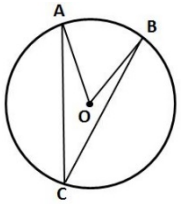
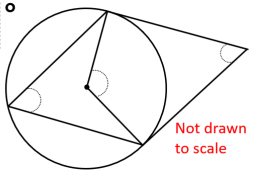
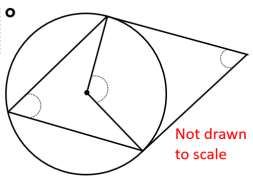
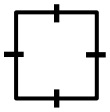
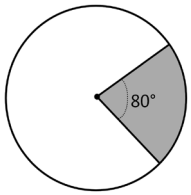
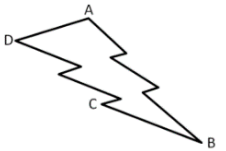
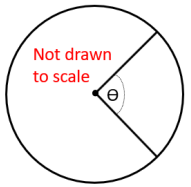
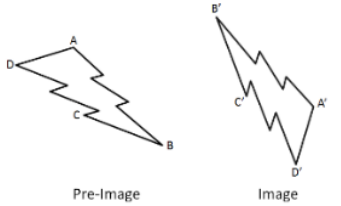
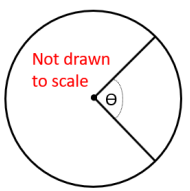
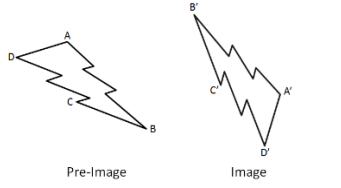
Depth of Knowledge Matrix – Geometry (Integrated 2)

Topic	Equation of a Circle	Central, Inscribed, & Circumscribed Angles	Perpendicular Lines	Area on a Coordinate Plane
CCSS Stand.	• G-MG.1	• G-C.2	• G-GPE.5	• G-GPE.7
DOK 1 Example	Write the equation of a circle with a radius of 7 units.	If the measure of angle AOB is 40°, what is the measure of angle ACB? 	Determine whether the lines are perpendicular. $3x + 4y = 7$ $y = \frac{2}{3}x + 5$	Find the area of the triangle with vertices at (-4, -1), (-2, 5), and (3, -3)
DOK 2 Example	Using the digits 1 to 9 at most two times each, place a digit in each box to make two circles: one with an area of less than 100 units^2 and one with more than 100 units^2. $\square x^2 + \square y^2 = \square$	Using the digits 0 to 9 at most one time each, place a digit in each box two times: once where the central angle is greater than 130° and once where it is less than 130°. You may reuse all the digits each time. central angle measure = $\square\square\square$° inscribed angle measure = $\square\square$° circumscribed angle measure = $\square\square$° 	Using the digits 0 to 9 at most one time each, fill in the boxes to create two perpendicular lines. $y = \frac{\square}{\square}x + \square$ $\square x + \square y = \square$	Using the integers -9 to 9 at most one time each, fill in the boxes to create coordinates that represent the vertices of two triangles: one with an area of less than 55 units^2 and one with an area of more than 55 units^2. You may reuse all the integers each time. $A:(\square, \square)$ $B:(\square, \square)$ $C:(\square, \square)$
DOK 3 Example	Using the digits 1 to 9 at most two times each, place a digit in each box to make a circle with the least possible area. $\square x^2 + \square y^2 = \square$	Using the digits 0 to 9 at most one time each, place a digit in each box so that the central angle has the greatest possible value. central angle measure = $\square\square\square$° inscribed angle measure = $\square\square$° circumscribed angle measure = $\square\square$° 	Using the digits 0 to 9 at most one time each, fill in the boxes to create two perpendicular lines whose solution is as close to the origin as possible. $y = \frac{\square}{\square}x + \square$ $\square x + \square y = \square$	Using the integers -9 to 9 at most one time each, fill in the boxes to create coordinates that represent the vertices of the triangle with the smallest possible area. $A:(\square, \square)$ $B:(\square, \square)$ $C:(\square, \square)$

Depth of Knowledge Matrix – Geometry (Integrated 2)

Topic	Geometric Proofs	Midpoint of a Line Segment	Sector Area	Transformations
CCSS Stand.	• G-CO.11	• G-GPE.6	• G-C.5	• G-CO.5
DOK 1 Example	Add one geometric marking to demonstrate the quadrilateral is a square. 	Find the midpoint of the line segment with the given endpoints. $(3, -2)$ and $(5, 5)$	Find the area of the shaded region. 	Rotate the image below 90° counterclockwise about point D and reflect it across a horizontal line. 
DOK 2 Example	Using exactly five geometric markings to show that a quadrilateral is a square.	Using the integers −9 to 9 at most one time each, place a digit in each box to create endpoints for two different line segments whose midpoint is (1, 3). One line segment should have a positive slope, and the other should have a negative slope. You may reuse all the integers for each line segment. $(\square, \square)$ and $(\square, \square)$	Using the digits 0 to 9 at most one time each, place a digit in each box so that the radius and angle measure result in the sector area. radius = ☐ units; Θ = ☐☐☐°; sector area = ☐☐ π units² 	List three sequences of transformations that take pre-image ABCD to image A′B′C′D′. 
DOK 3 Example	What is the least number of geometric markings needed to demonstrate that a quadrilateral is a square?	Using the integers −9 to 9 at most one time each, place a digit in each box to create endpoints for the longest possible line segment whose midpoint is (1, 3). $(\square, \square)$ and $(\square, \square)$	Using the digits 0 to 9 at most one time each, place a digit in each box so that the radius and angle measure result in the sector area is as close to 60 units² as possible. radius = ☐ units; Θ = ☐☐☐°; sector area = ☐☐ π units² 	What is the fewest number of transformations needed to take pre-image ABCD to image A′B′C′D′? 

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