

Mathematics
Geometry: Academic
Unit 1: Basic Concepts in Geometry

Essential Understandings	Geometry has basic terms and facts that are used to derive additional geometric facts.
Essential Questions	- What are the basic terms in geometry? - What are postulates, theorems, and definitions? - What are angles and segment, and how do we find their measures?
Essential Knowledge	- The basic terms in geometry are point, line, and plane. - Definitions, postulates, and theorems are used to describe relationships between geometric figures. - Segments and angles have measures, and these measures can be found by using segment relationships and angle relationships and their measures.
Vocabulary	<u>Terms</u>: - point, line, plane, space, collinear, coplanar, segment, midpoint, bisect, angle, angle bisector, adjacent angles, acute angle, right angle, obtuse angle, straight angle, rays, vertex, postulate, theorem
Essential Skills	- Use basic terms, postulates, and theorems. - Define of basic terms. - Use relationships to find the measure of missing angles and segments.
Related Maine Learning Results	<u>Mathematics</u> B. Data Measurement and Approximation B1.Students understand the relationship between precision and accuracy. - Express answers to a reasonable degree of precision in the context of a given problem. - Represent an approximate measurement using appropriate numbers of significant figures. - Know that most measurements are approximations and explain why it is useful to take the mean of repeated measurements. C. Geometry Geometric Figures C1.Students justify statements about polygons and solve problems. - Use the properties of triangles to prove theorems about figures and relationships among figures. - Solve for missing dimensions based on congruence and similarity. - Use the Pythagorean Theorem in situations where right triangles are created by adding segments to figures.

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	d. Use the distance formula.
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Related Maine Learning Results	C2.Students justify statements about circles and solve problems. - Use the concepts of central and inscribed angles to solve problems and justify statements. - 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. - Identify and find the value of trigonometric ratios for angles in right triangles. - Use trigonometry to solve for missing lengths in right triangles. - 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. - Simplify expressions including those with rational numbers. - Add, subtract, and multiply polynomials. - Factor the common term out of polynomial expressions. - Divide polynomials by $(ax+b)$. Equations and Inequalities D2.Students solve families of equations and inequalities. - Solve systems of linear equations and inequalities in two unknowns and interpret their graphs. - Solve quadratic equations graphically, by factoring in cases where factoring is efficient, and by applying the quadratic formula. - Solve simple rational equations. - Solve absolute value equations and inequalities and interpret the results. - 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. - 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. - Use and interpret logarithmic scales. - Solve equations in the form of $x + b^y$ using the equivalent form $y = \log_b x$.
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Sample Lessons And Activities	▪ Use the Protractor Postulate and the Angle Postulate to determine the measures of angles
Sample Classroom Assessment Methods	▪ Quizzes ▪ Take-home worksheets ▪ Tests
Sample Resources	▪ <u>Publications:</u> ○ <u>Geometry</u>, Jurgensen, Brown, Jurgensen (McDougal Littell) ○ <u>Geometry: Concepts and Skills</u>, Larson, Boswell, Stiff (McDougal Littell)