Illinois Alternate Assessment Mathematics Frameworks Priorities Grade 8

In the spring of 2006, a team of Illinois educators created the new Illinois Alternate Assessment (IAA) Frameworks. The purpose of the frameworks is to prioritize the skills and knowledge from the Illinois Learning Standards for students with the most significant cognitive disabilities, in order to develop a new Illinois Alternate Assessment. The Illinois State Board of Education (ISBE) contracted Pearson Educational Measurement (PEM), and their subcontractor partners, Beck Evaluation and Testing Associates, Inc. (BETA), and the Inclusive Large Scale Standards and Assessment (ILSSA) group, to develop the new IAA in grades three through eight and 11 for Reading and Mathematics; in grades four, seven, and 11 for Science; and in grades three, five, six, eight, and 11 for Writing. BETA's responsibilities include providing event-based assessment activities linked to the IAA Frameworks, developing the assessment rubric, and incorporating principles of Universal Design for Learning. ILSSA's responsibilities include facilitating the development of the IAA Frameworks and providing statewide staff development on how to access grade-level curriculum. Pearson Learning Group (PLG) is a division of PEM and their responsibilities include providing a customized online scoring tool along with training to use this feature.

During the framework development meetings, educators were divided into development teams based on both content area and grade level focus. Addressing reading, writing, mathematics, mathematics, and science, each content area had one development team for elementary school, one for middle school, and one for high school. Each team consisted of at least one general education teacher, one special education teacher, and one content expert. The process used by the development teams to create the Illinois Alternate Assessment Frameworks was as follows:

The development teams reviewed each of the assessment objectives (statements coded with numbers such as 6.8.03) in grades three through eight. For each assessment objective, the teams:
- Identified the critical function, or the main idea of the objective;
- Wrote an instructional activity that could be used to teach the skills needed to meet the assessment objective in the general education classroom;
- Wrote a modified instructional activity that could be used to teach students with the most significant cognitive disabilities the same skills; and
- Identified three assessment activities that could be used to assess students with the most significant cognitive disabilities on the skills described in the modified activity.

After the development teams examined the assessment objectives and wrote both instructional and assessment activities for each grade level, the teams prioritized the assessment objectives and selected the assessment objectives which are most suitable for students with the most significant cognitive disabilities. The leadership team at ISBE reviewed these priorities for further refinement. These pilot priorities will form the basis for the new IAA performance test items. Following the completion of the fall 2006 writing pilot, a review may be necessary in order to determine if the new IAA priorities are appropriate and provide a comparable assessment to the general statewide assessment.

Using grade-level curriculum as the focus, the development teams described the instructional and assessment supports, accommodations, and assistive technology required to ensure access to quality instruction.   The descriptions produced by the development teams were summarized into a set of statements designed to provide consistency across the content frameworks. These statements are as follows:
- Appropriate instruction must occur prior to the assessment activity.
- All activities must provide appropriate support, accommodations, and/or assistive technology during both the instructional activities and the assessment process. This may include the following:
  - The use of prompting strategies, ranging from minimum prompts to full physical assistance in order to create a learning continuum for correct responses.
  - The use of assistive technology, ranging from low tech to high tech.
  - The reduction of breadth, depth, and/or complexity.
- Specific instructional strategies and the instructional environment for the individual student vary and should be determined by the student's IEP team.
- During assessment activities, the students should use the mode of communication that they used to learn and practice the skills during instructional activities.

- Instruction should be presented to the student in a way that is authentic, accessible, and meaningful (e.g., tactile objects, picture symbols, or use of a text reader), to ensure the student has multiple opportunities to learn and demonstrate knowledge.
- Instruction should take place within the context of grade-level content, using age-appropriate activities and materials, regardless of the placement of the student.
- Instruction must incorporate age-appropriate activities and materials which represent the same grade level content as their peers without disabilities. However, the activities and materials may be adapted to meet the individual needs of the student (e.g., reduce the language requirements or difficulty of the task) as long as the context of the materials used by same age peers remains intact.

All instructional practices should occur using available resources and materials familiar to the learners.

Communication skills are essential to the assessment of students with significant cognitive disabilities. Symbolic communication skills form the foundation for reading, mathematics, and writing. Students with significant cognitive disabilities are very diverse in their communication ability. Some students communicate symbolically, while others communicate in highly individualized ways. There are some important considerations in the development of symbolic communication skills which include the following:
- All students communicate regardless of their level of symbolic language use.
- Students with the most significant cognitive disabilities can acquire generalized use of objects (or object selection) to communicate preferences (Hetzroni, Rubin, Konkol, 2002).
- Language learners must use symbols repeatedly, interactively, and generatively during meaningful and ongoing activities in language-rich environments (Goossens, Crain, & Elder, 1992; Cafiero, 1998; Goossens, et al., 1992; Romiski & Sevcik, 1996; Miller & Eller-Miller, 2002; Mirenda, 2003).
- Competent use of language for multiple purposes, audiences, and contexts facilitate the metalinguistic skills required for reading comprehension (Rankin, Harwood, & Mirenda, 1994).

The assessment activities in this document reflect three types of students who represent the continuum of communication skills within this student population.
- The first activity is designed for students who inconsistently respond to communication and inconsistently use words, objects, or gestures to communicate expressively.
- The second activity is for learners who are beginning to use understandable communication through gestures, pictures, objects/textures, points, etc., to clearly express a variety of intentions.
- The third activity is for students who are using verbal or written words, sign language, Braille, or any language-based augmentative system to request, initiate, and respond to questions, describe things or events, and express refusal.

Throughout the frameworks document, the suggested general education instructional and modified instructional activities are written in plural form, as instruction is typically provided to a whole class. However, the instruction for these activities may be provided in the context of whole class instruction, small group instruction, or individually based on student needs. Conversely, the assessment activities are written in the singular form, as the IAA is a standard assessment measuring individual performance.

The process of reviewing the frameworks and aligning the new IAA to the Illinois Learning Standards and regular assessment is an ongoing process. The activities in this document were created by Illinois teachers and are only suggested activities that may be used to teach the assessment objectives listed. The activities, materials, and techniques listed in the frameworks are just one possible way to teach these assessment objectives and should not to be considered the state-mandated strategy for teaching any given assessment objective. Teachers should feel comfortable in using other strategies, materials, or activities that may already be in place or familiar to the teacher. The IAA Frameworks and the IAA itself will continue to be reviewed and adjusted as changes occur with the Illinois Standards and/or the general assessment.

State Goal 6: Number Sense
    Representations and Ordering (Standard A)
        6.8.03 Recognize, translate between, and model multiple representations of rational numbers (decimals, fractions, mixed numbers, percents, and roots).
    Computation, Operations, Estimation, and Properties (Standards B and C)
        6.8.09 Solve problems and number sentences involving addition, subtraction, multiplication, and division using rational numbers, exponents, and roots.
    Ratios, Proportions, and Percents (Standard D)
        6.8.17 Read, write, recognize, model, and interpret percents including those less than 1% and greater than 100%.

State Goal 7: Measurement
    Units, Tools, Estimation, and Application (Standards A, B, and C)
        7.8.01 Select and use appropriate standard units and tools to solve measurement problems, including measurement of polygons and circles.
        7.8.03 Compare and estimate length (including perimeter/circumference), area, volume, weight/mass, and angles (0° to 360°) using referents.

State Goal 8: Algebra
    Representations, Patterns, and Expression (Standard A)
        8.8.01, Analyze, extend, and create sequences or linear functions, and determine algebraic expressions to describe the nth term of a sequence.
    Connections Using Tables, Graphs, and Symbols (Standard B)
        8.8.08 Translate between different representations (table, written, graphical, or pictorial) of whole number relationships and linear expressions.
    Writing, Interpreting and Solving Equations (Standards C and D)
        8.8.13 Solve word problems involving unknown quantities.

State Goal 9: Geometry
    Properties of Single Figures and Coordinate Geometry (Standard A)
        9.8.05 Graph points and identify coordinates of points on the Cartesian coordinate plane (all four quadrants).
    Relationships Between and Among Multiple Figures (Standard B)
        9.8.10 Identify front, side, and top views of a three-dimensional solid built with cubes.

State Goal 10: Data Analysis, Statistics, and Probability
    Data Analysis and Statistics (Standards A and B)
        10.8.01 Read, interpret (including possible misleading characteristics), and make predictions from data represented in a bar graph, line (dot) plot, Venn diagram (with two or three circles), chart/table, line graph, scatter plot, circle graph, stem–and–leaf plot, or histogram.
        10.8.03 Create a bar graph, chart/table, line graph, or circle graph and solve a problem using the data in the graph for a given set of data.
    Probability (Standard C)
        10.8.07 Represent all possible outcomes (sample space) for simple or compound events (e.g., tables, grids, tree diagrams).

State Goal 6

Representations and Ordering (Standard A)
Read, write, and represent numbers

6.8.03 Recognize, translate between, and model multiple representations of rational numbers (decimals, fractions, mixed numbers, and percents, and roots).

Critical Function	Suggested General Education Activity	Suggested Modified Instructional Activity	Possible Assessment Activity 1	Possible Assessment Activity 2	Possible Assessment Activity 3
Read and write numbers that are decimals, fractions, mixed numbers, improper fractions, percents, and square roots.	The teacher will demonstrate and explain the relationship between decimals, percents, and mixed numbers. The students will identify the fractions asked for by the teacher.	The teacher, using models, will demonstrate and explain the relationship between decimals, fractions, percents, and mixed numbers. Having four different fractions, represented by models, the students will identify the fraction asked for by the teacher.	Given two fractions or visual models of fractions, the student will identify the fractions asked for by the teacher.	Given three fractions, the student will identify the fraction requested.	Given a representation of a fraction, the student will identify the fraction.

State Goal 6

Computation, Operations, Estimation, and Properties (Standard B and C)
 Number Operations

6.8.09 Solve problems and number sentences involving addition, subtraction, multiplication, and division using rational numbers, exponents, and roots.

Critical Function	Suggested General Education Activity	Suggested Modified Instructional Activity	Possible Assessment Activity 1	Possible Assessment Activity 2	Possible Assessment Activity 3
Solve problems using addition, subtraction, multiplication, and division using rational, exponents, and square roots.	The teacher will model how to solve problems involving addition, subtraction, multiplication, and division using rational numbers, exponents, and roots. The students will solve problems involving addition, subtraction, multiplication, and division using rational numbers, exponents, and roots in many math problems (i.e., algebra problems, geometry, probability, data analysis).	Same as Suggested General Activity with necessary supports.	Given a word problem or number sentence and two possible answers, the student will select the correct response.	Given a word problem or number sentence and three possible answers, the student will select the correct response.	Given a word problem or number sentence, the student will solve the problem.

State Goal 6

Ratios, Proportions, and Percents (Standard D)
Percents

6.8.17 Read, write, recognize, model, and interpret percents including those less than 1% and greater than 100%.

Critical Function	Suggested General Education Activity	Suggested Modified Instructional Activity	Possible Assessment Activity 1	Possible Assessment Activity 2	Possible Assessment Activity 3
Read, write, recognize, and model percents.	The teacher will create manipulatives to model different percents (100 grid, circle representation, bars). The students will indicate if the two representations are equal.	Same as Suggested General Activity with necessary supports.	Given two models of percentages, the student will indicate whether or not the models represent equal amounts.	Given several models of percentages, the student will match the models to the percents they represent.	Given a blank model and a previously taught percent, the student will represent the given percent on the model.

State Goal 7

Units, Tools, Estimation, and Application (Standards A, B, and C)
Measurement Tools

7.8.01 Select and use appropriate standard units and tools to solve measurement problems, including measurement of polygons and circles.

Critical Function	Suggested General Education Activity	Suggested Modified Instructional Activity	Possible Assessment Activity 1	Possible Assessment Activity 2	Possible Assessment Activity 3
Choose and use the correct measuring tool to measure length, weight, capacity, and angles.\n\nExample:\nDraw a line, shape, polygon, figure, angle, or circle given the measurements or dimensions.	The teacher will use a variety of measuring tools and show the students how to use each tool (which also demonstrates the measuring process) in correct units. The students will measure several objects around classroom. The students will construct shapes, lines, and angles, given specific dimensions.	The teacher will use a variety of measuring tools and show the students how to use each tool (which also demonstrates the measuring process) in correct units. The students will measure several objects around classroom. The students will trace/reconstruct a specified line, shape, or angle.	Given two measuring tools and a specified item to be measured, the student will select the appropriate tool to measure the item (e.g., Would a scale or a ruler be appropriate to measure how much a book weighs?).	Given three measuring tools and specified items to be measured, the student will match the appropriate tools to the specified items.	Given a measuring tool, the student will measure simple items in the classroom.

State Goal 7					
Units, Tools, Estimation, and Application (Standards A, B, and C) **Estimation**					
7.8.03 Compare and estimate length (including perimeter/circumference), area, volume, weight/mass, and angles (0° to 360°) using referents.					
Critical Function	Suggested General Education Activity	Suggested Modified Instructional Activity	Possible Assessment Activity 1	Possible Assessment Activity 2	Possible Assessment Activity 3
Estimate length, area, volume, weight, and angles by referring to an object with a known measurement.	The teacher will demonstrate examples using known objects with known measurements, and will compare these to related objects (with unknown measures), and illustrate how to make an educated guess what the unknown measure is. The students will estimate values of various items.	Same as suggested General Education Activity with necessary supports.	Given two items, the student will estimate which item has more mass (weight).	Given a two-dimensional shape and an object that could be used to determine its perimeter (e.g., a picture frame and craft sticks), the student will estimate the perimeter in terms of the object used.	Given a two-dimensional shape and an object that represents a portion of its area (e.g., one scrapbook page and a picture), the student will estimate the total area in terms of the object used.

State Goal 8

Representations, Patterns, and Expressions (Standard A)
Patterns

8.8.01 Analyze, extend, and create sequences or linear functions, and determine algebraic expressions to describe the nth term of a sequence.

Critical Function	Suggested General Education Activity	Suggested Modified Instructional Activity	Possible Assessment Activity 1	Possible Assessment Activity 2	Possible Assessment Activity 3
Analyze sequence to explain how each term was found.	The teacher will give a numerical pattern and explain how to find the nth term. The nth term is the expression used to find any term in the pattern. The students will find the nth term of a sequence.	The teacher will give the students an easy pattern of numbers (e.g., 2, 4, 6, 8) and explain how to find the nth term. The nth term would be any term in the sequence. The students will find the given term.	Given a numerical pattern, the student will select the next term in the pattern from a choice of two.	Given a numerical pattern, the student will select the next three terms in the pattern.	Given a numerical pattern, the student will select the next five terms in the pattern.

State Goal 8

Representations, Patterns, and Expressions (Standard A)
Patterns

8.8.08 Translate between different representations (table, written, graphical, or pictorial) of whole number relationships and linear expressions.

Critical Function	Suggested General Education Activity	Suggested Modified Instructional Activity	Possible Assessment Activity 1	Possible Assessment Activity 2	Possible Assessment Activity 3
Compare linear expressions and an input output table to see if they match. Example: Compare a word problem with a graph.	The teacher will provide a table of values and corresponding graphs. The students will determine which graph matches the table and vice versa.	Same as suggested General Education Activity with necessary supports.	Given a choice of graphs, the student will choose the requested representation of whole numbers.	Given a written representation of whole numbers, the student will find the graph representation that matches.	Given a written representation of whole numbers, the student will draw a graph representation that matches.

State Goal 8					
Writing, And interpreting and Solving Equations (Standards C and D) **Solve Equations and Inequities** **8.8.13 Solve word problems involving unknown quantities.**					
Critical Function	Suggested General Education Activity	Suggested Modified Instructional Activity	Possible Assessment Activity 1	Possible Assessment Activity 2	Possible Assessment Activity 3
Solve word problems using unknown quantities.	The teacher will ask the students to write and solve word problems using one- and two-step equations using rational numbers. The students will solve word problems.	The teacher will ask the students to solve word problems using simple one-step equations. The students will solve word problems.	Given a word problem containing a simple one-step equation, the student will select the correct answer from two possible choices.	Given a word problem containing a simple one-step equation, the student will select the correct answer from three possible choices.	Given a word problem containing a simple situation, the student will solve the problem (e.g. There are bicycles and tricycles in a store. There are 20 wheels total. How many bicycles and tricycles could there be at this store?).

State Goal 9

Properties of Single Figures and Coordinate Geometry (Standard A)
Coordinate Geometry

9.8.05 Graph points and identify coordinates of points on the Cartesian coordinate plane (all four quadrants).

Critical Function	Suggested General Education Activity	Suggested Modified Instructional Activity	Possible Assessment Activity 1	Possible Assessment Activity 2	Possible Assessment Activity 3
Plot points and/or identify coordinates on a Cartesian plane. (A Cartesian plane is a grid with four quadrants.)	The teacher will review graphing. The students will graph points using all four quadrants. The students will find the coordinates of points on the plane.	Same as suggested General Education Activity with necessary supports.	Given an ordered pair, the student will plot one point in the first quadrant on a plane.	Given three ordered pairs, the student will plot the points in the first quadrant on a plane.	Given graph paper, the student will plot points in the first quadrant dictated by the teacher.

State Goal 9: Geometry

Relationships Between and Among Multiple Figures (Standard B)
Relationships Between Two- and Three-dimensional Objects

9.8.10 Identify front, side, and top views of a three-dimensional solid built with cubes.

Critical Function	Suggested General Education Activity	Suggested Modified Instructional Activity	Possible Assessment Activity 1	Possible Assessment Activity 2	Possible Assessment Activity 3
Identify front, side, and top views of a three-dimensional solid built with cubes.	The teacher will show three-dimensional figures built with cubes and paint the front, side, and top views different colors. The students will build a three-dimensional figure with blocks and identify the top, front, and side views.	The teacher will show three-dimensional figures built with cubes and paint the front, side, and top views different colors. The students will use two blocks stacked on top of each other to create a three-dimensional figure. The students will identify the shape of the top view given three choices.	Given a grocery bag with two three-dimensional grocery items inside, the student will be asked to find a specific shape within the bag by just looking at the top views.	Given a grocery bag with three three-dimensional shapes inside, the student will be asked to find specific shapes within the bag by just looking at the top views.	Given a grocery bag with the same grocery item standing, and then lying on its side, the student will be asked to identify the shape of the item in each position. (e.g., a box of crackers standing is a square and lying on its side is a rectangle).

State Goal 10

Data Analysis and Statistics (Standards A and B)
Read and Interpret Displays

10.8.01 Read, interpret (including possible misleading characteristics), and make predictions from data represented in a bar graph, line (dot) plot, Venn diagram (with two or three circles), chart/table, line graph, scatter plot, circle graph, stem–and–leaf plot, or histogram.

Critical Function	Suggested General Education Activity	Suggested Modified Instructional Activity	Possible Assessment Activity 1	Possible Assessment Activity 2	Possible Assessment Activity 3
Read, interpret (including possible misleading characteristics) and make predictions from data on a variety of diagrams and graphs.	The teacher will model how to read and interpret different types of graphs. Given data about something ongoing, the students will predict future outcomes assuming the pattern continues.	Same as suggested General Education Activity with necessary supports.	Given choices, the student will answer questions pertaining to data on a bar graph.	Given a graph, the student will answer questions pertaining to data on a bar graph.	Given a graph, the student will answer questions pertaining to data on a graph.

State Goal 10

Data Analysis and Statistics (Standards A and B)
Complete and Create Displays

10.8.03 Create a bar graph, chart/table, line graph, or circle graph and solve a problem using the data in the graph for a given set of data.

Critical Function	Suggested General Education Activity	Suggested Modified Instructional Activity	Possible Assessment Activity 1	Possible Assessment Activity 2	Possible Assessment Activity 3
Create a bar graph/chart/table, line graph, or circle graph, and solve problems using this data. Example: Students graph data using previous sales of t-shirts and need to predict how many t-shirts to buy to sell at a certain event.	The teacher will model how to create different types of graphs. The students will create a bar graph/chart/table, line graph, or circle graph, and solve problems using the data.	Same as suggested General Education Activity with necessary supports.	Given two pieces of data, the student will graph the data.	Given three pieces of data, the student will place the data on a graph. The student will correctly answer a question using the data from the graph.	Given a set of data, no more than five pieces, the student will create a bar graph by coloring, or shading. The student will answer three questions using the data from the graphs.

State Goal 10					
Probability (Standard C) **Outcomes and Counting Principles**					
10.8.07 Represent all possible outcomes (sample space) for simple or compound events (e.g., tables, grids, tree diagrams).					
Critical Function	Suggested General Education Activity	Suggested Modified Instructional Activity	Possible Assessment Activity 1	Possible Assessment Activity 2	Possible Assessment Activity 3
Represent all possible outcomes for simple or compound events.	The teacher will demonstrate how to determine all possible outcomes of a given situation. Given 10 different types of pizza toppings and two types of pizza crust, the students will determine how many different three-topping pizzas can be made.	The teacher will demonstrate how to determine all possible outcomes of a given situation. Given five different types of pizza toppings and two types of pizza crust, the students will determine how many different three-topping pizzas can be made.	Given three different types of pizza toppings and two different types of crust, the student will determine the number of possibilities of one-topping pizzas, from a choice of three possibilities.	Given three different types of pizza toppings and two types of crust and using manipulatives, the student will determine all the different two-topping pizzas that can be made.	Given three different types of pizza toppings and two types of crust, the student will determine all the different two-topping pizzas that can be made.