

Math Topics (#0598)

Description: This course provides a survey of relevant mathematical topics. Realistic problems will be solved using mathematical modeling, the selection of appropriate tools, and mathematical perseverance. Problems are approached arithmetically, investigated geometrically with graphic representation, and represented by the writing and solving of equations. Upon completion, students should be able to solve practical problems, reason and communicate with mathematics, and work confidently, collaboratively, and independently.

Credits: 1

Prerequisites:

Textbook/Resources:

Required Assessments:

Board Approved:8/18/16

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 app**

AASD Mathematics Standards for Students in Algebra 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.

	Essential Learning Objective (big Rocks) Domain	Performance Indicators	Assessment
7.G.A.	7. G.A Draw, construct, and describe geometrical figures and describe the relationships between them.	<p>7.G.A.1 Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.</p> <p>7. G.A.2 Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.</p>	Rubrics

		<p>7. G.A.3 Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.</p>	
7.G.B.	<p>7. G.B Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.</p>	<p>7. G.B.4 Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.</p> <p>7. G.B.5 Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.</p> <p>7.G.B.6 Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.</p>	Rubrics
8.G.A.	<p>8. G.A Understand congruence and similarity using physical models, transparencies, or geometry software.</p>	<p>8.G.A.1 Verify experimentally the properties of rotations, reflections, and translations:</p> <p>8.G.A.2 Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures,</p>	Rubrics

		<p><u>describe a sequence that exhibits the congruence between them.</u></p> <p><u>8. G.A.3 Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.</u></p> <p><u>8.G.A.4 Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.</u></p> <p><u>8. G.A.5 Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so</u></p>	
<p>8.G.B.</p>	<p>8. G.B Understand and apply the Pythagorean Theorem.</p>	<p><u>8. G.B.6 Explain a proof of the Pythagorean Theorem and its converse.</u></p> <p><u>8. G.B.7 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.</u></p>	<p>Rubrics</p>

		<u>8. G.B.8 Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.</u>	
8.G.C.	8.G.C. Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres	<u>8.G.C.9 Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.</u>	Rubrics
8.SP.A	8. SP.A Investigate patterns of association in bivariate data.	<p><u>8. SP.A.1 Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.</u></p> <p><u>8. SP.A.2 Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.</u></p> <p><u>8. SP.A.3 Use the equation of a linear model to solve problems in the context of bivariate</u></p>	Rubrics

measurement data, interpreting the slope and intercept. For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.

8. SP.A.4 Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?