Mathematics: **Brunswick School Department**
Honors Geometry
Unit 2: Congruent Triangles

Essential Understandings	▪ Congruent triangles are used to derive many geometric relationships.
Essential Questions	▪ What are congruent triangles? ▪ How do we show that triangles are congruent? ▪ How do we use congruent triangles to derive other geometric relationships?
Essential Knowledge	▪ In congruent triangles, each pair of corresponding parts is congruent. ▪ Triangles can be proven congruent using SSS, SAS, ASA, AAS and HL postulates and theorem. ▪ Base angles of an isosceles triangle are congruent. ▪ If two angles a triangle are congruent, then the triangles is isosceles. ▪ A triangle is equiangular if and only if it is equilateral. ▪ In an isosceles triangle, the median to the base, the altitude to the base and the bisector of the vertex angle are the same segment.
Vocabulary	▪ <u>Terms</u>: o corresponding parts, congruent triangles, SSS, SAS, ASA, AAS, HL, isosceles triangle, base angles, vertex angles, legs, base, right triangle, hypotenuse, legs, altitude, median, perpendicular bisector of a segment.
Essential Skills	▪ Determine if triangles are congruent using SSS, SAS, ASA, AAS, and HL. ▪ Use corresponding parts of congruent triangles to prove that other parts of triangles are congruent. ▪ Identify congruent sides and angles in an isosceles triangle. ▪ Given the measure of one angle in an isosceles triangle, find the measures of the other two angles. ▪ Identify the altitudes, medians, perpendicular bisectors, and angle bisectors in a triangle.

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Related Maine Learning Results	<u>Mathematics</u>
	C. Geometry
	  Geometric Figures
	  C1.Students justify statements about polygons and solve problems.
	    a. Use the properties of triangles to prove theorems about figures and relationships among figures.
	    b. Solve for missing dimensions based on congruence and similarity.
	    c. Use the Pythagorean Theorem in situations where right triangles are created by adding segments to figures.
	    d. Use the distance formula.
	  C2.Students justify statements about circles and solve problems.
	    a. Use the concepts of central and inscribed angles to solve problems and justify statements.
	    b. Use relationships among arc length and circumference, and areas of circles and sectors to solve problems and justify statements.
	  C3.Students understand and use basic ideas of trigonometry.
	    a. Identify and find the value of trigonometric ratios for angles in right triangles.
	    b. Use trigonometry to solve for missing lengths in right triangles.
	    c. Use inverse trigonometric functions to find missing angles in right triangles.

Related Maine Learning Results	D. Algebra
	   Equations and Inequalities
	   D2. Students solve families of equations and inequalities.
	     a. Solve systems of linear equations and inequalities in two unknowns and interpret their graphs.
	     b. Solve quadratic equations graphically, by factoring in cases where factoring is efficient, and by applying the quadratic formula.
	     c. Solve simple rational equations.
	     d. Solve absolute value equations and inequalities and interpret the results.
	     e. Apply the understanding that the solution(s) to equations of the form $f(x) = g(x)$ are x-value(s) of the point(s) of intersection of the graphs of $f(x)$ and $g(x)$ and common outputs in table of values.
	     f. Explain why the coordinates of the point of intersection of the lines represented by a system of equations is its solution and apply this understanding to solving problems.
	   D3. Students understand and apply ideas of logarithms.
	     a. Use and interpret logarithmic scales.
	     b. Solve equations in the form of $x + b^{y}$ using the equivalent form $y = \log_{b} x$.

Sample Lessons And Activities	▪ Use SSS, SAS, and ASA to identify and prove congruent triangles
Sample Classroom Assessment Methods	▪ Quizzes ▪ Take-home worksheets ▪ Tests
Sample Resources	▪ <u>Publications:</u> ○ <u>Geometry</u>, McDougal Littell