

Kindergarten Mathematics

Description The Appleton Area School District elementary mathematics program provides students opportunities to develop mathematical skills in thinking and applying problem-solving strategies. The framework of the program is based on providing students the knowledge of when and how to apply mathematical concepts and skills as well as an understanding of why the mathematical processes work.

Credits

Prerequisites

Textbooks/Resources Fuson, Dr. Karen C. *Math Expressions Common Core: Student Activity Book, Volume 1 & 2.* Houghton Mifflin Harcourt, 2013. ISBN# 978-0-547-82478-9.

Required Assessments District-wide, standards-based assessments identified

Board Approved April 1999

Revised August 2008

AASD Mathematics Goals for K-12 Students

- *Become mathematical problem solvers.*
- *Learn to reason mathematically.*
- *Learn to communicate mathematically.*
- *Make mathematical connections.*
- *Develop conceptual understanding of mathematics.*
- *Develop procedural fluency.*
- *Learn to use technology appropriately.*

AASD Mathematics Standards for Students in Kindergarten

Mathematical Practice Standards

1. Make Sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Mathematics Content Standards

<u>Domain</u>	<u>Cluster</u>
I. Counting and Cardinality	<ul style="list-style-type: none"> A. Know number names and the count sequence. B. Count to tell the number of objects. C. Compare numbers.
II. Operations and Algebraic Thinking	<ul style="list-style-type: none"> A. Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.
III. Number and Operations in Base Ten	<ul style="list-style-type: none"> A. Work with numbers 11-19 to gain foundations for place value.
IV. Measurement and Data	<ul style="list-style-type: none"> A. Describe and compare measurable attributes. B. Classify objects and count the number of objects in each category.
V. Geometry	<ul style="list-style-type: none"> A. Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres). B. Analyze, compare, create, and compose shapes.

Essential Learning Objectives	Performance Indicators	Classroom Assessments
<p>1. Develop deep conceptual understanding of mathematics by engaging in age-appropriate mathematical habits.</p>	<p>Performance will be satisfactory when the student:</p> <ul style="list-style-type: none"> a. makes Sense of problems and perseveres in solving them. b. reasons abstractly and quantitatively. c. constructs viable arguments and critiques the reasoning of others. d. models with mathematics. e. uses appropriate tools strategically. f. attends to precision. g. looks for and makes use of structure. h. looks for and expresses regularity in repeated reasoning. 	
<p>Objectives are linked to the Mathematical Practice Standards.</p>		
<p>2. Know number names and the count sequence.</p>	<p>Performance will be satisfactory when the student:</p> <ul style="list-style-type: none"> a. counts to 100 by ones and by tens. b. counts forward beginning from a given number within the known sequence (instead of having to begin at 1). c. writes numbers from 0 to 20. Represents a number of objects with a written numeral 0-20 (with 0 representing a count of no objects). 	
<p>Objectives are linked to the following AASD Mathematics Domains:</p> <ul style="list-style-type: none"> I. Counting and Cardinality 		

Essential Learning Objectives	Performance Indicators	Classroom Assessments
<p>3. Count to tell the number of objects.</p>	<p>Performance will be satisfactory when the student:</p> <ul style="list-style-type: none"> a. understands the relationship between numbers and quantities; connect counting to cardinality. <ul style="list-style-type: none"> 1. When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object. 2. Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted. 3. Understand that each successive number name refers to a quantity that is one larger. b. counts to answer “how many?” questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, counts out that many objects. 	
<p>Objectives are linked to the following AASD Mathematics Domains: I. Counting and Cardinality</p>		
<p>4. Compare numbers.</p>	<p>Performance will be satisfactory when the student:</p> <ul style="list-style-type: none"> a. identifies whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies. b. compares two numbers between 1 and 10 presented as written numerals. 	
<p>Objectives are linked to the following AASD Mathematics Domains: I. Counting and Cardinality</p>		

Essential Learning Objectives	Performance Indicators	Classroom Assessments
<p>5. Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.</p>	<p>Performance will be satisfactory when the student:</p> <ul style="list-style-type: none"> a. represents addition and subtraction with objects, fingers, mental images, drawings¹, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations. b. solves addition and subtraction word problems, and adds and subtracts within 10, e.g., by using objects or drawings to represent the problem. c. decomposes numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and records each decomposition by a drawing or equation (e.g., $5 = 2 + 3$ and $5 = 4 + 1$). d. for any number from 1 to 9, finds the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation. e. fluently adds and subtracts within 5. 	
<p>Objectives are linked to the following AASD Mathematics Domains: II. Operations and Algebraic Thinking</p>		
<p>6. Work with numbers 11-19 to gain foundations for place value.</p>	<p>Performance will be satisfactory when the student:</p> <ul style="list-style-type: none"> a. composes and decomposes numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and records each composition or decomposition by a drawing or equation (such as $18 = 10 + 8$); understands that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones. 	
<p>Objectives are linked to the following AASD Mathematics Domains: III. Number and Operations in Base Ten</p>		

Essential Learning Objectives	Performance Indicators	Classroom Assessments
<p>7. Describe and compare measurable attributes.</p>	<p>Performance will be satisfactory when the student:</p> <ul style="list-style-type: none"> a. describes measurable attributes of objects, such as length or weight. Describes several measurable attributes of a single object. b. directly compares two objects with a measurable attribute in common, to see which object has “more of”/“less of” the attribute, and describes the difference. <i>For example, directly compare the heights of two children and describe one child as taller/shorter.</i> 	
<p>Objectives are linked to the following AASD Mathematics Domains: IV. Measurement and Data</p>		
<p>8. Classify objects and count the number of objects in each category.</p>	<p>Performance will be satisfactory when the student:</p> <ul style="list-style-type: none"> a. classifies objects into given categories; counts the numbers of objects in each category and sorts the categories by count. 	
<p>Objectives are linked to the following AASD Mathematics Domains: IV. Measurement and Data</p>		
<p>9. Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).</p>	<p>Performance will be satisfactory when the student:</p> <ul style="list-style-type: none"> a. describes objects in the environment using names of shapes, and describes the relative positions of these objects using terms such as <i>above, below, beside, in front of, behind, and next to.</i> b. correctly names shapes regardless of their orientations or overall size. c. identifies shapes as two-dimensional (lying in a plane, “flat”) or three-dimensional (“solid”). 	
<p>Objectives are linked to the following AASD Mathematics Domains: V. Geometry</p>		

Essential Learning Objectives	Performance Indicators	Classroom Assessments
<p>10. Analyze, compare, create, and compose shapes.</p>	<p>Performance will be satisfactory when the student:</p> <ul style="list-style-type: none"> a. analyzes and compares two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/“corners”) and other attributes (e.g., having sides of equal length). b. models shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes. c. composes simple shapes to form larger shapes. <i>For example, “Can you join these two triangles with full sides touching to make a rectangle?”</i> 	
<p>Objectives are linked to the following AASD Mathematics Domains: V. Geometry</p>		

Resources and learning activities that address course objectives: