

**Southington Public Schools
Curriculum Map**

Subject: Practical Math

Grade: 10

UNIT TITLE	Measurement and Perimeter	Transformations	Area of 2-Dimensional Objects
CONTENT	<ul style="list-style-type: none"> • Estimate and measure using a variety of tools • Apply perimeter concepts to solve real worlds problems 	<ul style="list-style-type: none"> • Reflect, rotate, and transform geometric objects • Understand when/how transformations occur in the real world 	<ul style="list-style-type: none"> • Apply area formulas to a variety of geometric shapes as well as to solve real world problems • Use the Pythagorean Theorem to find unknown lengths
STATE STANDARDS	<p>2.2a (9-12C) Develop strategies for computation and estimation using properties of number systems to solve problems. <i>(1) Select and use appropriate methods for computing to solve problems in a variety of contexts.</i> <i>(3) Develop and use a variety of strategies to estimate values of formulas, functions and roots; to recognize the limitations of</i></p> <p>2.2b (9-12C) Solve proportional reasoning problems. <i>(1) Use dimensional analysis to determine equivalent rates.</i></p> <p>3.1a. (9-12C) Investigate relationships among plane and solid geometric figures using geometric models, constructions and tools. <i>(2) Use geometric properties to solve problems in two (and three) dimensions.</i> <i>(3) Determine and compare properties of classes of polygons.</i></p> <p>3.3 a. (9-12C) Solve a variety of problems involving one- two- (and three-dimensional) measurements using geometric relationships and trigonometric ratios</p>	<p>3.2a. (9-12C) Verify geometric relationships using algebra, coordinate geometry, and transformations. <i>(2) Describe how a change in measurement of one or more parts of a polygon or solid may affect its perimeter, area, surface area and volume and make generalizations for similar figures.</i> <i>(3) Apply transformations to plane figures to determine congruence, similarity, symmetry, and tessellations.</i></p> <p>3.2a. (9-12E) Use a variety of coordinate systems and transformations to solve geometric problems in two- and three-dimensions using appropriate tools and technology. <i>(3) Represent translations, reflections, rotations, and dilations of plane figures using sketches, coordinates, vectors, function notation and matrices to examine the effects of transformations and their composites and to solve related geometric problems.</i></p>	<p>3.1a. (9-12C) Investigate relationships among plane and solid geometric figures using geometric models, constructions and tools. <i>(2) Use geometric properties to solve problems in two and three dimensions.</i></p> <p>3.2a. (9-12C) Verify geometric relationships using algebra, coordinate geometry, and transformations. <i>(2) Describe how a change in measurement of one or more parts of a polygon or solid may affect its perimeter, area, surface area and volume and make generalizations for similar figures.</i></p> <p>3.3a. (9-12C) Solve a variety of problems involving one- two- and three-dimensional measurements using geometric relationships and trigonometric ratios. <i>(1) Select appropriate units, scales, degree of precision, and strategies to determine length, angle measure, perimeter, circumference, and area of plane geometric figures.</i> <i>(2) Use indirect methods including the Pythagorean Theorem, trigonometric ratios and proportions in similar figures to solve a variety of measurement problems.</i></p>

	<p><i>(1) Select appropriate units, scales, degree of precision, and strategies to determine length, angle measure, (perimeter) of plane geometric figures.</i></p> <p><i>(3) Justify the reasonableness of answers to direct (and indirect) measurement problems.</i></p>		
ASSESSMENT	<p><u>PERFORMANCE TASK</u></p> <p>You are an explorer looking for hidden treasure. Use your knowledge of lines, rays and angle measures to determine the location of the treasure following the clues given. You must answer all questions including distances, angle measures and locations.</p> <p>Your next task is to design your own treasure hunt writing clues and using a map of your choice. You must provide clues to help another explorer solve the location of your hidden treasure.</p>	<p><u>PERFORMANCE TASK</u></p> <p>Transformation Project: using Geometer’s Sketchpad</p>	<p><u>PERFORMANCE TASK</u></p> <p>For this project you will be asked to use your imagination, artistic flare, and understanding of geometry to make a floor plan of your dream room! Think about what your room is like now and imagine what it could be if budget and space was not an issue. First you will be asked to write about the similarities and differences you would include in your new room. Then, scale your actual dream room down to fit on an 8 1/2 X 11 piece of unlined paper. You will include the scale in the final draft. The dimensions of the room and each item in the room must be included in your final draft as well (ie: bed, desk, table). The room must contain a triangle, circle, and 2 quadrilaterals in which you will find the perimeter of each object as well as the area.</p>

	<u>OTHER EVIDENCE</u>	<u>OTHER EVIDENCE</u>	<u>OTHER EVIDENCE</u>
	<ul style="list-style-type: none"> • Quizzes: Measurement • Test • Worksheets • Projects 	<ul style="list-style-type: none"> • Quizzes: Measurement • Test • Worksheets • Projects 	<ul style="list-style-type: none"> • Quizzes: Measurement • Test • Worksheets • Projects
SKILLS	<ul style="list-style-type: none"> • Use a ruler to measure in English and metric systems to solve real world problems. • Use a protractor to measure angles in degrees to solve real world problems and to make geometric conjectures. • Use perimeter to solve real world problems. • Estimate both short and long distances. 	<ul style="list-style-type: none"> • Perform transformations. • Use transformations to manipulate objects. • Identify and interpret when transformations are executed in everyday life. 	<ul style="list-style-type: none"> • Use the appropriate formula to find the area of the given figure. • Find circumference and area of a circle. • Use the Pythagorean theorem to find the missing side length of a triangle. • Calculate the square root of a number.

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UNIT TITLE	Surface Area and Volume	Probability	
CONTENT	<ul style="list-style-type: none"> • Calculate the perimeter and area of 2-dimensional objects • Calculate the surface area and volume of 3 dimensional objects • Analyze the effect on area and volume of an object when dimensions change 	<ul style="list-style-type: none"> • Determine the probability of an event and use the results to make predictions on future outcomes. 	
STATE STANDARDS	<p>3.1a. (9-12C) Investigate relationships among plane and solid geometric figures using geometric models, constructions and tools. <i>(2) Use geometric properties to solve problems in two and three dimensions.</i></p> <p>3.2a. (9-12C) Verify geometric relationships using algebra coordinate geometry, and transformations. <i>(2) Describe how a change in measurement of one or more parts of a polygon or solid may affect its perimeter, area, surface area and volume and make generalizations for similar figures.</i></p> <p>3.3a. (9-12C) Solve a variety of problems involving one- two- and three-dimensional measurements using geometric relationships and trigonometric ratios. <i>(1) Select appropriate units, scales, degree of precision, and strategies to determine length, angle measure, perimeter, circumference, and area of plane geometric figures.</i> <i>(2) Use indirect methods including the Pythagorean Theorem, trigonometric ratios</i></p>	<p>4.2a. (9-12C) Analyze real world problems using statistical techniques. <i>(2) Use data from samples to make inferences about a population and determine whether claims are reasonable or false.</i> <i>(3) Determine and use measures spread and of central tendency to describe and compare sets of data.</i></p> <p>4.3a. (9-12C) Understand and apply the principles of probability in a variety of situations. <i>(1) Solve problems involving the probabilities of mutually exclusive events or complementary events.</i> <i>(2) Explore the concepts of conditional probability and independent events in real world contexts.</i> <i>(3) Use theoretical probabilities to solve problems and predict experimental outcomes.</i></p>	

	<p><i>and proportions in similar figures to solve a variety of measurement problems.</i></p> <p><i>(4) Use two dimensional representations, formal, and informal methods to solve surface area and volume problems.</i></p>		
ASSESSMENT	<p><u>PERFORMANCE TASK</u></p> <p>You are a cereal box designer selected by the Zaps Super Sugar Blast Cereal Company. Your job is to redesign their spherical cereal container. The container can be any shape, but it must hold the same amount of cereal as the spherical container and not roll off the supermarket shelves.</p> <p><u>OTHER EVIDENCE</u></p> <ul style="list-style-type: none"> • Quizzes and Classroom assignments. • Test • Worksheets • Projects 	<p><u>PERFORMANCE TASK</u></p> <p>You are a technology specialist working for a small publishing company. The company is planning on purchasing a new computer system. You have been asked to research available computer systems and determine the best one by completing a comparative study of various systems.</p> <p>Your task is to prepare a report outlining the reasons for your recommendation and support your conclusion using charts and tables that will consolidate the information you gathered.</p> <p><u>OTHER EVIDENCE</u></p> <ul style="list-style-type: none"> • Quizzes and Classroom assignments. • Test • Worksheets • Projects 	
SKILLS	<ul style="list-style-type: none"> • Find the surface area of a sphere, cylinder and prism. • Use their knowledge of surface area to solve real world problems. • Find the volume of a sphere, cylinder and prism. • Use their knowledge of volume to solve real world problems • Compare surface area and volume as their dimensions are changed. 	<ul style="list-style-type: none"> • Find the probability of simple events. • Find probabilities of 0 and 1. • Draw tree diagrams and list sample spaces. • Use the fundamental counting principle. • Find the probability of two independent events both occurring. • Find the probability of two dependent events occurring. • Use probability to make predictions about 	

	<ul style="list-style-type: none">• Construct nets to form specific three-dimensional objects.	outcomes.	
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