's economic growth or decline over time. • Explain that a country's total output of goods and services can and does fluctuate from year to year. • Identify the Consumer Price Index (CPI) as the most commonly used measure of price-level changes in the economy. • Analyze the impact of inflation and deflation on lenders, savers, borrowers, people on fixed incomes and on the economy as a whole. • Analyze the factors that lead to different unemployment rates for various groups (e.g., different ethnic groups, income levels, gender, age and regions of the country). • Explain why the unemployment rate is an imperfect measure of unemployment in the economy. • Identify the economic cost of unemployment. • Define full employment. 	<ul style="list-style-type: none"> • Identify the factors contributing to real economic growth in a nation (e.g., investments in human/physical capital, research and development, technological change). • Identify the factors that limit a nation's potential level of GDP. • Explain the costs and benefits to individuals and society of investments in physical and human capital. • Analyze the benefits and costs of economic growth. • Define each type of unemployment (frictional, structural, seasonal and cyclical). • Explain why structural and cyclical unemployment are more serious for the economy than seasonal or frictional unemployment. • Formulate and defend public policy that might address structural or cyclical unemployment. • Analyze the impact of unemployment on a given geographic region (e.g., state, county, city). • Utilize the consumer price index (CPI) to identify periods of inflation and deflation over various periods of U.S. history. • Evaluate economic policies by how successfully they curb unemployment, keep economic costs to a minimum and keep prices stable.
Grade 9-10 (H-I-J)		Grade 11-12 (I-J)

SOCIAL SCIENCE

GOAL 15: Understand economic systems, with an emphasis on the United States.

Standard B. Understand that scarcity necessitates choices by consumers.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Explain why, as the market price of a good or service goes up, the quantity demanded by consumers goes down. • Determine the market clearing price when given data about the supply and demand for a product. • Predict how the change in price of one good or service can lead to changes in prices of other goods and services. • Explain how prices help allocate scarce goods and services in a market economy. • Explain why shortages and surpluses occur in a market economy and provide real-world examples of each. 	<ul style="list-style-type: none"> • Describe various ways a consumer can pay for a good or service. • Evaluate the costs and benefits of differing ways to pay for a variety of consumer purchases. • Analyze the potential impact of current events on the price of consumer goods or services (e.g., new environmental regulations for automobiles; hurricanes and floods in agricultural areas). 	<ul style="list-style-type: none"> • Identify the non-price determinants of demand and predict the change in demand and market price for a product when any of those determinants change. • Predict how a change in interest rates will affect an individual's decision to borrow and/or save. • Identify the current rates of interest on different kinds of savings investments and explain why they vary. • Identify complementary products and explain how a change in the price of one complement affects the demand for the other. • Identify substitute products and explain how a change in the price of a substitute affects the demand for the other product.
Grade 9-10 (H-I-J)	Grade 11-12 (I-J)	

SOCIAL SCIENCE

GOAL 15: Understand economic systems, with an emphasis on the United States.

Standard C. Understand that scarcity necessitates choices by producers.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Provide examples of how changes in incentives encourage people to change their economic behavior in predictable ways. • Provide examples of how the same incentive will bring about differing responses from differing people. • Explain why, as the market price of a good or service goes up, the quantity supplied also goes up. 	<ul style="list-style-type: none"> • Predict the impact of changes in interest rates on business investment spending. • Explain how policies that change interest rates can be used to affect the level of spending. • Analyze how producers respond to incentives and allocate their scarce resources to maximize profits. • Predict what goods and services might be in demand as a result of a specific political action or natural disaster. • Explain how the pursuit of self-interest in competitive markets affects national economic well being. • Demonstrate how increases in productivity result from advances in technology and other resources. • Analyze the impact on the producer's level of competitiveness in the marketplace given examples of new products that resulted from technological changes. • Analyze how the marketing of a new or improved product can create job opportunities as well as eliminate job opportunities. • Analyze the impact entrepreneurs and their business or idea has on consumers and the economy. 	<ul style="list-style-type: none"> • Describe the characteristics that distinguish perfect competition, monopolistic competition, oligopoly and monopoly. • Analyze the impact on consumers of reduced competition in an industry. • Predict the change in supply of a product and the market price for the product when non-price determinants of supply change. • Cite examples of government intervention in the marketplace and analyze the impact of that intervention on consumers and producers. • Evaluate the importance of private ownership of productive resources in a market economy. • Identify examples of negative and positive externalities that result from the production or consumption of a product. • Analyze the effects of competition on the price, quality and quantity produced of a good.
Grade 9-10 (H-I-J)		Grade 11-12 (I-J)

SOCIAL SCIENCE

GOAL 15: Understand economic systems, with an emphasis on the United States.

Standard D. Understand trade as an exchange of goods or services.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Provide an example of comparative advantage in the school or community. • Explain why comparative advantage leads to specialization and trade. • Identify barriers to trade and their impact, and explain why nations create barriers to trade. • Analyze the impact of an increase or decrease in imports on jobs and consumers in the U.S. • Analyze the impact of an increase or decrease in exports on jobs and consumers in the U.S. • Identify new technologies over time and explain their impact on the economy. 	<ul style="list-style-type: none"> • Define balance of trade. • Analyze the impact of periods of trade surpluses and trade deficits in United States history. • Define the exchange rate. • Explain how the forces of supply and demand determine exchange rates. • Calculate the prices of products for exchange of goods between two nations using current data. • Analyze the impact on consumers and producers in both countries when the exchange rate for their currencies changes. • Explain why comparative advantage changes over time. • Explain how measures of productivity are used in producer decisions. • Analyze the relationship between standards of living and the productivity of labor. • Identify ways in which the productivity of labor can be increased. • Analyze how increased productivity of labor benefits both employers and employees. • Analyze the impact of increased wages (all other factors constant) on the supply and demand of labor. • Analyze the relationship between incentives that reward innovation and investments and the arte of increase of productivity. 	<ul style="list-style-type: none"> • Define transaction costs and provide examples. • Explain why reducing transaction costs encourages exchange. • Analyze the impact of United States imposed trade barriers on U.S. citizens and on the citizens of trading partners. • Explain the impact on United States consumers and producers when imports are restricted by public policies such as quotas and tariffs. • Assess how economic growth is a factor in alleviating poverty and raising standards of living. • Analyze how technological advances allow societies to produce more goods and services with the resources available. • Explain the relationship among higher productivity levels, new technologies and the standard of living.
Grade 9-10 (H-I-J)	Grade 11-12 (I-J)	

SOCIAL SCIENCE

GOAL 15: Understand economic systems, with an emphasis on the United States.

Standard E. Understand the impact of government policies and decisions on production and consumption in the economy.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Identify examples of proportional, progressive and regressive taxes in the economy. • Evaluate the fairness and efficiency of each kind of tax. • Analyze the benefits and costs to individuals and businesses of government policies that affect the economy. • Identify the main sources of revenue for federal and for state governments. • Explain how laws and government policies affecting the economy establish rules to help a market economy function effectively. 	<ul style="list-style-type: none"> • Give examples of public goods and services that producers will not produce because they cannot be withheld from those who do not pay for it (e.g., roads, national defense and environmental preservation). • Evaluate what would happen if government did not intervene and produce public goods. • Explain when (under what circumstances) and why markets do not allocate resources effectively. • Provide examples of government responses that have had a positive or negative effect on society, the environment or markets. • Explain how technological development affects current and future consumption, production and overall competitiveness in the marketplace. • Explain how investing in new physical or human capital may increase future production and consumption. • Identify monetary policy in the U.S., and explain who determines that policy. • Identify fiscal policy in the U.S., and explain who determines that policy. 	<ul style="list-style-type: none"> • Identify government policies that are designed to directly redistribute income, and explain why such policies exist. • Identify government policies that affect price or output levels for various goods and services, and explain how those policies might indirectly redistribute income. • Evaluate which groups in the economy benefit from, and which groups bear the costs of, government policies that redistribute income. • Analyze the impact of increasing or decreasing federal spending and/or reducing or increasing taxes on: employment, output, price level and interest rates in the short run. • Identify historical examples of fiscal policies, and analyze whether these policies were adopted to influence levels of output, employment, prices or all three. • Explain the causes of inflation. • Explain how the tools of monetary policy work to impact money supply and/or interest rates. • Analyze how changes in the money supply can influence overall levels of spending, employment and prices in the economy. • Analyze the impact on the availability and cost of consumer loans when monetary policy decisions either increase or decrease the money supply.
Grade 9-10 (H-I-J)	Grade 11-12 (I-J)	

SOCIAL SCIENCE

GOAL 16: Understand events, trends, individuals and movements shaping the history of Illinois, the United States and other nations.

Standard A. Apply the skills of historical analysis and interpretation.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Define the concept of a “watershed” event in history. • Explain why a primary source may not necessarily provide an accurate description of an historical event. • Identify the point of view of the author as found in a primary source document. • Identify any inconsistencies of an author as found in a primary source document. • Assess the value of posed and candid photographs as primary sources. 	<ul style="list-style-type: none"> • Compare the narrative in a work of historical fiction with the narrative of the same event in a work by an historian. • Describe the value of interviewing a person who witnessed an event in the past. • Assess the value of an oral history account. • Explain why significant historical events have multiple causes. • Explain the reasons why historians working in different periods can arrive at different conclusions of the same event. • Defend an interpretation of a significant person or event using a variety of primary and secondary sources. 	<ul style="list-style-type: none"> • Identify any patterns or differences that emerge in political, economic, environmental and social history after comparing the events and historical processes identified on the periodization charts of two civilizations. • Identify any patterns or differences that emerge in political, economic, environmental and social history after comparing the events and historical processes between one period and another in the same civilization. • Assess the effects that unexpected events had on the long-term trends of a given period. • Identify the characteristics of the Whig, Positivist, Marxist and Post-colonial interpretations of history.
Grade 9-10 (H-I-J)	Grade 11-12 (I-J)	

SOCIAL SCIENCE

GOAL 16: Understand events, trends, individuals and movements shaping the history of Illinois, the United States and other nations.

Standard B (U.S.). Understand the development of significant political events.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Evaluate the consequences of constitutional change and continuity over time. • Summarize the significant events that occurred during the development of the Supreme Court of the United States. • Describe the contributions of individuals or groups who had a significant impact on the course of judicial history. • Describe the significant events and contributions of individuals or groups in the development of United States diplomatic history. 	<ul style="list-style-type: none"> • Compare/contrast the causes and effects of significant political events in a period of United States history. • Summarize how principles of the United States Constitution were applied to resolve a political conflict (e.g., states rights, civil rights). • Evaluate how the forces of cooperation and conflict have affected the development of representative democracy. 	<ul style="list-style-type: none"> • Assess the significance of a watershed event in United States history. • Compare/contrast the initial philosophy of a political institution or group with its later and/or contemporary philosophy. • Describe examples of continuity and change in political institutions at the local, state and national levels. • Analyze the changing roles of political offices and institutions in United States history. • Assess how political ideology influences the political perspective of contemporary politicians or groups. • Analyze how changes in the economy, environment and social structure have influenced the current political structure of the United States.
Grade 9-10 (H-I-J)	Grade 11-12 (I-J)	

SOCIAL SCIENCE

GOAL 16: Understand events, trends, individuals and movements shaping the history of Illinois, the United States and other nations.

Standard B (World). Understand the development of significant political events.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Identify common political trends in the eastern and western hemispheres after 1500 CE (e.g., colonization, de-colonization, nationalism). • Analyze the political cause and effect relationships created by European exploration and expansion in the eastern and western hemispheres. • Identify the contributions of significant individuals to worldwide political thought (e.g., Locke, Burke, Marx) after 1500. 	<ul style="list-style-type: none"> • Describe the significant political ideas that are rooted in the Renaissance and Enlightenment periods. • Compare/contrast the development of democratic systems with other kinds of political systems. • Analyze how the forces of and cooperation and conflict affected a political system. • Describe the effects of interdependence among nations during periods of world conflict (Napoleonic Wars, World Wars, Cold War). 	<ul style="list-style-type: none"> • Assess the significance of a watershed event in World political history. • Assess the contribution of a significant individual to worldwide political thought. • Compare/contrast episodes of cooperation and conflict among proponents of opposing political ideologies. • Explain the relationships among economic, social and environmental factors and effects on a world political event. • Evaluate the impact of global interdependence in addressing a contemporary political issue (e.g., terrorism, human rights).
Grade 9-10 (H-I-J)	Grade 11-12 (I-J)	

SOCIAL SCIENCE

GOAL 16: Understand events, trends, individuals and movements shaping the history of Illinois, the United States and other nations.

Standard C (U.S.). Understand the development of economic systems.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Describe the impact of trade on political, social, economic and environmental developments in a place or region of the United States, 1865 – present. • Explain how changes in science and technology affected the exchange of goods and services, economic institutions and the movement of people among different regions of the United States, 1865 – present. • Explain how entrepreneurs organized their businesses and influenced government to limit competition and maximize profits. • Describe the economic causes of conflict in United States History since 1865 (e.g., Indian Wars, Civil War, urban unrest). • Describe significant people, ideas and events in the rise of organized labor from 1865-1914. 	<ul style="list-style-type: none"> • Discuss the values and beliefs that fostered significant economic developments and institutions in the United States over time. • Identify the causes and effects of significant economic legislation over time. • Analyze the economic impact of the westward expansion on families, communities and the nation. • Describe how individuals and groups such as industrialists and unions shaped American economic institutions during the 20th Century. • Analyze the environmental, social and political consequences that occurred in a region that experienced a significant change in the work force and a severe change in the availability of resources. 	<ul style="list-style-type: none"> • Assess the significance of a watershed event in United States economic history (e.g., gold standard, minimum wage legislation, NAFTA). • Describe the trends in the history of United States “bellwether industries” (e.g., agriculture, steel, housing) using charts, graphs and other sources. • Describe the development over time of the relationship between the national economy and the global economy since World War II. • Describe the influence of economic interest groups on the direction of the national economy since World War II. • Analyze how trends in the economic history of the United States have affected the country’s political, social and environmental history. • Assess the role of the Federal Government in shaping the United States economic system.
Grade 9-10 (H-I-J)	Grade 11-12 (I-J)	

SOCIAL SCIENCE

GOAL 16: Understand events, trends, individuals and movements shaping the history of Illinois, the United States and other nations.

Standard C (World). Understand the development of economic systems.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Analyze the impact of long-term economic trends on the political, social, economic and environmental developments of societies in different parts of the world, 1500 CE to present. • Explain how changes in science and technology affected the exchange of goods and services among people of different geographical regions of the past. • Describe the global impact of long-term economic trends from 1500 – present (e.g., long distance trade, banking, specialization of labor, urbanization, technological/scientific progress.) 	<ul style="list-style-type: none"> • Evaluate the economic impact and consequences of major cultural exchanges. • Evaluate the consequences of capitalism, socialism and communism upon the countries that have adopted them. • Analyze the economic impact of colonialism and imperialism around the world after 1500 CE. • Describe the impact of major economists and their ideas (e.g., Adam Smith, Karl Marx, John Maynard Keynes). • Describe the historical development of capitalism and other economic systems that developed in colonial empires after 1500. 	<ul style="list-style-type: none"> • Assess the significance of a watershed event in World economic history. • Describe the growth and development of industrial capitalism as the dominant economic model of the world. • Trace the historical forces of continuity and change in the development of the contemporary global economic system. • Predict the consequences of economic interdependence in the world's economic system, using a contemporary example. • Evaluate the benefits and drawbacks of economic interdependence. • Analyze the impact of a contemporary world economic issue on the United States (e.g., its political, social and environmental consequences).
Grade 9-10 (H-I-J)		Grade 11-12 (I-J)

SOCIAL SCIENCE

GOAL 16: Understand events, trends, individuals and movements shaping the history of Illinois, the United States and other nations.

Standard D (U.S.). Understand Illinois, United States and world social history.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Analyze the changing roles and status of men, women and children from the colonial period through the 19th Century. • Compare the importance of people’s customs and traditions during the historical development of a geographic region during the colonial/frontier periods and the 19th Century. • Describe family life of select groups of people during the colonial/frontier periods and the 19th Century. 	<ul style="list-style-type: none"> • Identify examples of cultural diffusion throughout United States social history. • Compare and contrast how different groups of people reacted to diversity within their societies. • Compare and contrast the actions of political, social and economic institutions before and after the abolition of slavery. • Appraise the long-term effects, including unintended consequences, on American society that occurred as a result of watershed events in American social history. 	<ul style="list-style-type: none"> • Assess the significance of a watershed event in United States social history. • Identify the historical forces of continuity and change that affected the development of social institutions over time. • Assess the impact of social movements on the social, political and economic institutions and cultures of the United States. • Analyze the origins and development of the social issues that affect United States citizens as members of a global society. • Evaluate recent government policies and social attitudes of interest groups affecting the further development of a pluralistic society in the United States since the 1960’s.
Grade 9-10 (H-I-J)	Grade 11-12 (I-J)	

SOCIAL SCIENCE

GOAL 16: Understand events, trends, individuals and movements shaping the history of Illinois, the United States and other nations.

Standard D (World). Understand Illinois, United States and world social history.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Analyze the consequences of discrimination past and present. • Analyze the impact of mass migrations of people upon the political, economic, social and environmental aspects of a world region. • Assess the impact of significant individuals or groups on world social history (e.g., religious leaders, philosophers). • Describe how the work of artists around the world (e.g., musicians, artists, filmmakers) reflects social issues. 	<ul style="list-style-type: none"> • Analyze the social history aspects of significant events in world history since 1500 (e.g., colonization, Protestant Reformation, industrialization, rise of technology, human rights movement, Holocaust). • Describe the impact of cultural diffusion and cultural encounters upon the political, economic and environmental aspects of different cultures. • Analyze the consequences of a world social issue on the political, economic and environmental aspects of society. 	<ul style="list-style-type: none"> • Assess the significance of a watershed event in World social history. • Assess the affects of changing technology since 1945 (e.g., atomic power, mass communications, means of production) on the course of world social history. • Evaluate the social consequences resulting from the expanding zone of human interaction over time. • Identify examples of cultural diffusion occurring within the societies around the world using a contemporary example.
Grade 9-10 (H-I-J)	Grade 11-12 (I-J)	

SOCIAL SCIENCE

GOAL 16: Understand events, trends, individuals and movements shaping the history of Illinois, the United States and other nations.

Standard E (U.S.). Understand Illinois, United States and world environmental history.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Analyze the social, political and economic effects on the abandoned environment of a significant migration of people from one region to another. • Describe the demographic distribution of people before and after a significant migration in United States history. • Describe the effects on the environment of the dispersion of European colonists in North America after 1500 CE. • Describe how major migrations have affected the cultural features of cities and rural communities in the United States. • Assess the effect of the industrial revolution on the physical environment in the United States. • Assess the effects on the environment of the historic process of suburbanization and rural depopulation. • Assess the effects of a significant past natural environmental disaster on physical and cultural features of the landscape of a place or region in the United States. 	<ul style="list-style-type: none"> • Describe how the rise of multinational economies has affected the environment of the United States since 1945. • Describe how military conflict in North America affected the environment, and assess the attendant human costs. • Identify the origins of significant environmental issues confronting the United States and North America. • Explain how an environmental issue confronting one region of the United States has affected the environment in other regions. 	<ul style="list-style-type: none"> • Assess the significance of a watershed event in United States environmental history. • Evaluate the importance of an environmental issue on the conduct of political life in Illinois and in the United States. • Assess the progress made by national organizations in addressing environmental issues in the United States since 1945. • Predict the political, economic and social consequence on the United States of a world environmental issue if it is not addressed. • Predict the potential of new technologies to reverse historic processes that have negatively impacted the United States environment.
Grade 9-10 (H-I-J)		Grade 11-12 (I-J)

SOCIAL SCIENCE

GOAL 16: Understand events, trends, individuals and movements shaping the history of Illinois, the United States and other nations.

Standard E (World). Understand Illinois, United States and world environmental history.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Describe the social, demographic, political and economic effects on the abandoned environment of a significant migration of people in World History. • Describe the environmental effects of the “Colombian Exchange.” • Describe how major migrations have affected the cultural features of cities and rural communities. • Assess the effect of the industrial revolution on the physical environment in an industrialized country. • Assess the impact on the environment of the industrial revolution on a traditional agrarian culture. • Assess the effects on the environment of the historic process of suburbanization and the depopulation of rural regions. 	<ul style="list-style-type: none"> • Describe how the rise of colonial powers affected the environment in colonial empires. • Describe how the rise of multinational economies has affected the environment in the post-colonial period. • Describe how military conflict affected the environment in Europe and Asia during the two world wars, and assess the attendant human costs. • Describe how military conflict affected the environment in Asia and Africa during the post-colonial period, and assess the attendant human costs. • Identify the origins and describe the development of significant environmental issues confronting Asia, Africa, South America, North America, Australia and the arctic regions. • Analyze the relationship between the environmental and political causes of famines. 	<ul style="list-style-type: none"> • Assess the significance of a watershed event in World environmental history. • Evaluate the importance of an environmental issue on the conduct of contemporary world affairs. • Explain how the control of technology has fostered independence, dependence or interdependence between and among nations. • Explain how the control of a natural resource has fostered independence, dependence or interdependence between and among nations. • Assess the progress made by global organizations in addressing environmental issues since 1945. • Predict the political, economic and social consequences of a world environmental issue if it is not addressed. • Predict the potential of new technologies to reverse historic processes that have negatively impacted the global environment.
Grade 9-10 (H-I-J)		Grade 11-12 (I-J)

SOCIAL SCIENCE

GOAL 17: Understand world geography and the effects of geography on society, with an emphasis on the United States.

Standard A. Locate, describe and explain places, regions and features on Earth.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Translate a mental map into sketch form to illustrate relative location of, size of and distances between geographic features (e.g., cities, mountains, rivers). • Demonstrate understanding of how to display spatial information by constructing maps, graphs, diagrams and charts to display spatial information (e.g., choropleth maps, climographs, population pyramids). • Analyze patterns of movement in space and time (e.g., hurricane tracks over several seasons, the spread of influence throughout the world). • Describe the location of places using the global system of time zones. • Demonstrate understanding of world time zones by determining the date and time in selected cities around the world in reference to Springfield, Illinois. 	<ul style="list-style-type: none"> • Determine approximate locations of places, both local and global, featured in a newspaper or television story. • Evaluate the merits of using specific map projections for specific purposes (e.g., use of the Mercator projection for navigation and the Robinson projection for depicting aerial distributions). • Identify the most appropriate maps and graphics in an atlas to answer specific questions about geographic issues (e.g., topography and transportation routes). • Compare sketch maps or photos to determine why people perceive different places in Illinois, the United States and the world in different ways. 	<ul style="list-style-type: none"> • Illustrate the spatial dynamics of contemporary and historical events (e.g., drawing a sketch map of the spread of radiation from the Chernobyl nuclear accident or of the bubonic plague in fourteenth-century Europe, how physical features have deterred migrations and invasions). • Explain the advantages for retailers to locate in malls rather than in dispersed locations (e.g., malls bring many large and small stores together in close proximity and take advantage of sharing costs for parking lots, lighting and other utilities while providing convenience and time efficiency for customers). • Determine potential spatial problems that may result in conflict (e.g., zoning changes, school district boundaries). • Develop maps, tables, graphs, charts and diagrams to depict the geographic implications of current world events (e.g., maps showing changing political boundaries, tables showing the distribution of refugees from areas affected by natural disaster). • Evaluate specific technologies to determine their usefulness in analyzing selected geographic problems (e.g., aerial photographs, satellite-produced imagery, geographic information systems and geographic positioning systems to determine the extent of water pollution in a harbor complex in South Africa or the range of deforestation in Madagascar).
Grade 9-10 (H-I-J)	Grade 11-12 (I-J)	

SOCIAL SCIENCE

GOAL 17: Understand world geography and the effects of geography on society, with an emphasis on the United States.

Standard B. Analyze and explain characteristics and interactions of Earth's physical systems.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Analyze climographs for selected places and suggest reasons for similarities and differences in climates. • Hypothesize about the future effects of the use of technology on Earth's physical systems (e.g., climate, soil, air, water). • Analyze the causes and effects of changes over time in physical landscapes (e.g., forest cover, water distribution, temperature fluctuations) as shown on maps, graphs and satellite produced images. • Predict the potential outcomes of the continued movement of Earth's tectonic plates (e.g., continental drift, earthquakes, volcanic activity). 	<ul style="list-style-type: none"> • Explain the patterns of features associated with the margins of tectonic plates such as earthquake zones and volcanic activity (e.g., the Ring of Fire around the Pacific Ocean, the San Andreas fault in coastal California). • Explain how erosional agents such as water and ice produce distinctive landforms (e.g., water and badlands, ice and glacial valleys, waves and sea cliffs). • Compare the relationships among Earth's physical processes (e.g., the relationships between ocean currents, prevailing winds and atmospheric pressure cells). • Describe the ocean circulation system and the way it affects world climate patterns. 	<ul style="list-style-type: none"> • Analyze the global distribution of natural resources to determine the relationship of resource availability to international problems and issues. • Explain how changes in the physical environment relate to both natural and human activity (e.g., earthquakes, forest fires, water and soil pollution). • Evaluate global environmental changes to determine whether the changes are a result of human actions, natural causes or a combination of both factors (e.g., increases in world temperatures attributable to major global environmental changes, results of the greenhouse effect attributable to human action, the link between changes in solar emissions and amounts of volcanic dust in the atmosphere attributable to natural causes). • Evaluate the carrying capacity of selected world regions to predict the likely consequences of exceeding their environmental limits (e.g., the impact of the economic exploitation of Siberia's resources on a fragile sub-Arctic environment).
Grade 9-10 (H-I-J)	Grade 11-12 (I-J)	

SOCIAL SCIENCE

GOAL 17: Understand world geography and the effects of geography on society, with an emphasis on the United States.

Standard C. Understand relationships between geographic factors and society.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Explain the patterns of natural resource distribution (e.g., petroleum, timber in various regions of the United States and the world). • Identify reasons related to the natural environment that influence the location of certain human activities (e.g., corn production in Illinois, rice in Southeast Asia). • Analyze rapidly growing urban centers to determine the impact of urban sprawl on the physical and human environment. • Explain how human induced alterations of the environment have resulted in human migration (e.g., “Okies” from the Dust Bowl to California, the expanding Sahara). • Rank natural hazards based on the degree of impact on people and the physical environment (e.g., loss of life, destruction of property, economic impact, alteration of ecosystems). 	<ul style="list-style-type: none"> • Analyze major urban centers in the United States and the world to determine how migration of different ethnic groups has altered their population and functions. • Explain the different land use areas within cities in Illinois and the United States (e.g., residential, commercial, recreational). • Formulate a plan to prolong the use of nonrenewable resources such as petroleum and precious minerals. • Analyze urban disaster preparedness plans to determine similarities and differences in the ways cities prepare for different types of natural disasters (e.g., earthquakes in Tokyo, Japan; hurricanes in Charleston, SC). • Analyze a map showing the origin of products purchased by United States citizens (e.g., automobile, clothing, electronics). 	<ul style="list-style-type: none"> • Identify the characteristics of cities in developing countries and compare them to those of cities in developed countries in terms of physical features, site, situation, function, internal structure and level of technology use. • Evaluate the effects of human activity on similar environments under different resource management strategies (e.g., farming on the Great Plains as compared to the Ukraine). • Explain how the uneven distribution of resources can result in global cooperation and conflict among nations in an increasingly interdependent world. • Analyze the impact of major natural disasters and their connections to other areas of the world (e.g., drought, floods, hurricanes). • Explain how people adapt to and modify their environment in ways that reveal their cultural values, economic/political systems, and technological levels. • Analyze newspaper articles, magazines and media reports to determine regional differences in environmental problems throughout the United States and the world.
Grade 9-10 (H-I-J)		Grade 11-12 (I-J)

SOCIAL SCIENCE

GOAL 17: Understand world geography and the effects of geography on society, with an emphasis on the United States.

Standard D. Understand the historical significance of geography.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Describe how legacies of the past have affected past and present human characteristics of places (e.g., wealth and poverty, exploitation, colonialism and independence). • Explain, in terms of “push-pull” factors, the major population movements that have occurred in the past and may occur among places and regions. • Analyze maps of human settlement and routes traveled in the past to determine the relationship between where people lived and their movements. 	<ul style="list-style-type: none"> • Explain how human use of resources has changed over time and how these changes have affected settlement patterns (e.g., discovery of gold in California and Alaska). • Formulate generalizations about how technological developments have affected the quality of life in regions and nations throughout the world. • Analyze how the physical characteristics of places and regions have influenced the migration of people (e.g., Ice Age, Potato Famine, Dust Bowl). • Compare past and present types of settlements in the United States and other countries to determine similarities and differences (e.g., the colonial South of the United States vs. the colonial North settlement of Australia). 	<ul style="list-style-type: none"> • Explain the reasons why people would choose to change from a dispersed rural to a concentrated urban form of settlement (e.g., the need for a marketplace, religious needs, military protection). • Examine ways in which ecosystems have changed (e.g., as a result of different stages of human occupancy, shifting population densities, new levels of technology). • Analyze major human conflicts to determine the role of physical and cultural geographic features in the causes, conflict and outcomes.
Grade 9-10 (H-I-J)		Grade 11-12 (I-J)

SOCIAL SCIENCE

GOAL 18: Understand social systems with an emphasis on the United States.

Standard A. Compare characteristics of culture as reflected in language, literature, the arts, traditions and institutions.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Predict how technology/media will impact culture during the student's lifetime. • Analyze immigration patterns to see how American cultures have been shaped. • Identify various cultures that have combined to create a larger, multicultural American society. • Define the concept of the global community. • Draw conclusions about how the media creates and/or reinforces societal norms. • Evaluate the role of the humanities (e.g., literature, art, music, architecture) in a culture. 	<ul style="list-style-type: none"> • Describe how different cultures are depicted in literature and the arts of the United States. • Identify cultural traditions from other lands that have been integrated into American life. • Analyze how various cultural groups have impacted the student's culture. • Analyze the ways that conflicts can be resolved in a pluralistic society. • Assess the impact of outside influences on a given culture (e.g., western music on Asian society). • Give an example of a technological change creating cultural dissonance. 	<ul style="list-style-type: none"> • Distinguish between acculturation and assimilation. • Explain how cultural characteristics are manifested in political and economic systems. • Analyze advantages and disadvantages of living in a pluralistic society. • Evaluate how changes in social institutions reflect political, environmental, economic and technological changes in a culture. • Evaluate how technology instills cultural values. • Describe a folk or mythological interpretation of a social or physical phenomenon.
Grade 9-10 (H-I-J)	Grade 11-12 (I-J)	

SOCIAL SCIENCE

GOAL 18: Understand social systems with an emphasis on the United States.

Standard B. Understand the roles and interactions of individuals and groups in society.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Describe how interaction among people brings about social change (e.g., natives and colonizers, Peace Corps volunteers). • Explain how changing topics of self and groups (e.g., minorities, women, children, adolescents) have affected the roles of social institutions. • Explain how the changing concept of social institutions affects groups in society (e.g., minorities, women, children, adolescents). • Describe how such groups as social clubs, schools and churches influence the preservation and transmission of culture. 	<ul style="list-style-type: none"> • Analyze the effectiveness of different types of institutions (e.g., educational, governmental, charitable) in meeting similar social needs. • Compare the role and effectiveness of social institutions in other countries with those in the United States (e.g., schools, relief agencies). • Distinguish between norms and mores. • Explain likely consequences for nonconformity in a social group. • Explain how the concept of gender is a social construct. • Explain how race is a social construct. • Explain how policymakers influence social and economic statuses (e.g., tax policy, child labor laws, suffrage). 	<ul style="list-style-type: none"> • Analyze a local social issue by collecting and interpreting data. • Distinguish between achieved status and ascribed status. • Assess the effect of technology on the status and role of individuals. • Describe how an individual can work with others to make a change in official social policy. • Compare how a government agency and a private agency approach the resolution of a social problem. • Explain a theory of a prominent sociologist or psychologist.
Grade 9-10 (H-I-J)	Grade 11-12 (I-J)	

SOCIAL SCIENCE

GOAL 18: Understand social systems with an emphasis on the United States.
Standard C. Understand how social systems form and develop over time.

Stage H	Stage I	Stage J
<ul style="list-style-type: none"> • Explain how diverse groups have enriched United States culture. • Analyze how the ideals of the Founders have influenced the development of multicultural society in the United States. • Explain the impact of prejudice on the operation of United States social, political and economic institutions over time. • Define cultural exchange and provide examples of cultural exchange between two groups. 	<ul style="list-style-type: none"> • Identify historical examples of how different ideas about emotions, motivation and personality have led to significant social change. • Analyze the social effects of major cultural exchanges. • Give examples of global communication and economic activity. • Analyze the changing global perceptions of various social groups in the United States. • Analyze how global communications have affected cultural exchanges in the contemporary world. 	<ul style="list-style-type: none"> • Analyze the positive and negative impact of modernization on cultural and physical environments. • Analyze the impact of emerging sociological or psychological thought on various social institutions. • Evaluate the effectiveness of sociological/psychological theory in explaining individual and group behavior (e.g., peer pressure, consumer behavior, “mob psychology”).
Grade 9-10 (H-I-J)	Grade 11-12 (I-J)	