Brunswick School Department Grade 5 Geometry and Measurement

	Geometry and Measurement
Essential Understandings	<ul> <li>Lines are the fundamental building blocks of polygons.</li> <li>Different tools are used to measure different things.</li> <li>Standard units provide common language for communicating measurement.</li> </ul>
Essential Questions	<ul> <li>How can one use attributes to recognize and classify polygons and three dimensional figures?</li> <li>How does one construct a polygon?</li> <li>How can one construct, describe, and compare circles?</li> <li>How can triangles be classified?</li> <li>What is rotational symmetry?</li> <li>How can one measure length?</li> <li>How can one find perimeter?</li> <li>What are similar figures?</li> <li>How does one convert units within the standard measurement system (i.e., meters and millimeters)?</li> <li>How does one use a protractor to measure angles?</li> <li>What is the difference between linear, square and cubic units?</li> <li>How does one measure volume?</li> <li>How does one calculate elapsed time?</li> <li>How does one measure temperature?</li> <li>How does one measure and convert weight using fractions and decimals?</li> <li>What is a coordinate system?</li> </ul>

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	<ul> <li>A straight edge, compass and protractor can be used to construct a polygon</li> </ul>
	Polygon. ■ Relationships between lines can be used to identify and classify
	polygons.
	<ul> <li>One can use attributes to determine how polygons and three-</li> </ul>
	dimensional figures are alike and different.
	<ul> <li>Angles are acute, obtuse, or right.</li> </ul>
Essential	<ul> <li>All points on a circle are an equal distance from the center point.</li> </ul>
Knowledge	<ul> <li>Triangles are classified as acute, obtuse or right and isosceles,</li> </ul>
	<ul> <li>An object is symmetrical when one half is the mirror image of the</li> </ul>
	other half.
	<ul> <li>Slides, rotations, and reflections can be used to create patterns</li> </ul>
	and demonstrate congruence.
	<ul> <li>An object has rotational symmetry if an outline of the turning figure matches its original shape</li> </ul>
	<ul> <li>Similar figures have corresponding equal angles and the lengths of</li> </ul>
	the sides are proportional.
	<ul> <li>Perimeter is measured in linear units.</li> </ul>
	<ul> <li>Area is measured in square units.</li> </ul>
	<ul> <li>Volume is measured in cubic units.</li> </ul>
	<ul> <li>Elapsed time is the amount of time that has passed between two</li> </ul>
	given points in time.
	A coordinate system is used to plot and locate ordered pairs.
Veeebulenv	<u>Ierms</u> :
vocabulary	o rectangular prism, coordinate system (Canesian plane),
	face
	<ul> <li>Draw and construct polygons using a straight edge compass and</li> </ul>
	protractor. (R. A)
	<ul> <li>Recognize attributes of two and three- dimensional figures using</li> </ul>
	multiple methods including sides, edges, vertices and faces.
	Shapes include rectangular and triangular prisms, cylinders,
	spheres, pyramids and cones. (R, A)
	<ul> <li>Identify, describe, draw, and compare circles. (R, A)</li> </ul>
Essential	<ul> <li>Identify, describe, draw, and distinguish the following triangles:</li> </ul>
Skills	isosceles, equilateral, acute, obtuse, scalene, and right. (R, A)
	<ul> <li>Slide, rotate or reflect figures to create patterns or demonstrate</li> <li>congruence (P, A)</li> </ul>
	Identify and create figures with rotational (R Δ)
	<ul> <li>Identify numerical similarities of polygons using side proportions (I</li> </ul>
	<ul> <li>Measure linear length using inches, feet, vards, miles, centimeters.</li> </ul>
	meters and kilometers. (I. R. A)
	<ul> <li>Measure the perimeter of polygons to the nearest quarter inch and</li> </ul>
	half centimeter. (R. A)

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	<ul> <li>Measure the area of squares and rectangles to the nearest square</li> </ul>
	unit. (R, A)
	<ul> <li>Make conversions within measurement systems when solving</li> </ul>
	problems (i.e., inches to feet, minutes to hours, grams to kilograms,
	ounces to cups, etc.). (I, R, A)
	<ul> <li>Measure angles within 2 degrees using a protractor. (I, R)</li> </ul>
	<ul> <li>Measure and use units of measure appropriately and consistently</li> </ul>
	to solve problems. (R, A)
	<ul> <li>Find the area of triangles and quadrilaterals including right triangles</li> </ul>
	and parallelograms. (I, R)Recognize the relationship between the
	area of a triangle and a quadrilateral (i.e. why the area of a triangle
Eccential	IS 1/201). (I, R) Evoloin and illustrate the difference between linear equare and
Skille	• Explain and illustrate the difference between intear, square, and
JKIII3	■ Find the volume and the surface area of rectangular prisms using a
	formula (I R A)
	<ul> <li>Use the formula I x w x h for the volume of a rectangular prism. (I.</li> </ul>
	R, A)
	<ul> <li>Use formulas to compute the area and perimeter of squares and</li> </ul>
	rectangles. (R, A)
	<ul> <li>Recognize and estimate the relative sizes of one cubic meter, one</li> </ul>
	cubic centimeter, one cubic inch and one cubic foot. (I, R,
	A)Create and use nets to visualize rectangular prisms and
	calculate the volume. (I, R)
	<ul> <li>Calculate elapsed time. (R, A)</li> </ul>
	Find temperature in Fahrenheit and Celsius, including negative
	numbers. (I, K, A)lyleasure capacity in milliliters, liters, ounces,
	Cups, pints, quarts, and gallons. (K, A)
	<ul> <li>weasure and convent weight in ounces, pounds, grams, and</li> <li>kilograms using fractions and desimals. (L.B. A)</li> </ul>
	■ Use a coordinate system to plot and locate ordered pairs (L.R.)

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	B. Data
	Measurement and Approximation
	B1.Students understand and use measures of elapsed time,
	temperature, capacity, mass and use measures of mass and
	weight
	a. Select and use appropriate tools and units (mass in grams,
	weight in pounds) for these measures.
	b. Solve and justify problems with those measures.
	C. Geometry
	Geometric Measurement
	C2. Students find the areas of triangles and guadrilaterals.
	a. Know how to derive and use the formula, $A = (1/2) bh$ for the
	area of a triangle.
	b. Find the area of parallelograms.
	C3. Students understand how to find the volume and surface area
Related	of rectangular prisms.
Maine Learning	a. Know how to build solids with unit cubes and find their
Results	volume.
	b. Recognize and estimate the relative sizes of one cubic meter
	and one cubic centimeter or one cubic inch and one cubic
	foot.
	c. Know how to derive and use the formula (length x width x
	height) for the volume of a rectangular prism.
	d. Create nets to aid visualization and computation.
	C4. Students understand how to describe position and direction in
	two dimensions.
	a. Locate points on the Cartesian plane.
	Transformations
	C5.Students reflect, slide, and rotate plane figures.
	a. Slide, rotate, or reflect figures to create patterns or
	demonstrate congruence.
	b. Identify figures with rotational or line symmetry.
	c. Create figures with rotational or line symmetry.

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	NECAP
	Geometry and Measurement
	M (G & M) 5-3
	Uses properties or attributes (shape of bases, number of lateral
	faces, or number of bases) to identify, compare, or describe
	three-dimensional shapes (rectangular prisms, triangular prisms,
	cylinders, spheres, pyramids, or cones).
	M (G & M) 5-6
NECAP	Demonstrates conceptual understanding of perimeter or
	polygons, and the area of rectangles or right triangles through
	models, manipulatives, or formulas, the area of polygons or
	irregular figures on grids, and volume of rectangular prisms
	(cubes) using a variety of models, manipulatives, or formulas.
	Expresses all measures using appropriate units.
	M (G & M) 5-7
	Measures and uses units of measures appropriately and
	consistently, and makes conversions within systems when
	solving problems across the content strands.