

COURSE: Regents Geometry

Unit	Performance Indicator	Assessments
Geometry Basics	<p>G.G.1 Know and apply that if a line is perpendicular to each of two intersecting lines at their point of intersection, then the line is perpendicular to the plane determined by them</p> <p>G.G.2 Know and apply that through a given point there passes one and only one plane perpendicular to a given line</p> <p>G.G.3 Know and apply that through a given point there passes one and only one line perpendicular to a given plane</p> <p>G.G.4 Know and apply that two lines perpendicular to the same plane are coplanar</p> <p>G.G.5 Know and apply that two planes are perpendicular to each other if and only if one plane contains a line perpendicular to the second plane</p> <p>G.G.6 Know and apply that if a line is perpendicular to a plane, then any line perpendicular to the given line at its point of intersection with the given plane is in the given plane</p> <p>G.G.7 Know and apply that if a line is perpendicular to a plane, then every plane containing the line is perpendicular to the given plane</p> <p>G.G.8 Know and apply that if a plane intersects two parallel planes, then the intersection is two parallel lines</p> <p>G.G.9 Know and apply that if two planes are perpendicular to the same line, they are parallel</p> <p>G.G.35 Determine if two lines cut by a transversal are parallel, based on the measure of given pairs of angles formed by the transversal and the lines</p>	<p>Homework</p> <p>Classwork</p> <p>Group Work</p> <p>Quizzes</p> <p>Tests</p>
Logic	<p>G.G.24 Determine the negation of a statement and establish its truth value</p> <p>G.G.25 Know and apply the conditions under which a compound statement (conjunction, disjunction, conditional, biconditional) is true</p> <p>G.G.26 Identify and write the inverse, converse, and contrapositive of a given conditional statement and note the logical equivalences</p>	<p>Homework</p> <p>Classwork</p> <p>Group Work</p> <p>Quizzes</p> <p>Tests</p>

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Graphing I	<p>G.G.62 Find the slope of a perpendicular line, given the equation of a line</p> <p>G.G.63 Determine whether two lines are parallel, perpendicular, or neither, given their equations</p> <p>G.G.64 Find the equation of a line, given a point on the line and the equation of a line perpendicular to the given line</p> <p>G.G.65 Find the equation of a line, given a point on the line and the equation of a line parallel to the desired line</p> <p>G.G.66 Find the midpoint of a line segment, given its endpoints</p> <p>G.G.67 Find the length of a line segment, given its endpoints</p> <p>G.G.68 Find the equation of a line that is the perpendicular bisector of a line segment, given the endpoints of the line segment</p>	<p>Homework</p> <p>Classwork</p> <p>Group Work</p> <p>Quizzes</p> <p>Tests</p>
Triangles	<p>G.G.28 Determine the congruence of two triangles by using one of the five congruence techniques (SSS, SAS, ASA, AAS, HL), given sufficient information about the sides and/or angles of two congruent triangles</p> <p>G.G.29 Identify corresponding parts of congruent triangles</p> <p>G.G.30 Investigate, justify, and apply theorems about the sum of the measures of the angles of a triangle</p> <p>G.G.31 Investigate, justify, and apply the isosceles triangle theorem and its converse</p> <p>G.G.32 Investigate, justify, and apply theorems about geometric inequalities, using the exterior angle theorem</p> <p>G.G.33 Investigate, justify, and apply the triangle inequality theorem</p> <p>G.G.34 Determine either the longest side of a triangle given the three angle measures or the largest angle given the lengths of three sides of a triangle</p> <p>G.G.42 Investigate, justify, and apply theorems about geometric relationships, based on the properties of the line segment joining the midpoints of two sides of the triangle</p> <p>G.G.43 Investigate, justify, and apply theorems about the centroid of a triangle, dividing each median into segments whose lengths are in the ratio 2:1</p> <p>G.G.48 Investigate, justify, and apply the Pythagorean theorem and its converse</p> <p>G.G.69 Investigate, justify, and apply the properties of triangles and quadrilaterals in the coordinate plane, using the distance, midpoint, and slope formulas</p>	<p>Homework</p> <p>Classwork</p> <p>Group Work</p> <p>Quizzes</p> <p>Tests</p>

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Polygons	<p>G.G.36 Investigate, justify, and apply theorems about the sum of the measures of the interior and exterior angles of polygons</p> <p>G.G.37 Investigate, justify, and apply theorems about each interior and exterior angle measure of regular polygons</p> <p>G.G.38 Investigate, justify, and apply theorems about parallelograms involving their angles, sides, and diagonals</p> <p>G.G.39 Investigate, justify, and apply theorems about special parallelograms (rectangles, rhombuses, squares) involving their angles, sides, and diagonals</p> <p>G.G.40 Investigate, justify, and apply theorems about trapezoids (including isosceles trapezoids) involving their angles, sides, medians, and diagonals</p> <p>G.G.41 Justify that some quadrilaterals are parallelograms, rhombuses, rectangles, squares, or trapezoids</p> <p>G.G.69 Investigate, justify, and apply the properties of triangles and quadrilaterals in the coordinate plane, using the distance, midpoint, and slope formulas</p>	<p>Homework</p> <p>Classwork</p> <p>Group Work</p> <p>Quizzes</p> <p>Tests</p>
Transformations	<p>G.G.54 Define, investigate, justify, and apply isometries in the plane (rotations, reflections, translations, glide reflections) Note: Use proper function notation.</p> <p>G.G.55 Investigate, justify, and apply the properties that remain invariant under translations, rotations, reflections, and glide reflections</p> <p>G.G.56 Identify specific isometries by observing orientation, numbers of invariant points, and/or parallelism</p> <p>G.G.57 Justify geometric relationships (perpendicularity, parallelism, congruence) using transformational techniques (translations, rotations, reflections)</p> <p>G.G.58 Define, investigate, justify, and apply similarities (dilations and the composition of dilations and isometries)</p> <p>G.G.59 Investigate, justify, and apply the properties that remain invariant under similarities</p> <p>G.G.60 Identify specific similarities by observing orientation, numbers of invariant points, and/or parallelism</p> <p>G.G.61 Investigate, justify, and apply the analytical representations for translations, rotations about the origin of 90° and 180°, reflections over the lines $x = 0$, $y = 0$, and $y = x$, and dilations centered at the origin</p>	<p>Homework</p> <p>Classwork</p> <p>Group Work</p> <p>Quizzes</p> <p>Tests</p>

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Similarity	<p>G.G.44 Establish similarity of triangles, using the following theorems: AA, SAS, and SSS</p> <p>G.G.45 Investigate, justify, and apply theorems about similar triangles</p> <p>G.G.46 Investigate, justify, and apply theorems about proportional relationships among the segments of the sides of the triangle, given one or more lines parallel to one side of a triangle and intersecting the other two sides of the triangle</p> <p>G.G.47 Investigate, justify, and apply theorems about mean proportionality:</p> <ul style="list-style-type: none"> o the altitude to the hypotenuse of a right triangle is the mean proportional between the two segments along the hypotenuse o the altitude to the hypotenuse of a right triangle divides the hypotenuse so that either leg of the right triangle is the mean proportional between the hypotenuse and segment of the hypotenuse adjacent to that leg 	<p>Homework</p> <p>Classwork</p> <p>Group Work</p> <p>Quizzes</p> <p>Tests</p>
Circles	<p>G.G.49 Investigate, justify, and apply theorems regarding chords of a circle:</p> <ul style="list-style-type: none"> o perpendicular bisectors of chords o the relative lengths of chords as compared to their distance from the center of the circle <p>G.G.50 Investigate, justify, and apply theorems about tangent lines to a circle:</p> <ul style="list-style-type: none"> o a perpendicular to the tangent at the point of tangency o two tangents to a circle from the same external point o common tangents of two non-intersecting or tangent circles <p>G.G.51 Investigate, justify, and apply theorems about the arcs determined by the rays of angles formed by two lines intersecting a circle when the vertex is:</p> <ul style="list-style-type: none"> o inside the circle (two chords) o on the circle (tangent and chord) o outside the circle (two tangents, two secants, or tangent and secant) <p>G.G.52 Investigate, justify, and apply theorems about arcs of a circle cut by two parallel lines</p> <p>G.G.53 Investigate, justify, and apply theorems regarding segments intersected by a circle:</p> <ul style="list-style-type: none"> o along two tangents from the same external point o along two secants from the same external point o along a tangent and a secant from the same external point o along two intersecting chords of a given circle <p>G.G.70 Solve systems of equations involving one linear equation and one quadratic equation graphically</p> <p>G.G.71 Write the equation of a circle, given its center and radius or given the endpoints of a diameter</p> <p>G.G.72 Write the equation of a circle, given its graph Note: The center is an ordered pair of integers and the radius is an integer.</p> <p>G.G.73 Find the center and radius of a circle, given the equation of the circle in center-radius form</p> <p>G.G.74 Graph circles of the form $(x - h)^2 + (y - k)^2 = r^2$</p>	<p>Homework</p> <p>Classwork</p> <p>Group Work</p> <p>Quizzes</p> <p>Tests</p>

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Solids	<p>G.G.10 Know and apply that the lateral edges of a prism are congruent and parallel</p> <p>G.G.11 Know and apply that two prisms have equal volumes if their bases have equal areas and their altitudes are equal</p> <p>G.G.12 Know and apply that the volume of a prism is the product of the area of the base and the altitude</p> <p>G.G.13 Apply the properties of a regular pyramid, including:</p> <ul style="list-style-type: none"> o lateral edges are congruent o lateral faces are congruent isosceles triangles o volume of a pyramid equals one-third the product of the area of the base and the altitude <p>G.G.14 Apply the properties of a cylinder, including:</p> <ul style="list-style-type: none"> o bases are congruent o volume equals the product of the area of the base and the altitude o lateral area of a right circular cylinder equals the product of an altitude and the circumference of the base <p>G.G.15 Apply the properties of a right circular cone, including:</p> <ul style="list-style-type: none"> o lateral area equals one-half the product of the slant height and the circumference of its base o volume is one-third the product of the area of its base and its altitude <p>G.G.16 Apply the properties of a sphere, including:</p> <ul style="list-style-type: none"> o the intersection of a plane and a sphere is a circle o a great circle is the largest circle that can be drawn on a sphere o two planes equidistant from the center of the sphere and intersecting the sphere do so in congruent circles o surface area is $4\pi r^2$ o volume is $(4/3)\pi r^3$ 	<p>Homework</p> <p>Classwork</p> <p>Group Work</p> <p>Quizzes</p> <p>Tests</p>
Constructions/Locus	<p>G.G.17 Construct a bisector of a given angle, using a straightedge and compass, and justify the construction</p> <p>G.G.18 Construct the perpendicular bisector of a given segment, using a straightedge and compass, and justify the construction</p> <p>G.G.19 Construct lines parallel (or perpendicular) to a given line through a given point, using a straightedge and compass, and justify the construction</p> <p>G.G.20 Construct an equilateral triangle, using a straightedge and compass, and justify the construction</p> <p>G.G.21 Investigate and apply the concurrence of medians, altitudes, angle bisectors, and perpendicular bisectors of triangles</p> <p>G.G.22 Solve problems using compound loci</p> <p>G.G.23 Graph and solve compound loci in the coordinate plane</p>	<p>Homework</p> <p>Classwork</p> <p>Group Work</p> <p>Quizzes</p> <p>Tests</p>