Mathematics
Geometry II Honors
Unit 3: Quadrilaterals and Polygons

Essential Understandings	▪ Parallelograms and trapezoids have unique properties (or characteristics) that can be derived using congruent triangles.
Essential Questions	▪ What are the properties of parallelograms? ▪ What are the properties of rectangles? ▪ What are the properties of rhombi? ▪ What are the properties of squares? ▪ What are the properties of trapezoids? ▪ What are the properties of isosceles trapezoids?
Essential Knowledge	▪ Parallelograms, rectangles, rhombi, squares, trapezoids and other quadrilaterals have special properties.
Vocabulary	▪ <u>Terms</u>: ○ parallelogram, rectangle, rhombus, square, trapezoid and isosceles trapezoid; opposite sides, opposite angles, diagonals, diagonals that bisect each other; bases, legs, base angles, and medians of trapezoids
Essential Skills	▪ Name the properties of each type of quadrilateral. ▪ Determine if a quadrilateral with certain properties is a parallelogram or not. ▪ Identify the type of parallelogram based on given properties. ▪ Find the lengths of sides and measures of angles of each type of quadrilateral. ▪ Solve algebraic equations using properties of parallelograms, rectangles, rhombi, squares, and trapezoids.

Mathematics
Geometry II Honors
Unit 3: Quadrilaterals and Polygons

Related Maine Learning Results	Mathematics 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.

Mathematics
Geometry II Honors
Unit 3: Quadrilaterals and Polygons

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	▪ Prove the 3 basic properties of parallelograms: Opposite sides of a parallelogram are congruent; Opposite angles of a parallelogram are congruent; and the diagonals of a parallelogram bisect each other ▪ Use these 3 properties to solve problems involving measurements in parallelograms
Sample Classroom Assessment Methods	▪ Quizzes ▪ Take-home worksheets ▪ Tests
Sample Resources	▪ Publications: ○ Geometry, McDougal Littell