Math Common Core Spirals

Domain *Geometry* **G**

Grade *K* *Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).*

Standard 1 CC.K.G.1 Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres). Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to.

Grade *K* *Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).*

Standard 2 CC.K.G.2 Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres). Correctly name shapes regardless of their orientations or overall size.

Grade *K* *Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).*

Standard 3 CC.K.G.3 Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres). Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").

Grade *K* *Analyze, compare, create, and compose shapes.*

Standard 4 CC.K.G.4 Analyze, compare, create, and compose shapes. Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length).

Grade *K* *Analyze, compare, create, and compose shapes.*

Standard 5 CC.K.G.5 Analyze, compare, create, and compose shapes. Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.

Grade *K* *Analyze, compare, create, and compose shapes.*

Standard 6 CC.K.G.6 Analyze, compare, create, and compose shapes. Compose simple shapes to form larger shapes. For example, "can you join these two triangles with full sides touching to make a rectangle?"

Grade *1* *Reason with shapes and their attributes.*

Standard 1 CC.1.G.1 Reason with shapes and their attributes. Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); for a wide variety of shapes; build and draw shapes to possess defining attributes.

Math Common Core Spirals

Grade *1*

Reason with shapes and their attributes.

Standard
2

CC.1.G.2 Reason with shapes and their attributes. Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape. (Students do not need to learn formal names such as "right rectangular prism.")

Grade *1*

Reason with shapes and their attributes.

Standard
3

CC.1.G.3 Reason with shapes and their attributes. Partition circles and rectangles into two and four equal shares, describe the shares using the words halves, fourths, and quarters, and use the phrases half of, fourth of, and quarter of. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.

Grade *2*

Reason with shapes and their attributes.

Standard
1

CC.2.G.1 Reason with shapes and their attributes. Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes. (Sizes are compared directly or visually, not compared by measuring.)

Grade *2*

Reason with shapes and their attributes.

Standard
2

CC.2.G.2 Reason with shapes and their attributes. Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.

Grade *2*

Reason with shapes and their attributes.

Standard
3

CC.2.G.3 Reason with shapes and their attributes. Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

Grade *3*

Reason with shapes and their attributes.

Standard
1

CC.3.G.1 Reason with shapes and their attributes. Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

Grade *3*

Reason with shapes and their attributes.

Standard
2

CC.3.G.2 Reason with shapes and their attributes. Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. For example, partition a shape into 4 parts with equal area, and describe the area of each part is 1/4 of the area of the shape.

Math Common Core Spirals

Grade *4*   *Draw and identify lines and angles, and classify shapes by properties of their lines and angles.*

Standard 1   CC.4.G.1 Draw and identify lines and angles, and classify shapes by properties of their lines and angles. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.

Grade *4*   *Draw and identify lines and angles, and classify shapes by properties of their lines and angles.*

Standard 2   CC.4.G.2 Draw and identify lines and angles, and classify shapes by properties of their lines and angles. Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.

Grade *4*   *Draw and identify lines and angles, and classify shapes by properties of their lines and angles.*

Standard 3   CC.4.G.3 Draw and identify lines and angles, and classify shapes by properties of their lines and angles. Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.

Grade *5*   *Graph points on the coordinate plane to solve real-world and mathematical problems.*

Standard 1   CC.5.G.1 Graph points on the coordinate plane to solve real-world and mathematical problems. Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).

Grade *5*   *Graph points on the coordinate plane to solve real-world and mathematical problems.*

Standard 2   CC.5.G.2 Graph points on the coordinate plane to solve real-world and mathematical problems. Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

Grade *5*   *Classify two-dimensional figures into categories based on their properties.*

Standard 3   CC.5.G.3 Classify two-dimensional figures into categories based on their properties. Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.

Grade *5*   *Classify two-dimensional figures into categories based on their properties.*

Standard 4   CC.5.G.4 Classify two-dimensional figures into categories based on their properties. Classify two-dimensional figures in a hierarchy based on properties.

Math Common Core Spirals

Grade *6*   *Solve real-world and mathematical problems involving area, surface area, and volume.*

Standard 1
CC.6.G.1 Solve real-world and mathematical problems involving area, surface area, and volume. Find area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.

Grade *6*   *Solve real-world and mathematical problems involving area, surface area, and volume.*

Standard 2
CC.6.G.2 Solve real-world and mathematical problems involving area, surface area, and volume. Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = l\,w\,h$ and $V = b\,h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.

Grade *6*   *Solve real-world and mathematical problems involving area, surface area, and volume.*

Standard 3
CC.6.G.3 Solve real-world and mathematical problems involving area, surface area, and volume. Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.

Grade *6*   *Solve real-world and mathematical problems involving area, surface area, and volume.*

Standard 4
CC.6.G.4 Solve real-world and mathematical problems involving area, surface area, and volume. Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.

Grade *7*   *Draw, construct, and describe geometrical figures and describe the relationships between them.*

Standard 1
CC.7.G.1 Draw, construct, and describe geometrical figures and describe the relationships between them. Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.

Grade *7*   *Draw, construct, and describe geometrical figures and describe the relationships between them.*

Standard 2
CC.7.G.2 Draw, construct, and describe geometrical figures and describe the relationships between them. Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.

Grade *7*   *Draw, construct, and describe geometrical figures and describe the relationships between them.*

Standard 3
CC.7.G.3 Draw, construct, and describe geometrical figures and describe the relationships between them. Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.

Math Common Core Spirals

Grade *7*   *Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.*

Standard 4   CC.7.G.4 Solve real-life and mathematical problems involving angle measure, area, surface area, and volume. Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.

Grade *7*   *Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.*

Standard 5   CC.7.G.5 Solve real-life and mathematical problems involving angle measure, area, surface area, and volume. Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.

Grade *7*   *Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.*

Standard 6   CC.7.G.6 Solve real-life and mathematical problems involving angle measure, area, surface area, and volume. Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

Grade *8*   *Understand congruence and similarity using physical models, transparencies, or geometry software.*

Standard 1   CC.8.G.1 Understand congruence and similarity using physical models, transparencies, or geometry software. Verify experimentally the properties of rotations, reflections, and translations:
   -- a. Lines are taken to lines, and line segments to line segments of the same length.
   -- b. Angles are taken to angles of the same measure.
   -- c. Parallel lines are taken to parallel lines.

Grade *8*   *Understand congruence and similarity using physical models, transparencies, or geometry software.*

Standard 2   CC.8.G.2 Understand congruence and similarity using physical models, transparencies, or geometry software. Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.

Grade *8*   *Understand congruence and similarity using physical models, transparencies, or geometry software.*

Standard 3   CC.8.G.3 Understand congruence and similarity using physical models, transparencies, or geometry software. Describe the effect of dilations, translations, rotations and reflections on two-dimensional figures using coordinates.

Grade *8*   *Understand congruence and similarity using physical models, transparencies, or geometry software.*

Standard 4   CC.8.G.4 Understand congruence and similarity using physical models, transparencies, or geometry software. Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.

Grade *8*   <u>*Understand congruence and similarity using physical models, transparencies, or geometry software.*</u>

Standard
5

CC.8.G.5 Understand congruence and similarity using physical models, transparencies, or geometry software. Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. For example, arrange three copies of the same triangle so that the three angles appear to form a line, and give an argument in terms of transversals why this is so.

Grade *8*   <u>*Understand and apply the Pythagorean Theorem.*</u>

Standard
6

CC.8.G.6 Understand and apply the Pythagorean Theorem. Explain a proof of the Pythagorean Theorem and its converse.

Grade *8*   <u>*Understand and apply the Pythagorean Theorem.*</u>

Standard
7

CC.8.G.7 Understand and apply the Pythagorean Theorem. Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.

Grade *8*   <u>*Understand and apply the Pythagorean Theorem.*</u>

Standard
8

CC.8.G.8 Understand and apply the Pythagorean Theorem. Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.

Grade *8*   <u>*Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.*</u>

Standard
9

CC.8.G.9 Solve real-world and mathematical problems involving volume of cylinders, cones and spheres. Know the formulas for the volume of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.

Grade *9-12*   <u>*Circles*</u>

Standard
C.1

CC.9-12.G.C.1 Understand and apply theorems about circles. Prove that all circles are similar.

Grade *9-12*   <u>*Circles*</u>

Standard
C.2

CC.9-12.G.C.2 Understand and apply theorems about circles. Identify and describe relationships among inscribed angles, radii, and chords. Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.

Math Common Core Spirals

Grade *9-12*   *Circles*

Standard
C.3
CC.9-12.G.C.3 Understand and apply theorems about circles. Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.

Grade *9-12*   *Circles*

Standard
C.4
CC.9-12.G.C.4 (+) Understand and apply theorems about circles. Construct a tangent line from a point outside a given circle to the circle.

Grade *9-12*   *Circles*

Standard
C.5
CC.9-12.G.C.5 Find arc lengths and areas of sectors of circles. Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.

Grade *9-12*   *Congruence*

Standard
CO.01
CC.9-12.G.CO.1 Experiment with transformations in the plane. Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.

Grade *9-12*   *Congruence*

Standard
CO.02
CC.9-12.G.CO.2 Experiment with transformations in the plane. Represent transformations in the plane using, e. g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).

Grade *9-12*   *Congruence*

Standard
CO.03
CC.9-12.G.CO.3 Experiment with transformations in the plane. Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.

Grade *9-12*   *Congruence*

Standard
CO.04
CC.9-12.G.CO.4 Experiment with transformations in the plane. Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.

Math Common Core Spirals

Grade *9-12*   *Congruence*

Standard CO.05   CC.9-12.G.CO.5 Experiment with transformations in the plane. Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.

Grade *9-12*   *Congruence*

Standard CO.06   CC.9-12.G.CO.6 Understand congruence in terms of rigid motions. Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.

Grade *9-12*   *Congruence*

Standard CO.07   CC.9-12.G.CO.7 Understand congruence in terms of rigid motions. Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.

Grade *9-12*   *Congruence*

Standard CO.08   CC.9-12.G.CO.8 Understand congruence in terms of rigid motions. Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.

Grade *9-12*   *Congruence*

Standard CO.09   CC.9-12.G.CO.9 Prove geometric theorems. Prove theorems about lines and angles. Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.

Grade *9-12*   *Congruence*

Standard CO.10   CC.9-12.G.CO.10 Prove geometric theorems. Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to 180 degrees; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.

Grade *9-12*   *Congruence*

Standard CO.11   CC.9-12.G.CO.11 Prove geometric theorems. Prove theorems about parallelograms. Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.

Math Common Core Spirals

Grade *9-12*   *Congruence*

Standard CO.12   CC.9-12.G.CO.12 Make geometric constructions. Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.

Grade *9-12*   *Congruence*

Standard CO.13   CC.9-12.G.CO.13 Make geometric constructions. Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.

Grade *9-12*   *Geometric Measurement and Dimension*

Standard GMD.1   CC.9-12.G.GMD.1 Explain volume formulas and use them to solve problems. Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. Use dissection arguments, Cavalieri's principle, and informal limit arguments.

Grade *9-12*   *Geometric Measurement and Dimension*

Standard GMD.2   CC.9-12.G.GMD.2 (+) Explain volume formulas and use them to solve problems. Give an informal argument using Cavalieri's principle for the formulas for the volume of a sphere and other solid figures.

Grade *9-12*   *Geometric Measurement and Dimension*

Standard GMD.3   CC.9-12.G.GMD.3 Explain volume formulas and use them to solve problems. Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.*

Grade *9-12*   *Geometric Measurement and Dimension*

Standard GMD.4   CC.9-12.G.GMD.4 Visualize relationships between two-dimensional and three-dimensional objects. Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.

Grade *9-12*   *Expressing Geometric Properties with Equations*

Standard GPE.1   CC.9-12.G.GPE.1 Translate between the geometric description and the equation for a conic section. Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.

Grade *9-12*   *Expressing Geometric Properties with Equations*

Standard
GPE.2   CC.9-12.G.GPE.2 Translate between the geometric description and the equation for a conic section. Derive the equation of a parabola given a focus and directrix.

Grade *9-12*   *Expressing Geometric Properties with Equations*

Standard
GPE.3   CC.9-12.G.GPE.3 (+) Translate between the geometric description and the equation for a conic section. Derive the equations of ellipses and hyperbolas given the foci, using the fact that the sum or difference of distances from the foci is constant.

Grade *9-12*   *Expressing Geometric Properties with Equations*

Standard
GPE.4   CC.9-12.G.GPE.4 Use coordinates to prove simple geometric theorems algebraically. For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point $(1, \sqrt{3})$ lies on the circle centered at the origin and containing the point $(0, 2)$.

Grade *9-12*   *Expressing Geometric Properties with Equations*

Standard
GPE.5   CC.9-12.G.GPE.5 Use coordinates to prove simple geometric theorems algebraically. Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).

Grade *9-12*   *Expressing Geometric Properties with Equations*

Standard
GPE.6   CC.9-12.G.GPE.6 Use coordinates to prove simple geometric theorems algebraically. Find the point on a directed line segment between two given points that partitions the segment in a given ratio.

Grade *9-12*   *Expressing Geometric Properties with Equations*

Standard
GPE.7   CC.9-12.G.GPE.7 Use coordinates to prove simple geometric theorems algebraically. Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.*

Grade *9-12*   *Modeling with Geometry*

Standard
MG.1   CC.9-12.G.MG.1 Apply geometric concepts in modeling situations. Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).*

Math Common Core Spirals

Grade *9-12*   <u>*Modeling with Geometry*</u>

Standard
MG.2   CC.9-12.G.MG.2 Apply geometric concepts in modeling situations. Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).*

Grade *9-12*   <u>*Modeling with Geometry*</u>

Standard
MG.3   CC.9-12.G.MG.3 Apply geometric concepts in modeling situations. Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).*

Grade *9-12*   <u>*Similarity, Right Triangles, and Trigonometry*</u>

Standard
SRT.01   CC.9-12.G.SRT.1 Understand similarity in terms of similarity transformations. Verify experimentally the properties of dilations given by a center and a scale factor:
            -- a. A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.
            -- b. The dilation of a line segment is longer or shorter in the ratio given by the scale factor.

Grade *9-12*   <u>*Similarity, Right Triangles, and Trigonometry*</u>

Standard
SRT.02   CC.9-12.G.SRT.2 Understand similarity in terms of similarity transformations. Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.

Grade *9-12*   <u>*Similarity, Right Triangles, and Trigonometry*</u>

Standard
SRT.03   CC.9-12.G.SRT.3 Understand similarity in terms of similarity transformations. Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.

Grade *9-12*   <u>*Similarity, Right Triangles, and Trigonometry*</u>

Standard
SRT.04   CC.9-12.G.SRT.4 Prove theorems involving similarity. Prove theorems about triangles. Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.

Grade *9-12*   <u>*Similarity, Right Triangles, and Trigonometry*</u>

Standard
SRT.05   CC.9-12.G.SRT.5 Prove theorems involving similarity. Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.

Math Common Core Spirals

Grade *9-12*   *Similarity, Right Triangles, and Trigonometry*

Standard
SRT.06   CC.9-12.G.SRT.6 Define trigonometric ratios and solve problems involving right triangles. Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.

Grade *9-12*   *Similarity, Right Triangles, and Trigonometry*

Standard
SRT.07   CC.9-12.G.SRT.7 Define trigonometric ratios and solve problems involving right triangles. Explain and use the relationship between the sine and cosine of complementary angles.

Grade *9-12*   *Similarity, Right Triangles, and Trigonometry*

Standard
SRT.08   CC.9-12.G.SRT.8 Define trigonometric ratios and solve problems involving right triangles. Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.

Grade *9-12*   *Similarity, Right Triangles, and Trigonometry*

Standard
SRT.09   CC.9-12.G.SRT.9 (+) Apply trigonometry to general triangles. Derive the formula A = (1/2)ab sin(C) for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.

Grade *9-12*   *Similarity, Right Triangles, and Trigonometry*

Standard
SRT.10   CC.9-12.G.SRT.10 (+) Apply trigonometry to general triangles. Prove the Laws of Sines and Cosines and use them to solve problems.

Grade *9-12*   *Similarity, Right Triangles, and Trigonometry*

Standard
SRT.11   CC.9-12.G.SRT.11 (+) Apply trigonometry to general triangles. Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).