

2005 Core Curriculum – “CROSSWALKS”

Performance Indicator	Concept/Skill Geometric Relationships #1-16 (aka Solid Geometry)
G.G.1	A line perpendicular to each of two intersecting lines at their point of intersection, is perpendicular to the plane determined by them
G.G.2	Through a given point there passes one and only one plane perpendicular to a given line
GG.3	Through a given point there passes one and only one plane perpendicular to a given line
G.G.4	Two lines perpendicular to the same plane are coplanar
G.G.5	Two planes are perpendicular to each other if and only if one plane contains a line perpendicular to the second plane

G.G.6	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
G.G.7	If a line is perpendicular to a plane then every plane containing the line is perpendicular to the given plane
G.G.8	If a plane intersects two parallel planes, then the intersection is two parallel lines
G.G.9	Two planes perpendicular to the same line are parallel.
GG.10	The lateral edges of a prism are congruent and parallel
G.G.11	Two prisms have equal volumes if their bases have equal areas and their altitudes are equal
G.G.12	The volume of a prism is the product of the area of the base and the altitude
G.G.13	Apply the properties of a regular pyramid, including: <ul style="list-style-type: none"> ○ Lateral edges are congruent ○ Lateral faces are congruent isosceles triangles ○ Volume of a pyramid equals one-third the product of the area of the base and the altitude

G.G.14	Apply the properties of a cylinder, including: <ul style="list-style-type: none"> ○ Bases are congruent ○ Volume equals the product of the area of the base and the altitude ○ Lateral area of a right circular cylinder equals the product of an altitude and the circumference of the base
G.G.15	Apply the properties of a right circular cone, including: <ul style="list-style-type: none"> ○ Lateral area equals one-half the product of the slant height and the circumference of its base ○ Volume is one-third the product of the area of its base and its altitude

G.G.16	Apply the properties of a sphere, including: <ul style="list-style-type: none"> ○ The intersection of a plane and a sphere is a circle ○ A great circle is the largest circle that can be drawn on a sphere ○ Two planes equidistant from the center of the sphere and intersecting the sphere do so in congruent circles ○ Surface area is $4\pi r^2$ ○ Volume is $\frac{4}{3}\pi r^3$
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Constructions #17 - 20

G.G.17	Bisect a given angle using a straightedge and compass, and justify the construction
G.G.18	Construct the perpendicular bisector of a given segment, using a straightedge and compass, and justify the construction
G.G.19	Construct a line parallel (or perpendicular) to a given line through a given point, using a straightedge and compass, and justify the construction
G.G.20	Construct an equilateral triangle, using a straightedge and compass, and justify the construction

Locus #21- 23

G.G.21	Investigate and apply the concurrence of medians, altitudes, angles bisectors, and perpendicular bisectors of triangles
G.G.22	Compound loci
G.G.23	Graph and solve compound loci in the coordinate plane

Informal and formal Proofs #24 - 53

G.G.24	Determine the negation of a statement and establish its truth value
G.G.25	Know and apply the conditions under which a compound statement (conjunction, disjunction, conditional, biconditional) is true
G.G.26	Identify and write the inverse, converse, and contrapositive of a given conditional statement and note the logical equivalences
G.G.27	Write a proof arguing from a given hypothesis to a given conclusion
G.G.28	Determine the congruence of two triangles using SSS, SAS, ASA, AAS, HL
G.G.29	Identify corresponding parts of congruent triangles
G.G.30	Investigate, justify, and apply theorems about the sum of the measures of the angles of a triangle
G.G.31	Investigate, justify, and apply the isosceles triangle and its converse

G.G.32	Investigate, justify, and apply theorems about geometric inequalities, using the exterior angle theorem
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G.G.33	Investigate, justify, and apply the triangle inequality theorem
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
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
G.G.36	Investigate, justify, and apply theorems about the sum of the measures of the interior and exterior angles of polygons
G.G.37	Investigate, justify, and apply theorems about each interior and exterior angle measure of regular polygons
G.G.38	Investigate, justify, and apply theorems about parallelograms involving their angles, sides, and diagonals
G.G.39	Investigate, justify and apply theorems about special parallelograms involving their angles, sides, and diagonals
G.G.40	Investigate justify, and apply theorems about trapezoids involving their angles, sides, medians, and diagonals

G.G.41	Justify that some quadrilaterals are parallelograms, rhombuses, rectangles, squares, or trapezoids
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
G.G.43	Investigate, justify, and apply theorems about the centroid of a triangle dividing each median into segment whose lengths are in the ratio 2:1
G.G.44	Similarity of triangles (AA, SAS, and SSS)
G.G.45	Investigate, justify, and apply theorems about similar triangles
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 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
G.G.47	Investigate, justify, and apply theorems about mean proportionality: <ul style="list-style-type: none"> ○ altitude to the hypotenuse of a right triangle

G.G. 48	Pythagorean theorem and its converse
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G.G.49	Investigate, justify and apply theorems regarding chords of a circle
G.G.50	Investigate, justify, and apply theorems about tangent lines to a circle
G.G.51	Investigate, justify, and apply theorems about the arcs determined by the rays of angles formed by two lines intersecting a circle
G.G.52	Investigate justify, and apply theorems about arcs of a circle cut by two parallel lines.
G.G.53	Investigate, justify, and apply theorems regarding segments intersected by a circle

Transformational Geometry #54 - 61

G.G.54	Define, investigate, justify, and apply isometries in the plane
G.G.55	Investigate, justify, and apply the properties that remain invariant under translations, rotations, reflections, and glide reflections
G.G.56	Identify specific isometries by observing orientation, numbers of invariant points, and/or parallelogram
G.G.57	Justify geometric relationships using transformational techniques
G.G.58	Define, investigate, justify and apply similarities
G.G.59	Investigate, justify, and apply the properties that remain invariant under similarities
G.G.60	Identify specific similarities by observing orientation, numbers of invariant points, and/or parallelism

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.
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Coordinate Geometry #62 - 74

G.G.62	Slope of a perpendicular line, given the equation the a line
G.G.63	Determine whether two lines are parallel, perpendicular, or neither, given their equations
G.G.64	Equation of a line given a point on the line and the equation of a line perpendicular to the given line
G.G.65	Find the length of a line segment, given its endpoints
G.G.66	Midpoint of a line segment
G.G.67	Length of a line segment
G.G.68	Equation of a line that is the perpendicular bisector of a line segment, given the endpoints of the line segment

G.G.69	Properties of triangles and quadrilaterals in the coordinate plane, using the distance, midpoint, and slope formulas
G.G.70	Graphic solutions of systems of equations involving one linear equation and one quadratic equation

G.G.71	Equation of a circle, given its center and radius or the endpoints of a diameter
G.G.72	Equation of a circle given its graph (center is an ordered pair of integers and the radius is an integer)
G.G.73	Find the center and radius of a circle, given the equation of the circle in center-radius form
G.G.74	Graph circles of the form $(x - h)^2 + (y - k)^2 = r^2$