

ELL Newcomers Math – Grades 3-6

Description Grades 3-6 students will develop beginning language, skills, and strategies related to mathematics.

Prerequisites English Language Level 1-2

Textbooks/Resources

Required Assessments ACCESS

Board Approved July, 2005

Revised

AASD Mathematics Goals for K-12 Students

The ELL Bilingual Education program will enable students to:

- *Become mathematical problem solvers.*
- *Learn to reason mathematically.*
- *Learn to communicate mathematically.*
- *Make mathematical connections.*
- *Become proficient in basic computational skills.*
- *Learn to use technology appropriately.*

AASD Mathematics Standards for Students in Grades 3-6

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| . Number Operations and Relationships | <ul style="list-style-type: none">. Understand place value of whole numbers through the hundred thousands (999,999). Solve problems involving addition, subtraction, multiplication and division.. Understand the relationship among whole numbers, simple fractions and decimals. |
| II. Geometry | <ul style="list-style-type: none">. Identify and describe polygons and common 3-dimensional figures.. Compare shapes of plane geometric figures in terms of such concepts as symmetry, congruence and similarity.. Understand right angles in geometric figures and objects in the environment, and relationships with other angles. |
| III. Measurement | <ul style="list-style-type: none">. Demonstrate the ability to measure length, liquid capacity and weight (mass) using the appropriate units (metric and U.S customary) and tools of measurement.. Understand the use of measurement to specific degrees of accuracy for time, money, temperature and angel size. |
| IV. Algebraic Relationships | <ul style="list-style-type: none">. Understand simple number expressions and sentences.. Identify relationships between two quantities.. Demonstrate problem solving strategies, including working a simple problem and working backward. |
| V. Statistics & Probability | <ul style="list-style-type: none">. Collect and record data.. Make predictions based on probability. |

Standard 3: English language learners communicate information, ideas, and concepts necessary for academic success in the content area of MATHEMATICS.

Domain	Level 1 Entering	Level 2 Beginning	Level 3 Developing	Level 4 Expanding	Level 5 Bridging
Listening	<ul style="list-style-type: none"> estimate prices (using visually supported newspaper ads) from oral questions (e.g., “Which one costs about \$1000?”) 	<ul style="list-style-type: none"> compare prices (using visually supported newspaper ads) from oral questions (e.g., “Which one costs more, X or X?”) 	<ul style="list-style-type: none"> narrow the range of prices (using newspaper ads) from oral questions (e.g., “Which one costs under \$1000?”) 	<ul style="list-style-type: none"> make relative comparisons (using newspaper ads) from oral questions (e.g., “Which one is most expensive?”) 	<ul style="list-style-type: none"> make conditional purchases (using newspaper ads) from oral questions (e.g., “If you had \$1000, which items would you buy?”)
Speaking	<ul style="list-style-type: none"> repeat new information about math processes involving computation with use of realia or manipulatives (e.g., “Here are 3 groups of 4.”) 	<ul style="list-style-type: none"> rephrase new information about math processes involving computation with use of visual support 	<ul style="list-style-type: none"> relate new information about math processes involving computation to previous experiences 	<ul style="list-style-type: none"> explain or discuss uses of information about math processes involving computation 	<ul style="list-style-type: none"> integrate or synthesize information about math processes involving computation to create own problems
Reading	<ul style="list-style-type: none"> recreate drawings from models and written directions (e.g., “Make a car like this.”) 	<ul style="list-style-type: none"> construct or recognize scale drawings from models and written directions 	<ul style="list-style-type: none"> construct scale drawings from everyday experiences based on written sets of directions 	<ul style="list-style-type: none"> build models based on pictures and written sets of directions (such as geoboards) 	<ul style="list-style-type: none"> build models based on pictures and written instructions (such as 3D puzzles)
Writing	<ul style="list-style-type: none"> show what’s needed to problem solve through drawings and labels 	<ul style="list-style-type: none"> show process of problem solving through drawings and sequential language (e.g., “First.... Second...”) 	<ul style="list-style-type: none"> give step-by-step process of how to problem solve and check work 	<ul style="list-style-type: none"> describe strategies to use in the process of math problem solving (such as mental math or use of calculators) 	<ul style="list-style-type: none"> analyze and evaluate strategies to use in the process of math problem solving

ELP Standards – WIDA (Classroom)

Standard 3: English language learners communicate information, ideas, and concepts necessary for academic success in the content area of **MATHEMATICS**.

Domain	Level 1 Entering	Level 2 Beginning	Level 3 Developing	Level 4 Expanding	Level 5 Bridging
Listening	<ul style="list-style-type: none"> identify quantities, math symbols, operations, or geometric attributes from oral statements and illustrations (such as shape or size) 	<ul style="list-style-type: none"> compare quantities or attributes based on oral directions, illustrations, or statements using contrastive language (such as longer, shorter, greater or less than) 	<ul style="list-style-type: none"> identify examples of mathematical terms based on oral descriptions of their properties or attributes (such as differentiate among geometric figures based on length, width, or height) 	<ul style="list-style-type: none"> apply language of formulas required for problem solving or data analysis as directed orally 	<ul style="list-style-type: none"> construct models of geometric figures, real-world problems, numerical functions or patterns based on grade level mathematical oral discourse
Speaking	<ul style="list-style-type: none"> tell place values of large whole numbers (such as using manipulatives for numbers of 3 to 7 digits) respond to WH-questions related to math symbols and geometric shapes 	<ul style="list-style-type: none"> describe large whole numbers from pictures of everyday objects ask and respond to questions about patterns, data, or measurement 	<ul style="list-style-type: none"> give examples of large whole numbers from real life experiences describe operations, procedures, or functions with real life examples 	<ul style="list-style-type: none"> explain use/reasons for large whole numbers presented orally from math texts summarize or predict information from math texts 	<ul style="list-style-type: none"> create word problems involving large whole numbers presented orally from grade level math texts explain the reasoning in selecting problem-solving strategies
Reading	<ul style="list-style-type: none"> match words or pictures with math symbols, quantities, and figures (such as denominations with money or time with clocks) 	<ul style="list-style-type: none"> match words/phrases with math-related terms and operations supported visually (such as prices of items or time-related activities) 	<ul style="list-style-type: none"> choose examples of language of math-related terms and information from procedural descriptions or word problems 	<ul style="list-style-type: none"> summarize language of math- related terms and information in procedural descriptions or word problems 	<ul style="list-style-type: none"> interpret or evaluate language of math-related terms and information in procedural descriptions or word problems from grade level texts
Writing	<ul style="list-style-type: none"> draw three dimensional shapes in response to vocabulary (such as cones, cylinders, or prisms) 	<ul style="list-style-type: none"> make lists of real world examples and label three dimensional figures 	<ul style="list-style-type: none"> describe the attributes of three dimensional figures 	<ul style="list-style-type: none"> compare/contrast the attributes of three dimensional figures (e.g., “A ___ is like a ___ because ___”) 	<ul style="list-style-type: none"> describe procedures used to solve real world problems that incorporate three dimensional figures

A. Mathematical Processes

Course Objectives	Performance Indicators	Classroom Assessments
<p>1. Use mathematical processes.</p>	<p>Performance will be satisfactory when the student:</p> <ul style="list-style-type: none"> . recognizes, identifies, formulates questions, justifies and tests patterns & relationships. . recognizes and uses step-by-step processes in reasoning by following basic oral & written directions. . communicates mathematical ideas in a variety of ways (including words, numbers, symbols, pictures, charts, graphs, tables, diagrams, and models). . links mathematics to everyday experiences. . exhibits knowledge of various mathematical functions. . recognizes and uses mathematical concepts and vocabulary (e.g. subtraction, minus, take away, what is left?). . discusses mathematical concepts and solutions. . identifies, selects, demonstrates, and explores appropriate strategies for problem solving. . identifies mathematical usage in content areas. 	<ul style="list-style-type: none"> • Manipulatives (e.g. Pattern blocks, Base Ten blocks) • Math Journal • Student Drawings • Observations • Illustrations • Calendar Math • Lunch Count • Charts, Graphs, Tables • Written Work • Oral & Written Directions
<p>Above objective aligned with AASD standards: Math: Mathematical Processes</p>		

B. Number Operations and Relationships

Course Objectives	Performance Indicators	Classroom Assessments
<p>1. Use numbers effectively for various purposes, such as counting, measuring, estimating, and problem solving.</p>	<p>Performance will be satisfactory when the student:</p> <ul style="list-style-type: none"> . recognizes and uses whole numbers, place value, percentages, decimals, and fractions through manipulatives, number lines, pictures, and oral sharing. . groups and counts more complex numbers (e.g. higher place value, fractions, money, and by 3's, 12's, etc.). . estimates and rounds numbers (e.g. whole numbers, fractions, decimals, money, etc.). . reads, writes, and orders numbers (e.g. whole numbers, fractions, decimals, money, etc.). . recalls and computes addition, subtraction, multiplication, and division facts (through fact families, tables, etc.). . distinguishes between a numerator and a denominator. . performs computations with fractions and decimals (addition, subtraction, multiplication, division, ordering, estimating). . generates basic equivalencies between fractions, decimals, and percentages. . applies mental math. . uses a calculator. . explains problem-solving situations involving adding and subtracting money. 	<ul style="list-style-type: none"> • Manipulatives (e.g. Money, Base Ten blocks, Pattern Blocks, etc.) • Observations • Math Journal • Written Assignments • Oral & Written Presentations
<p>Above objective aligned with AASD standards: Math: Number Operations and Relationships</p>		

C. Geometry

Course Objectives	Performance Indicators	Classroom Assessments
<p>1. Use geometric concepts to interpret, represent, and solve problems.</p>	<p>Performance will be satisfactory when the student:</p> <ul style="list-style-type: none"> . names and describes two- and three-dimensional figures (e.g., circles, polygons, trapezoids, prisms, spheres). . compares, sorts and classifies the figures. . draws and constructs physical models. . explains how these figures are related to objects in the environment. . uses physical materials and motion geometry (e.g., slides, flips, and turns). . identifies symmetry and similarity between 2- and 3-D figures. . identifies their properties (e.g., number of sides or faces, two- or three-dimensionality, equal sides, number of right angles). . identifies and uses relationships among figures, including but not limited to: <ul style="list-style-type: none"> • location (e.g., between, adjacent to, interior of) • position (e.g., parallel, perpendicular) • intersection (of two-dimensional figures). . predicts the results of combining or subdividing two-dimensional figures (e.g. two triangles = parallelogram). . uses simple two-dimensional coordinate systems to find locations on maps and to represent points and simple figures. 	<ul style="list-style-type: none"> • Manipulatives (Tangrams, Pattern Blocks, Pentominoes, 3-D Shapes, etc.) • Following Oral Directions to produce a figure/drawing • TPR • Math Journals • Graphic Organizers • Observations • Educational Games (e.g. Battleship – Grid Coordinates)
<p>Above objective aligned with AASD standards: Math: Geometry</p>		

D. Measurement

Course Objectives	Performance Indicators	Classroom Assessments
<p>1. Select and use appropriate tools (including technology) and techniques to measure things.</p>	<p>Performance will be satisfactory when the student:</p> <ul style="list-style-type: none"> . demonstrates, shows, and uses measurable attributes such as length, liquid capacity, time, weight (mass), temperature, volume, and money, and identifies the appropriate units to measure. . uses and decides appropriate measurements in problem-solving situations. . demonstrates the use of measuring instruments. . demonstrates conversion of standard units of measurement within a system (yards, feet, and inches) and between Metric and U.S. Customary (inches to centimeters). . estimates and/or calculates perimeter, area, volume, weight, money, time, and temperature. 	<ul style="list-style-type: none"> • Manipulatives (Clocks, Measuring Cups, Scales, Calendars, Money, Rulers, Thermometers, etc.) • Measuring Classroom Objects • Cooking • Math Journals • Observations • Written & Oral Presentations
<p>Above objective aligned with AASD standards: Math: Measurement</p>		

E. Statistics & Probability

Course Objectives	Performance Indicators	Classroom Assessments
<p>1. Use data collection and probability to problem-solve.</p>	<p>Performance will be satisfactory when the student:</p> <ul style="list-style-type: none"> . applies problem-solving strategies (e.g. Makes predictions, collects data, draws conclusions, etc.). . describes and interprets a set of data using <ul style="list-style-type: none"> • high and low values and range • most frequent value (mode) • middle value of a set of ordered data (median) • average (mean). . generates charts, tables, and graphs from a given or collected set of data. . formulates and answers questions using data from a variety of sources. . makes predictions and determines probability of future events and tests predictions using data from a variety of sources. 	<ul style="list-style-type: none"> • Manipulatives • Math Journals • Observations • Graphs, Charts, Tables • Word Problems • Written Assignments • Written & Oral Presentations
<p>Above objective aligned with AASD standards: Math: Statistics & Probability</p>		

F. Algebraic Relationships

Course Objectives	Performance Indicators	Classroom Assessments
<p>1. Discover and describe simple patterns and relationships.</p>	<p>Performance will be satisfactory when the student:</p> <ul style="list-style-type: none"> . uses letters, boxes, or other symbols to stand for any number (e.g., $N+0=N$ is true for any number, different ways to make 10, 100, \$1.00). . recognizes and generates basic fact families of addition and subtraction. . uses the vocabulary, symbols, and notation of algebra accurately (e.g. =, <, >, x, y; use of the Associative Property of Multiplication). . uses equations and inequalities in a variety of ways (e.g. to represent story problems). . recognizes variability in relationships by describing how a change in one quantity can produce a change in another (e.g., number of bicycles and the total number of wheels). . works with linear patterns and relationships in a variety of ways (e.g. Recognizing and extending number patterns, describing them verbally, representing them with tables, charts, and graphs). 	<ul style="list-style-type: none"> • Manipulatives • Written Assignments • Math Journals • Oral Presentations • Tables (e.g. Variability)
<p>Above objective aligned with AASD standards: Math: Algebraic Relationships</p>		