Mathematics

Brunswick School Department Honors Geometry Unit 1: Parallel Lines

Essential Understandings	 Parallel lines have many properties and applications in geometry.
Essential Questions	 What are some relationships between angles formed by parallel lines and a transversal? What is the difference between deductive and inductive reasoning? What determines parallel lines? What are the names of the special pairs of angles formed by a transversal? What theorems involve parallel lines?
Essential Knowledge	 Parallel lines and a transversal form pairs of angles that are congruent or supplementary. Congruent angles can determine parallel lines. The sum of the measures of the interior angles of a triangle is 180. Skew lines are non-coplanar. The sum of the interior angles of a polygon is related to the number of sides. The sum of the exterior angles of a polygon, one at each vertex, is always equal to 360. A regular polygon has congruent sides and congruent angles. Inductive reasoning involves using patterns, not deductions.
Vocabulary	 <u>Terms</u>: parallel lines, parallel planes, skew lines, transversal, corresponding angles, alternate interior angles, same side interior angles, same side exterior angles, alternate exterior angles, same side exterior angles, polygon, regular polygon, pentagon, hexagon, octagon, decagon, n-gon, convex, non-convex, exterior angle of a polygon, interior angle of a polygon, remote interior angles of a triangle, inductive reasoning
Essential Skills	 Prove certain angles are congruent when two parallel lines are cut by a transversal Prove certain angles are supplementary when two parallel lines are cut by a transversal Prove two lines are parallel if certain angles are congruent. Prove two lines are parallel if certain angles are supplementary. Identify scalene, isosceles, equilateral, acute, right obtuse and equiangular triangles. Find the measures of the angles of a triangle based on given information. Identify polygons, pentagons, hexagons, octagon, decagons, etc. Find the measure of an angle in a triangle from other known angle measures.

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	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.
	 Use the concepts of central and inscribed angles to solve
Related	problems and justify statements.
Maine Learning	b. Use relationships among arc length and circumference, and
Results	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.
	D. Algebra
	Symbols and Expressions
	D1. Students understand and use polynomials and expressions with
	rational exponents.
	a. Simplify expressions including those with rational numbers.
	b. Add, subtract, and multiply polynomials.
	c. Factor the common term out of polynomial expressions.
	d. Divide polynomials by (ax+b).

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	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.
	 Solve absolute value equations and inequalities and
Related	interpret the results.
Maine Learning	e. Apply the understanding that the solution(s) to equations of
Results	the form $f(x) = g(x)$ are x-value(s) of the point(s) of interpoint (s) of
	Intersection of the graphs of f(x) and g(x) and common
	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 $x + b$ using the equivalent
	form $v = \log x$.
Sampla	 Define and identify angles associated two lines out by a
J assons	 Define and identify angles associated two lines cut by a transversal: corresponding angles alternate interior angles same
And	side interior angles, etc
Activities	
Sample	 Quizzes, take-home worksheets, and tests.
Classroom	
Assessment	
Methods	
• •	<u>Publications:</u>
Sample	 <u>Geometry</u>, McDougal Littell
Resources	