Illinois Alternate Assessment Mathematics Frameworks Priorities Grade 11

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 6.11.01) 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 6A)

        6.11.01 Recognize, represent, order, compare real numbers, and locate real numbers on a number line (e.g., π, $\sqrt{2}$, $\sqrt{5}$, 2/3, -1.6).

    Computation, Operations, Estimation, and Properties (Standards B and C)

        6.11.09 Solve problems involving estimates or data (e.g., use averages to estimate the cost of a job that includes labor and materials).

        6.11.10 Perform numerical computations with real numbers.

        6.11.13 Set up, evaluate, or solve single- and multi-step number sentences and word problems with rational numbers using the four basic operations.

    Ratios, Proportions, and Percents (Standard D)

        6.11.18 Set up, evaluate, or solve common problems involving percent (e.g., sales tax, tip, interest, discount, markup, commission, compound interest).

State Goal 7: Measurement

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

        7.11.01 Change from one unit to another within the same system of measurement, including calculations with mixed units (e.g., 3 ½ hours plus 4 hours and 20 minutes; 2½ feet minus 16 inches).

        7.11.03 Determine and calculate to an indicated precision the length, width, height, perimeter/circumference, area, volume, surface area, angle measures, or sums of angle measures of common geometric figures or combinations of common geometric figures.

State Goal 8: Algebra

    Representations, Patterns, and Expression (Standard A)

        8.11.04 Determine a specific term, a finite sum, or a rule that generates terms of a pattern.

    Connections Using Tables, Graphs, and Symbols (Standard B):

        8.11.12 Create and connect representations that are tabular, graphic, numeric, and symbolic from a set of data.

State Goal 9: Geometry

    Properties of Single Figures and Coordinate Geometry (Standard A)

        9.11.02 Identify and represent transformations (rotations, reflections, translations, dilations) of an object in the plane, and describe the effects of transformations on points in words or coordinates.

        9.11.06 Identify a three-dimensional object from different perspectives.

        9.11.07 Identify the relationship between two-dimensional patterns (e.g., nets) and related three-dimensional objects (e.g., cylinders, prisms, cones).

State Goal 10: Data Analysis, Statistics, and Probability

    Data Analysis and Statistics (Standards A and B)

        10.11.01 Read, interpret, predict, interpolate, extrapolate, and use information from a variety of graphs, charts, and tables.

State Goal 6

Representations and Ordering (Standard A)

6.11.01 Recognize, represent, order, compare real numbers, and locate real numbers on a number line (e.g., π, √2, √5, 2/3, -1.6).

Critical Function	Suggested General Education Activity	Suggested Modified Instructional Activity	Possible Assessment Activity 1	Possible Assessment Activity 2	Possible Assessment Activity 3
Recognize, represent, order, compare real numbers, and locate real numbers on a number line (e.g., π, √2, √5, 2/3, -1.6).	The teacher will demonstrate, explain and compare the order of real numbers. Given 10 real numbers, the students will place them on a number line. Examples: Read numbers on a number line. Place numbers on the number line. Put numbers in order from least to greatest or greatest to least. Compare numbers to determine less than, greater than or equal. Place a dot on the number line where a certain number belongs.	The teacher will demonstrate, explain, and compare the order of real numbers. Given two whole numbers (subset of real numbers) plotted and labeled on a number line, the students will place a third number on the number line.	Given a number line, the student will communicate understanding of number placement.	Given a number line and a number, the student will identify the number and show its placement.	Given a number line, the student will identify the number and write the number on the number line in the proper order.

State Goal 6

Computation, Operations, Estimation, and Properties (Standards B and C)

6.11.09 Solve problems involving estimates or data (e.g., use averages to estimate the cost of a job that includes labor and materials).

Critical Function	Suggested General Education Activity	Suggested Modified Instructional Activity	Possible Assessment Activity 1	Possible Assessment Activity 2	Possible Assessment Activity 3
Solve problems involving estimates or data.	The teacher will review rules for rounding up or down and will model how to solve problems using estimation. The students will solve a problem (e.g., A notebook costs $2.98. Approximately how much would 4 notebooks cost?).	The teacher will review rules for rounding up or down and will model how to solve problems using estimation. The students will be instructed to choose 3 grocery items. The students will use rounding up to the next dollar skill to estimate what the total cost will be for all three items.	Given a set of data, the student will indicate if the answer provided is correct.	Given a set of data, the student will indicate from a set of answers which is correct. (e.g., Given a selection for a vending machine item, the student will estimate the number of dollars needed for a purchase.)	Given a set of data, the student will determine the correct answer. (e.g., The student wants to buy x, y, and z. How much money will the student need?)

State Goal 6

Computation, Operations, Estimation, and Properties (Standards B and C)

6.11.10 Perform numerical computations with real numbers.

Critical Function	Suggested General Education Activity	Suggested Modified Instructional Activity	Possible Assessment Activity 1	Possible Assessment Activity 2	Possible Assessment Activity 3
Perform numerical computations with real numbers.	The teacher will review how to perform numerical computations. The students will add positive and negative numbers with and without a number line.	The teacher will review how to perform numerical computations. Using manipulatives, a calculator, and/or a number line, the students will perform addition, subtraction, multiplication, and division problems.	Given a temperature of three degrees below zero and a rise in temperature of 10 degrees, the student will provide the current temperature from a choice of two.	Given a temperature of three degrees below zero and a rise in temperature of 10 degrees, the student will provide the current temperature from a choice of listed possible temperatures.	Given a temperature of three degrees below zero and a rise in temperature of 10 degrees, the student will provide the current temperature.

State Goal 6

Computation, Operations, Estimation, and Properties (Standards B and C)

6.11.13 Set up, evaluate, or solve single- and multi-step number sentences and word problems with rational numbers using the four basic operations.

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.	The teacher will demonstrate how to extract the relevant information from a word problem, set up the number sentence, and solve the equation. The students will solve word problems.	The teacher will demonstrate how to extract the relevant information from a word problem, set up the number sentence, and solve the equation. The students will perform a variety of story problems related to real life situations (shopping, hours worked, etc.) that require 2-4 basic operations.	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)

6.11.18 Set up, evaluate, or solve common problems involving percent (e.g., sales tax, tip, interest, discount, markup, commission, compound interest).

Critical Function	Suggested General Education Activity	Suggested Modified Instructional Activity	Possible Assessment Activity 1	Possible Assessment Activity 2	Possible Assessment Activity 3
Solve problems involving percent.	The teacher will remind students that total cost of an item can be found by multiplying by 100% plus the tax (6% tax would require us to multiply by 1.06; 7%, 1.07, etc). The students will then find the total cost in one step using calculators.	The teacher will give the students a calculator; explain how to change % into decimal and multiply by a cost to find tax. Next, the teacher will show how to add tax to cost to find total price. The students will then add tax to cost of items, using calculators.	Given the word problem, a student buys a sweatshirt that costs $20. The tax is 6%; the student will choose the correct amount of tax when given a choice of two.	Given the word problem, a student buys a sweatshirt that costs $20. The tax is 6%; the student will choose the correct amount of tax when given a list of possible taxes.	Given the word problem, a student buys a sweatshirt that costs $20. The tax is 6%; the student will calculate the tax.

State Goal 7

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

7.11.01 Change from one unit to another within the same system of measurement, including calculations with mixed units (e.g., 3 ½ hours plus 4 hours and 20 minutes; 2½ feet minus 16 inches).

Critical Function	Suggested General Education Activity	Suggested Modified Instructional Activity	Possible Assessment Activity 1	Possible Assessment Activity 2	Possible Assessment Activity 3
Change from one unit to another within the same system of measurement.	The teacher will review basic measurement facts with students and how to add and subtract in measurement units. The students will practice computing total time worked from time cards.	Same as suggested General Education Activity with necessary supports.	Given two times (12:00 to 1:00), the student will determine the amount of time, in hours, that has elapsed.	Given different times (12:00 to 1:00; 12:30 to 1:00), the student will match cards identifying hour and ½ hour.	Given a story problem using increments of time, the student will determine total time. Example: A man worked: 2 hrs. on Mon. 2 ½ hours on Tues. 3 ½ hours on Wed. What is the total time he worked?

State Goal 7

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

7.11.03 Determine and calculate to an indicated precision the length, width, height, perimeter/circumference, area, volume, surface area, angle measures, or sums of angle measures of common geometric figures or combinations of common geometric figures.

Critical Function	Suggested General Education Activity	Suggested Modified Instructional Activity	Possible Assessment Activity 1	Possible Assessment Activity 2	Possible Assessment Activity 3
Determine and calculate to an indicated precision the length, width, height, perimeter, circumference, area, volume, surface area, angle measures, or sums of angle measures on common geometric figures or combinations of common geometric figures.	The teacher will review the definitions and formulas for surface area and volume. The students will calculate the surface area and volume of a cereal box by measuring its dimensions (length, width, and height).	Same as suggested General Education Activity with necessary supports.	Given a surface to measure and two different measurements, the student will choose the correct measurement.	Given a square table, the student will measure a side to determine the size of the tablecloth needed.	Given rectangular tables with different dimensions, the student will measure the tables' lengths and widths to determine the size of the tablecloth needed for each table.

State Goal 8

Representations, Patterns, and Expression (Standard A)

8.11.04 Determine a specific term, a finite sum, or a rule that generates terms of a pattern.

Critical Function	Suggested General Education Activity	Suggested Modified Instructional Activity	Possible Assessment Activity 1	Possible Assessment Activity 2	Possible Assessment Activity 3
Continue patterns and tell how the pattern was created.	The teacher will model and describe how to determine a rule that generates the rules of a pattern. The students will use an equation to find the next number in a pattern.	The teacher will model and describe how to determine a rule that generates the rules of a pattern. Given a number pattern of five numbers with two missing numbers, the students will determine a specific pattern to fill in the blanks.	Given a pattern with one blank and the rule, the student will determine the missing number.	Given a pattern with two blanks and the rule, the student will determine the missing numbers.	Given a pattern with three blanks and the rule, the student will determine the missing numbers.

State Goal 8

Connections Using Tables, Graphs, and Symbols (Standard B)

8.11.12 Create and connect representations that are tabular, graphic, numeric, and symbolic from a 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
Make connections between different forms of data.	The teacher will model and explain how to use an equation to create a graph. The students will practice using an equation and turning it into a table of ordered pairs. The students will then graph the ordered pairs.	The teacher will model and explain how to use an equation to create a graph. Given a floor plan showing multiple same-size tables and the same number of chairs at each table; the students will complete a chart (for each table there are six chairs) to connect the data from the floor plan to the chart. The students will graph the pairs from the chart.	Given a floor plan showing multiple same-size tables and the same number of chairs at each table; the students will complete a chart (for each table there are six chairs) to connect the data from the floor plan to the chart. The student will be given two choices of charts and will determine which chart matches the floor plan.	Given a floor plan (see activity 1) and several charts, the student will determine which chart matches the floor plan.	Given a floor plan (like from the modified activity), the student will complete a chart that represents the floor plan.

State Goal 9

Properties of Single Figures and Coordinate Geometry (Standard A)

9.11.02 Identify and represent transformations (rotations, reflections, translations, dilations) of an object in the plane, and describe the effects of transformations on points in words or coordinates.

Critical Function	Suggested General Education Activity	Suggested Modified Instructional Activity	Possible Assessment Activity 1	Possible Assessment Activity 2	Possible Assessment Activity 3
Identify and represent transformations.	The teacher will use a Geometer's Sketch pad to show the students how to tessellate. The students will use rotations, reflections, and translations.	The teacher will have the students draw an object on one side of the paper using charcoal on a piece of paper. The students will be asked to fold the paper and rub to transfer the reverse image onto the other side of the paper and discuss that this is a reflection.	Given a sample of a reflection and something that is not a reflection, the student will choose the reflection.	Given multiple samples of reflections and non-reflections, the student will sort the samples by reflection and non-reflection.	Given art materials, the student will create their own reflection.

State Goal 9

Properties of Single Figures and Coordinate Geometry (Standard A)

9.11.06 Identify a three-dimensional object from different perspectives.

Critical Function	Suggested General Education Activity	Suggested Modified Instructional Activity	Possible Assessment Activity 1	Possible Assessment Activity 2	Possible Assessment Activity 3
Identify a three-dimensional object from different perspectives.	The teacher will model how a three-dimensional shape looks different from all points of view. The students will identify a three-dimensional object from different perspectives and draw it from top view, side view, and front view.	The teacher will model how a three-dimensional shape looks different from all points of view. Given a top view of several three-dimensional objects, the students will pick out certain items based on the view from the top of the object. For example, a box of cereal, search for a rectangle.	Given a circle top view and a choice of a can of soup or a box of cereal, the student will indicate which three-dimensional object matches the circle top view.	Given examples of the shapes of top views and examples of corresponding three-dimensional objects, the student will match the object to the top view of the correct shape.	Given three-dimensional objects, the student will create the top view.

State Goal 9

Properties of Single Figures and Coordinate Geometry (Standard A)

9.11.07 Identify the relationship between two-dimensional patterns (e.g., nets) and related three-dimensional objects (e.g., cylinders, prisms, cones).

Critical Function	Suggested General Education Activity	Suggested Modified Instructional Activity	Possible Assessment Activity 1	Possible Assessment Activity 2	Possible Assessment Activity 3
Identify the relationship between two-dimensional patterns and related three-dimensional objects.	The teacher will have the students take a box and demonstrate as many nets as possible. The students will identify the relationship between patterns and objects.	The teacher will have students take a flattened-out box and assemble the box showing the relationship between what it looked like flat and what it looks like assembled. The students will assemble the box.	Given a flattened-out paper grocery bag and an open standing grocery bag, the student will determine whether or not these are the same.	Given a flattened box and a choice of an open standing bag and an open standing box, the student will select the item that matches the flattened box.	Given a three-dimensional object, the student will determine which two-dimensional pattern, when folded, will make the three-dimensional object.

State Goal 10

Data Analysis and Statistics (Standards A and B)

10.11.01 Read, interpret, predict, interpolate, extrapolate and use information from a variety of graphs, charts, and tables.

Critical Function	Suggested General Education Activity	Suggested Modified Instructional Activity	Possible Assessment Activity 1	Possible Assessment Activity 2	Possible Assessment Activity 3
Read, interpret, predict, interpolate, and use information from a variety of graphs, charts, and tables.	The teacher will review how to interpret data from a graph. The students will be given a graph and asked to predict answers based on the graph.	Same as suggested General Education Activity with necessary supports.	Given choices, the student will answer "yes" and "no" questions pertaining to information on a graph.	Given a graph, the student will answer two questions about the graph.	Given a graph, the student will read and interpret information about the graph.