MFAS Geometry CPALMS Review Packet

Circles, Geometric Measurement, and Geometric Properties

MFAS Geometry EOC Review

Table of Contents

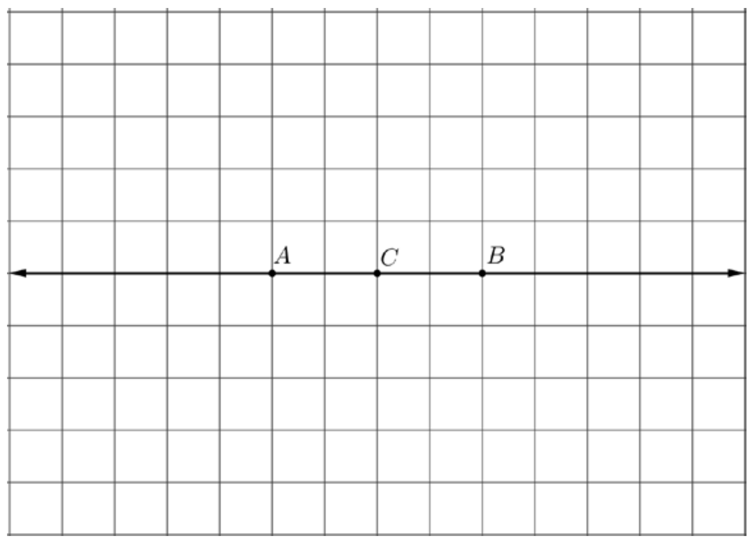
MAFS.912.G-C.1.1

Level 2	Level 3	Level 4	Level 5
identifies that all circles are similar	uses a sequence of no more than two transformations to prove that two circles are similar	uses the measures of different parts of a circle to determine similarity	explains why all circles are similar

Dilation of a Line: Center on the Line

In the figure, points *A*, *B*, and *C* are collinear.

1. Graph the images of points *A*, *B*, and *C* as a result of a dilation with center at point *C* and scale factor of 1.5. Label the images of *A*, *B*, and *C* as A', B', and C', respectively.

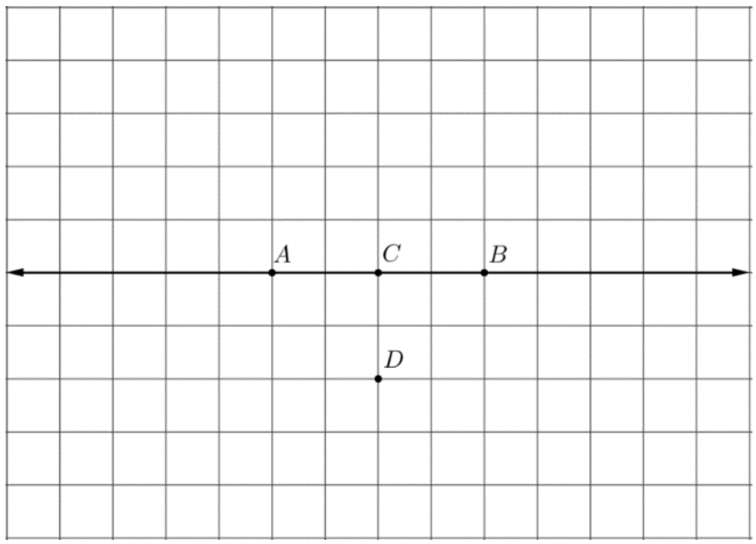


2. Describe the image of $\overleftrightarrow{AB}$ as a result of this dilation. In general, what is the relationship between a line and its image after dilating about a center on the line?

Dilation of a Line: Factor of Two.

In the figure, the points *A*, *B*, and *C* are collinear.

1. Graph the images of points *A*, *B*, and *C* as a result of dilation with center at point *D* and scale factor equal to 2. Label the images of *A*, *B*, and *C* as A', B', and C', respectively.

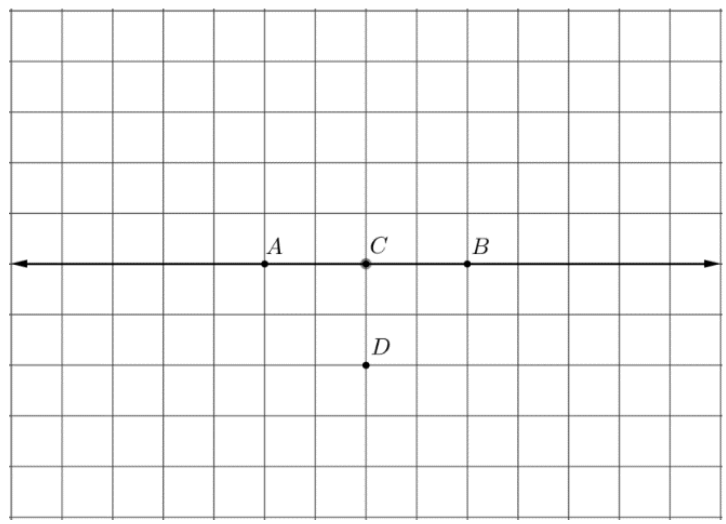


2. Describe the image of $\overleftrightarrow{AB}$ as a result of the same dilation. In general, what is the relationship between a line and its image after dilating about a center not on the line?

Dilation of a Line: Factor of One Half

In the figure, the points *A*, *B*, *C* are collinear.

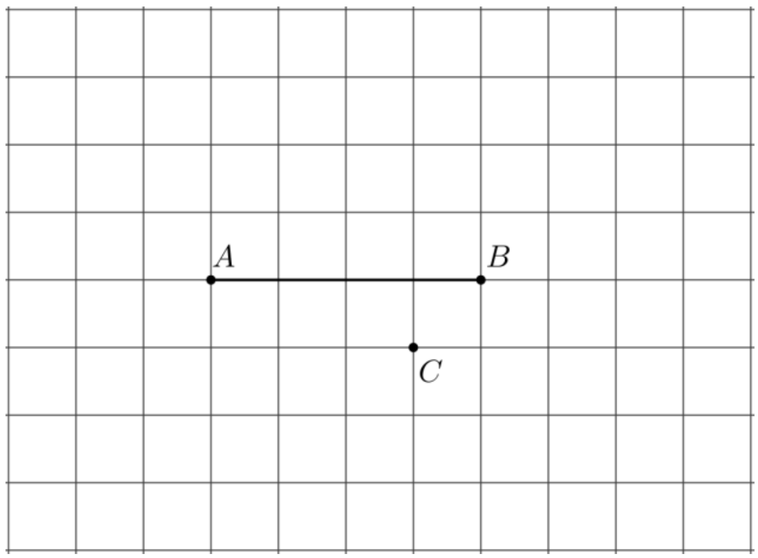
1. Graph the images of points *A*, *B*, *C* as a result of dilation with center at point *D* and scale factor equal to 0.5. Label the images of *A*, *B*, and *C* as A', B', and C', respectively.



2. Describe the image of $\overleftrightarrow{AB}$ as a result of the same dilation. In general, what is the relationship between a line and its image after dilating about a center not on the line?

Dilation of a Line Segment

1. Given $\overline{AB}$, draw the image of $\overline{AB}$ as a result of the dilation with center at point *C* and scale factor equal to 2.



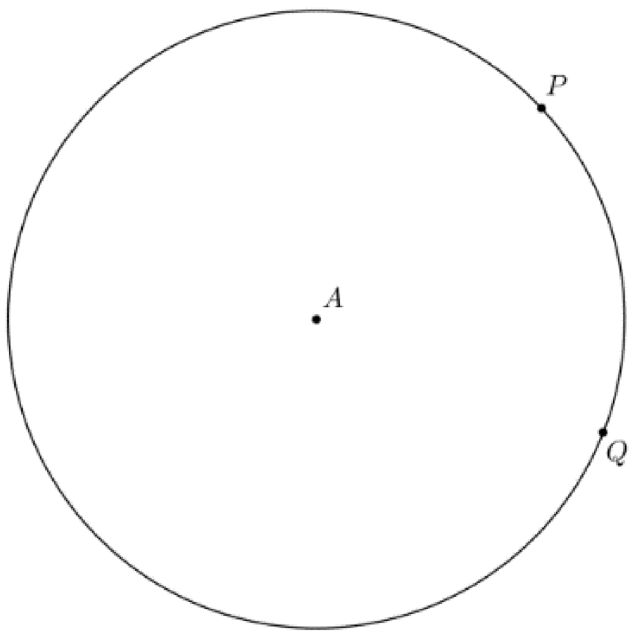
2. Describe the relationship between $\overline{AB}$ and its image.

MAFS.912.G-C.1.2

Level 2	Level 3	Level 4	Level 5
solves problems using the properties of central angles, diameters, and radii	solves problems that use no more than two properties including using the properties of inscribed angles, circumscribed angles, and chords	solves problems that use no more than two properties, including using the properties of tangents	solves problems using at least three properties of central angles, diameters, radii, inscribed angles, circumscribed angles, chords, and tangents

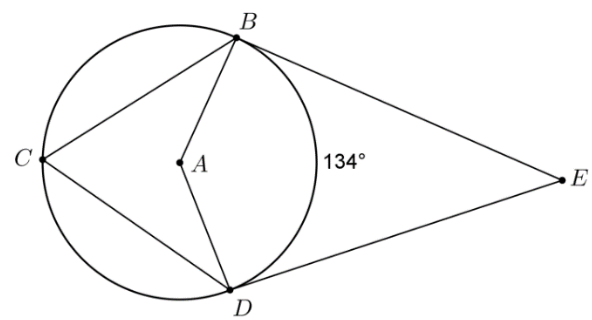
Central and Inscribed Angles

Describe the relationship between an inscribed angle and a central angle that intersect the same arc. Use the circle below to illustrate your reasoning.



Circles with Angles

Use circle *A* below to answer the following questions. Assume points *B*, *C*, and *D* lie on the circle, segments $\overline{BE}$ and $\overline{DE}$ are tangent to circle *A* at points *B* and *D*, respectively, and the measure of $\widehat{BD}$ is $134°$.



1. Identify the type of angle represented by $\angle BAD$, $\angle BCD$, and $\angle BED$ in the diagram and then determine each angle measure. Justify your calculations by showing your work.

    a. $\angle BAD$:
    $m\angle BAD =$

    b. $\angle BCD$:
    $m\angle BCD =$

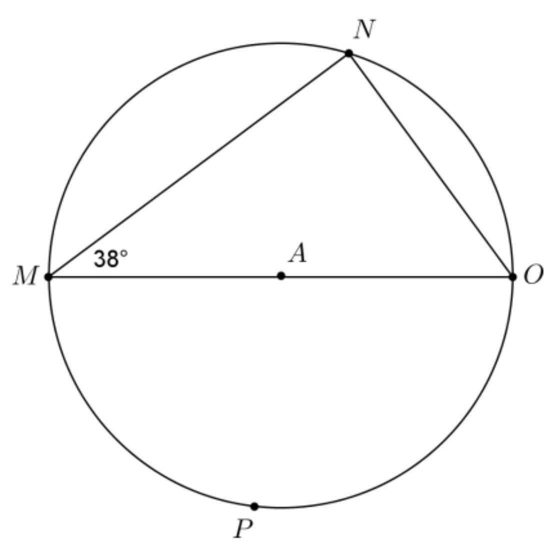
    c. $\angle BED$:
    $m\angle BED =$

2. Describe, in general, the relationship between:

    a. $\angle BAD$ and $\angle BCD$:

    b. $\angle BAD$ and $\angle BED$:

Inscribed Angle on Diameter



1. If point *A* is the center of the circle, what must be true of *m∠MNO*? Justify your answer.

2. Explain how to find the *m∠NOM* .

Tangent Line and Radius

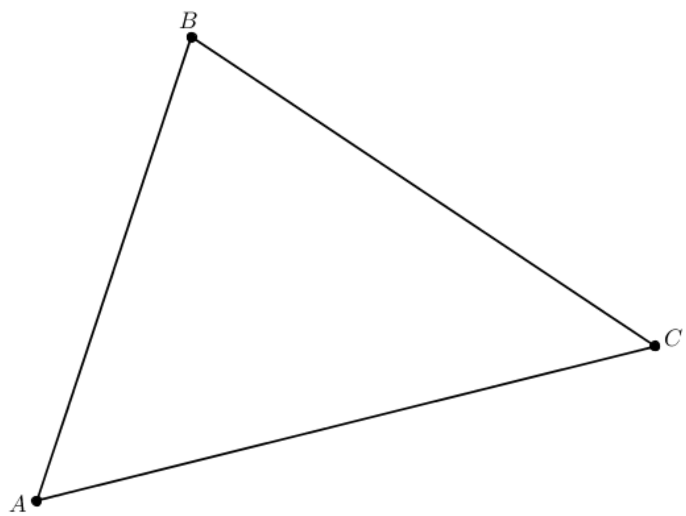
1. Line *t* is tangent to circle *O* at point *P*. Draw circle *O*, line *t,* and radius$\overline{OP}$. Describe the relationship between $\overline{OP}$ and line t.

MAFS.912.G-C.1.3

Level 2	Level 3	Level 4	Level 5
identifies inscribed and circumscribed circles of a triangle	creates or provides steps for the construction of the inscribed and circumscribed circles of a triangle; uses properties of angles for a quadrilateral inscribed in a circle; chooses a property of angles for a quadrilateral inscribed in a circle within an informal argument	solves problems that use the incenter and circumcenter of a triangle; justifies properties of angles of a quadrilateral that is inscribed in a circle; proves properties of angles for a quadrilateral inscribed in a circle	proves the unique relationships between the angles of a triangle or quadrilateral inscribed in a circle

Inscribed Circle Construction

Use a compass and straightedge to construct a circle inscribed in the triangle.

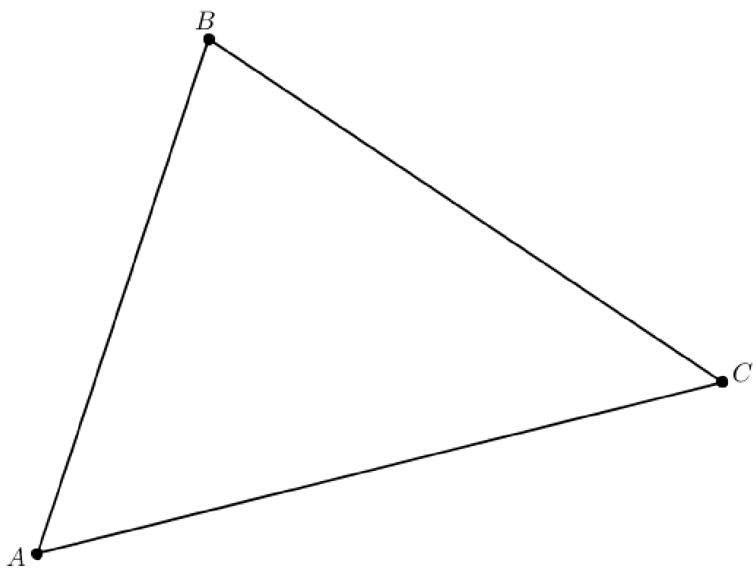


1. What did you construct to locate the center of your inscribed circle?

2. What is the name of the point of concurrency that serves as the center of your inscribed circle?

Circumscribed Circle Construction

Use a compass and straightedge to construct a circle circumscribed about the triangle.

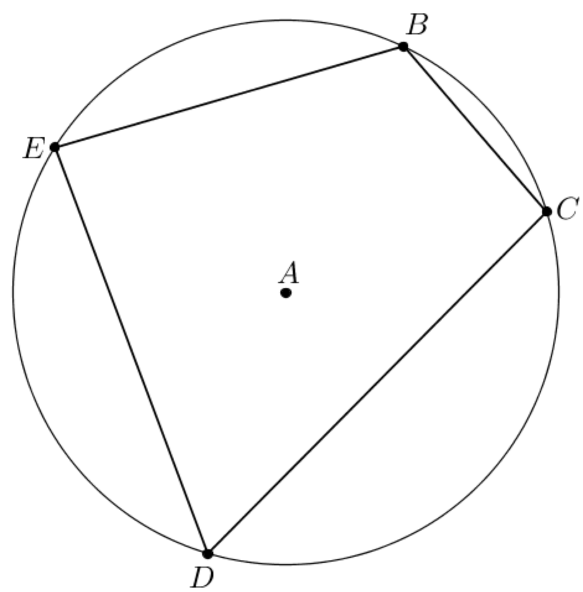


3. What did you construct to locate the center of your circumscribed circle?

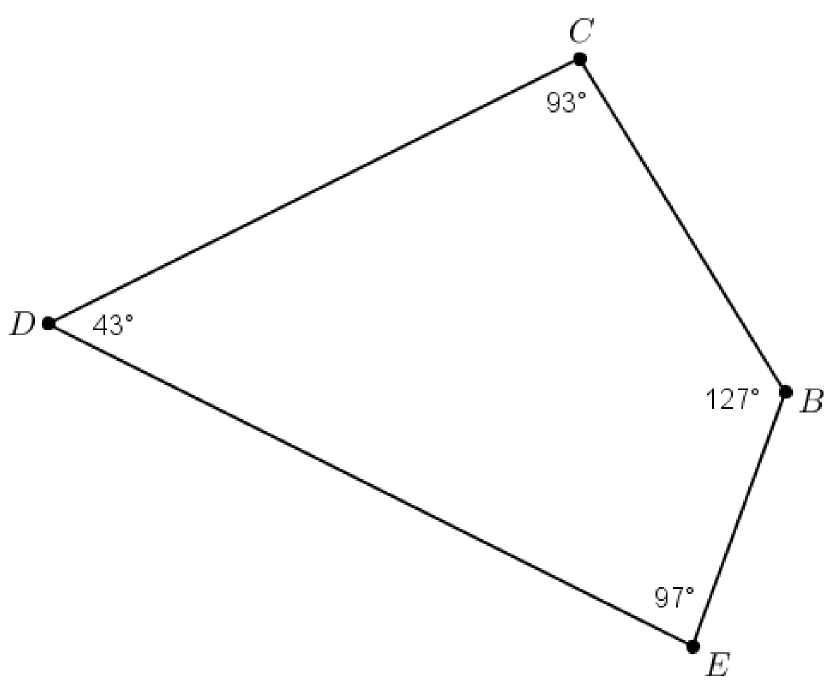
4. What is the name of the point of concurrency that serves as the center of your circumscribed circle?

Inscribed Quadrilaterals

1. Quadrilateral *BCDE* is inscribed in circle *A*. Prove that $\angle EDC$ and $\angle CBE$ are supplementary.



2. Can the quadrilateral below be inscribed in a circle? Explain why or why not.

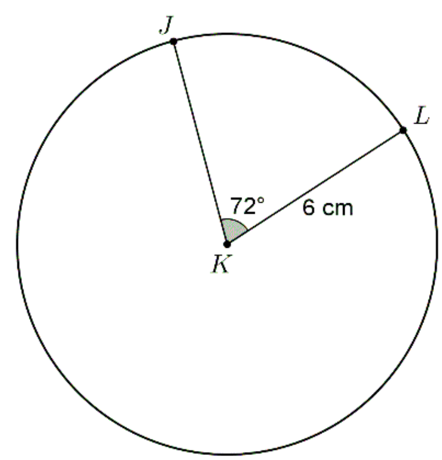


MAFS.912.G-C.2.5

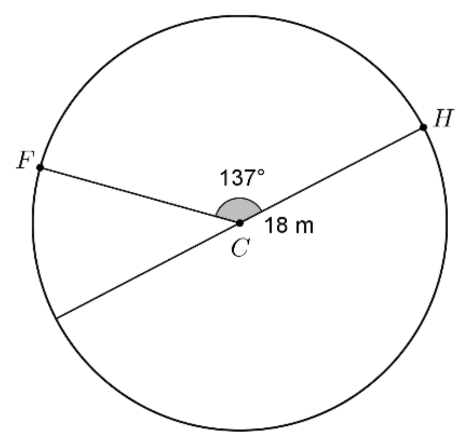
Level 2	Level 3	Level 4	Level 5
identifies a sector area of a circle as a proportion of the entire circle	applies similarity to solve problems that involve the length of the arc intercepted by an angle and the radius of a circle; defines radian measure as the constant of proportionality	derives the formula for the area of a sector and uses the formula to solve problems; derives, using similarity, the fact that the length of the arc intercepted by an angle is proportional to the radius	proves that the length of the arc intercepted by an angle is proportional to the radius, with the radian measure of the angle being the constant of proportionality

Arc Length

1. Find the length of $\widehat{JL}$ of circle *K* in terms of π. Show all of your work carefully and completely.

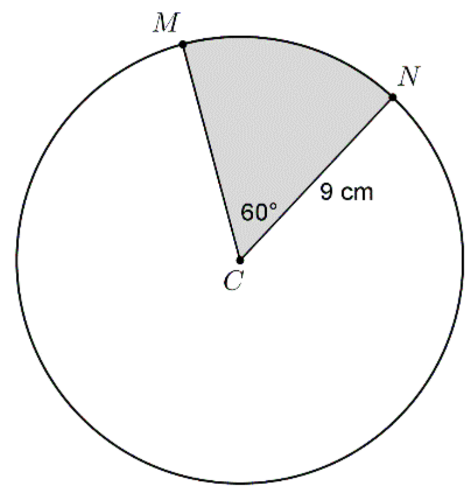


2. Find the length of $\widehat{FH}$ of circle *C*. Round your answer to the nearest hundredth. Show all of your work carefully and completely.

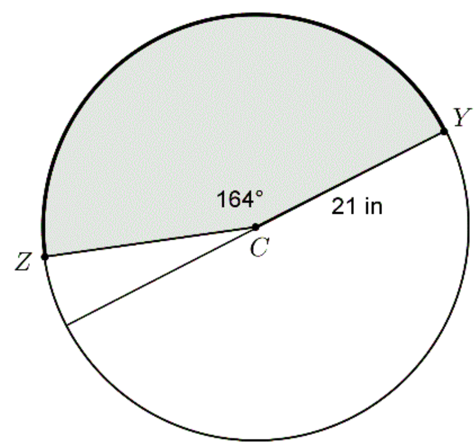


Sector Area

1. Find the area of the shaded sector in terms of π. Show all of your work carefully and completely.



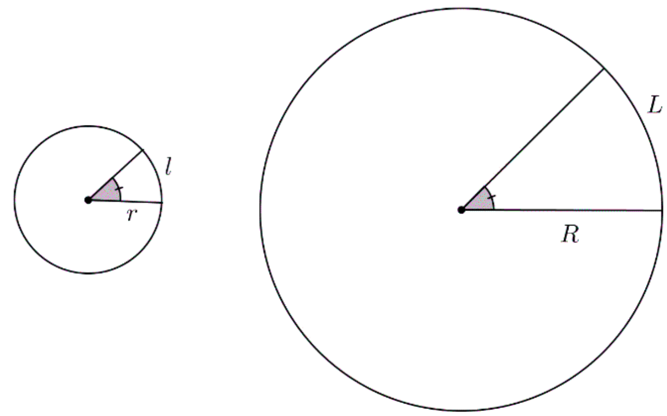
2. Find the area of the shaded sector. Round your answer to the nearest hundredth. Show all of your work carefully and completely.



Arc Length and Radians

Use the similarity of circles to explain why the length of an arc intercepted by an angle is proportional to the radius. That is, given the following diagram:

1. Explain why $\frac{L}{l} = \frac{R}{r}$.



2. Explain how the fact that arc length is proportional to radius leads to a definition of the radian measure of an angle.

Deriving the Sector Area Formula

1. Write a formula that can be used to find the area of a sector of a circle. Be sure to explain what each variable represents. You may include a diagram in your description.

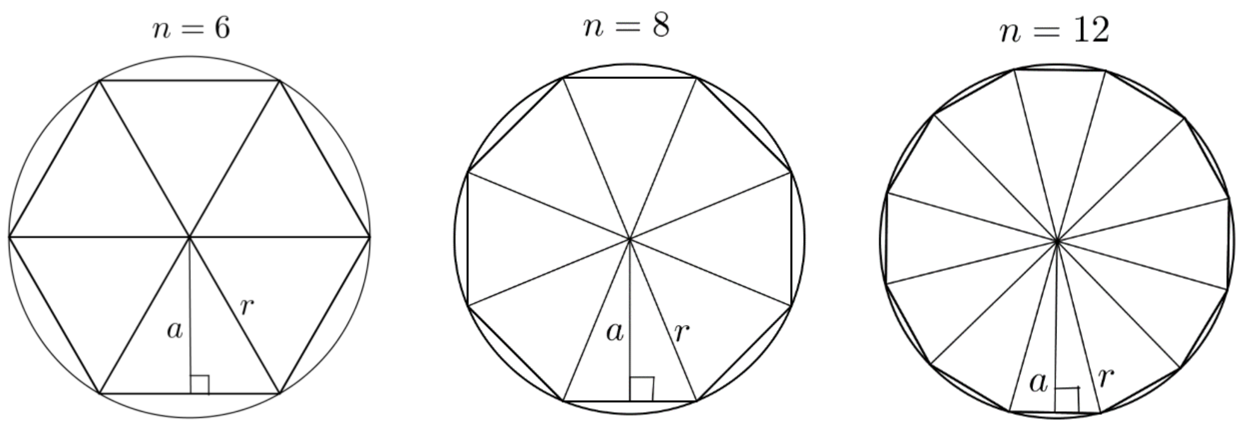
2. Explain and justify the formula you wrote.

MAFS.912.G-GMD.1.1

Level 2	Level 3	Level 4	Level 5
gives an informal argument for the formulas for the circumference of a circle and area of a circle	uses dissection arguments and Cavalier's principle for volume of a cylinder, pyramid, and cone	sequences an informal limit argument for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone	explains how to derive a formula using an informal argument

Area and Circumference – 1

Suppose a regular *n*-gon is inscribed in a circle of radius *r*. Diagrams are shown for *n* = 6, *n* = 8, and *n* = 12.



Imagine how the relationship between the *n*-gon and the circle changes as *n* increases.

1. Describe the relationship between the area of the *n*-gon and the area of the circle as *n* increases.

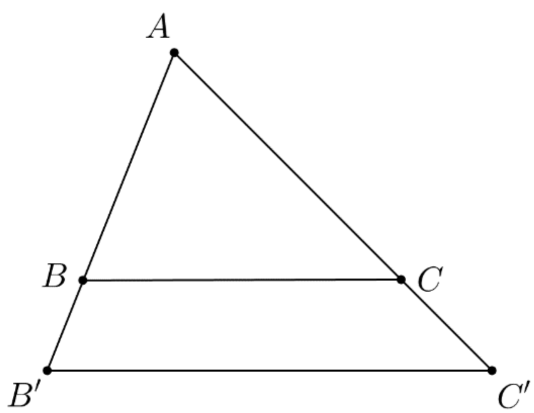
2. Describe the relationship between the perimeter of the *n*-gon and the circumference of the circle as *n* increases.

3. Recall that the area of a regular polygon, A_P, can be found using the formula $A_P = \frac{1}{2}ap$ where a is the apothem and p is the perimeter of the polygon, as shown in the diagram. Consider what happens to a and p in the formula $A_P = \frac{1}{2}ap$ as n increases and derive an equation that describes the relationship between the area of a circle, A, and the circumference of the circle, *C*.

Area and Circumference – 2

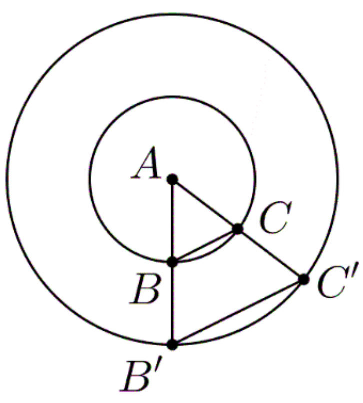
The objective of this exercise is to show that for any circle of radius *r*, the area of the circle, *A*(*r*), can be found in terms of the area of the unit circle, *A*(1). In other words, show that
$A(r) = r^2 \cdot A(1)$.

1. Given ΔABC and $\Delta AB'C'$ such that $AB' = r \cdot AB$ and $AC' = r \cdot AC$, show or explain why the Area of $\Delta AB'C' = r^2 \cdot$ Area of ΔABC.



2. Given two concentric circles with center at *A*, one of radius 1 (that is, $AB = 1$) and the other of radius *r* with $r > 1$ (that is, $AB' = r$), so that $AB' = r \cdot AB$ and $AC' = r \cdot AC$.

Let $\overline{BC}$ be one side of regular *n*-gon P_n inscribed in circle *A* of radius 1 and let $\overline{B'C'}$ be one side of regular *n*-gon P'_n inscribed in circle *A* of radius *r*. Using the result from (1), show or explain why Area of $P'_n = r^2 \cdot$ Area of P_n.



3. Finally, show or explain why $A(r) = r^2 \cdot A(1)$.

Area and Circumference – 3

The unit circle is a circle of radius 1. Define π to be the area, $A(1)$, of the unit circle, that is, $\pi = A(1)$.

Let A represent the area and C represent the circumference of a circle of radius r. Assume each of the following is true:

- The area of a circle is equal to half of the product of the circumference and the radius, that is $A = \frac{1}{2} Cr$.
- The area of a circle is equal to r^2 times the area of the unit circle, that is, $A = r^2 \cdot A(1)$.

Use these two assumptions and the above definition of π to derive:

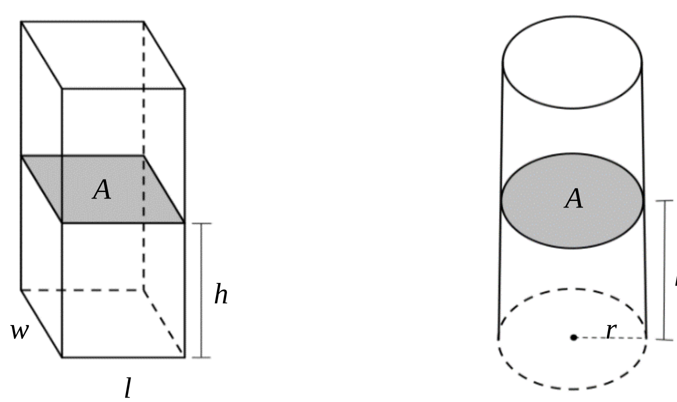
1. The formula for the area, A, of a circle.

2. The formula for the circumference, C, of a circle.

3. The formula for π in terms of C and d, the diameter of a circle.

Volume of a Cylinder

The rectangular prism and the cylinder below have the same height and the same cross-sectional area at any given height above the base. This means that the area of the shaded rectangle, A_1, is the same as the area of the shaded circle, A_2 when $h_1 = h_2$.

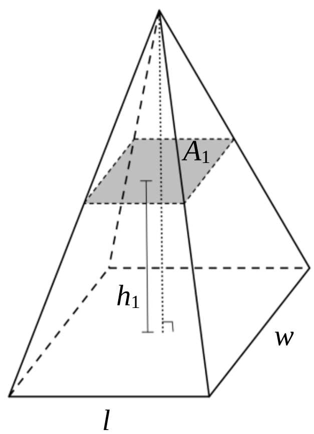


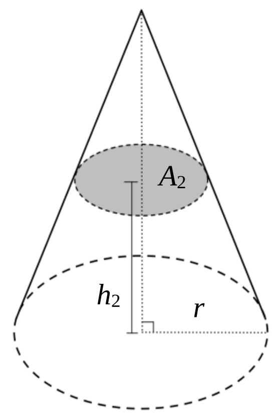
V = Volume
h = height
r = radius

1. Use the formula for the volume of a prism ($V = l \cdot w \cdot h$) to derive and explain the formula for the volume of a cylinder.

Volume of a Cone

The rectangular pyramid and the cone below have the same height and the same cross-sectional area at any given height above the base. This means that the area of the shaded square, A_1, is the same as the area of the shaded circle, A_2 when $h_1 = h_2$.





V = Volume
h = height
r = radius
l = length
w = width

1. Use the formula for the volume of a rectangular pyramid ($V = \frac{1}{3} \cdot lwh$) to derive and explain the formula for the volume of a cone.

MAFS.912.G-GMD.1.3

Level 2	Level 3	Level 4	Level 5
substitutes given dimensions into the formulas for the volume of cylinders, pyramids, cones, and spheres, given a graphic, in a real-world context	finds a dimension, when given a graphic and the volume for cylinders, pyramids, cones, or spheres	solves problems involving the volume of composite figures that include a cube or prism, and a cylinder, pyramid, cone, or sphere (a graphic would be given); finds the volume when one or more dimensions are changed	finds the volume of composite figures with no graphic; finds a dimension when the volume is changed

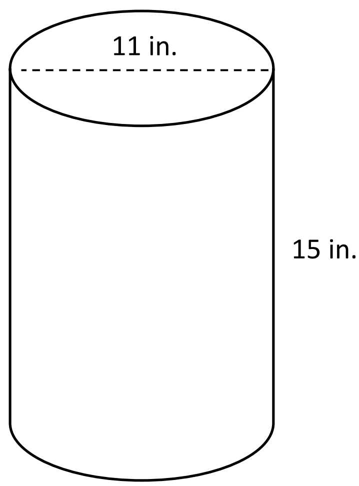
Volume of a Cylinder

The coach at Coastal High School is concerned about keeping her athletes hydrated during practice. She can either buy a case of 24 quart-sized drinks or fill a cylindrical cooler with water and a powder mix. The dimensions of the cylindrical cooler are given below and one quart is equal to 57.75 cubic inches. Which option provides the most drink for her athletes?

1. Look up any formulas you need in your book. Justify your response by showing and/or explaining your work.

Individual Drinks

Cylindrical Cooler

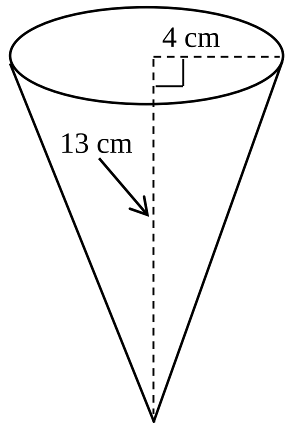


Snow Cones

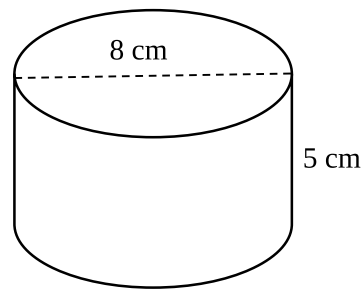
Jennifer loves snow cones and wants to get the most for her money. There are two vendors at the fair selling snow cones for the same price. If the two containers are completely filled and then leveled off across their tops, which will hold the most? If necessary, round off to the nearest cubic centimeter.

1. Look up any formulas you need in your book. Justify your response by showing and/or explaining your work.

Traditional Snow Cone



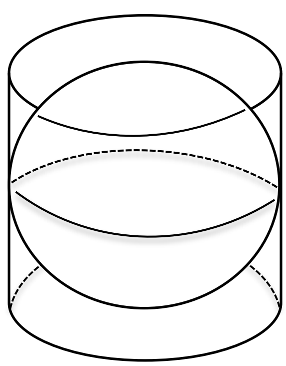
Snow Cone in a Cup



Do Not Spill the Water!

Suppose a ball is completely submerged inside a cylinder filled with water displacing some of the water in the cylinder. Assume the ball and the cylinder both have a diameter of 10 centimeters, and the diameter of the ball is the same as the height of the cylinder.

Determine the volume of water that can remain in the cylinder after the ball is inserted so that the water rises to the top edge of the cylinder without spilling. Look up any formulas you need in your book or notes. Justify your response by showing and/or explaining your work.

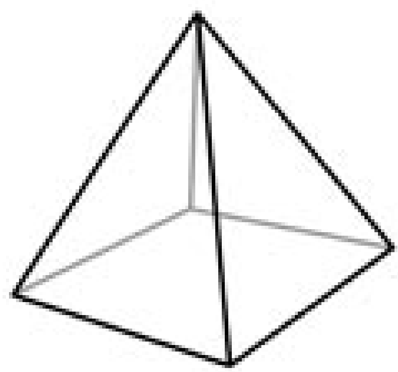


The Great Pyramid

The Great Pyramid of Giza is an example of a square pyramid and is the last surviving structure considered a wonder of the ancient world. The builders of the pyramid used a measure called a cubit, which represents the length of the forearm from the elbow to the tip of the middle finger. One cubit is about 20 inches in length.

Find the height of the Great Pyramid (in cubits) if each base edge is 440 cubits long and the volume of the pyramid is 18,069,330 cubic cubits.

Look up any formulas you need in your book. Justify your response by showing and/or explaining your work.

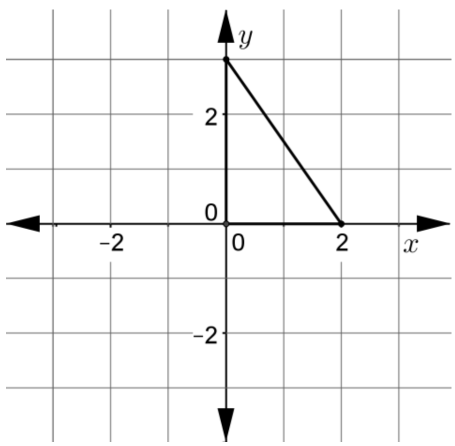


MAFS.912.G-GMD.2.4

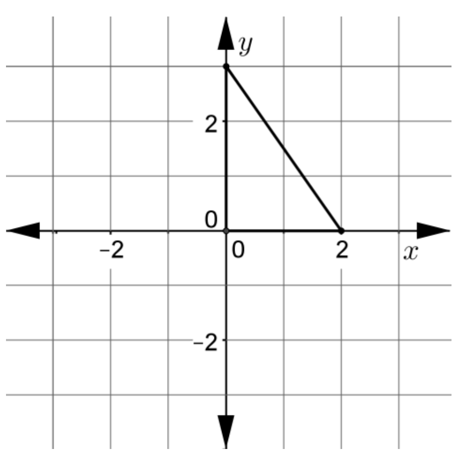
Level 2	Level 3	Level 4	Level 5
identifies the shapes of two-dimensional cross- sections formed by a vertical or horizontal plane	identifies a three-dimensional object generated by rotations of a triangular and rectangular object about a line of symmetry of the object; identifies the location of a horizontal or vertical slice that would give a particular cross-section; draws the shape of a particular two-dimensional cross-section that is the result of horizontal or vertical slice of a three-dimensional shape	identifies a three-dimensional object generated by rotations of a closed two-dimensional object about a line of symmetry of the object; identifies the location of a nonhorizontal or nonvertical slice that would give a particular cross-section; draws the shape of a particular two-dimensional cross-section that is the result of a nonhorizontal or nonvertical slice of a three-dimensional shape; compares and contrasts different types of slices	identifies a three-dimensional object generated by rotations, about a line of symmetry, of an open two-dimensional object or a closed two-dimensional object with empty space between the object and the line of symmetry; compares and contrasts different types of rotations

2D Rotations of Triangles

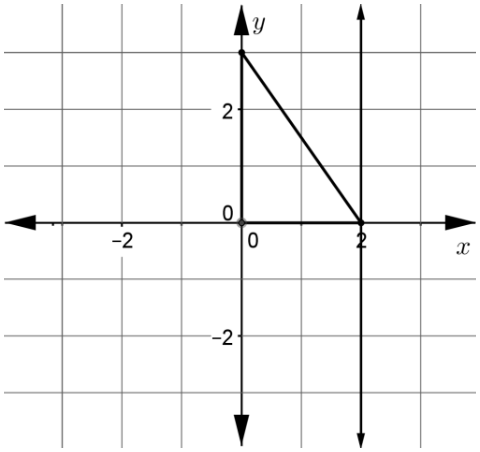
1. Describe in detail the solid formed by rotating a right triangle with vertices at (0, 0), (2, 0), and (0, 3) about the vertical axis. Include the dimensions of the solid in your description.



2. Describe in detail the solid formed by rotating a right triangle with vertices at (0, 0), (2, 0), and (0, 3) about the horizontal axis. Include the dimensions of the solid in your description.

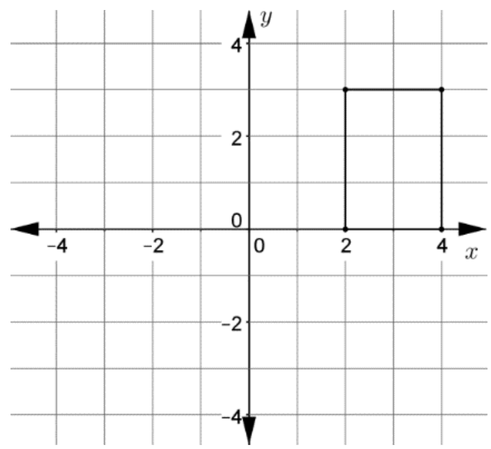


3. Imagine the solid formed by rotating the same right triangle about the line x = 2. Describe this solid in detail

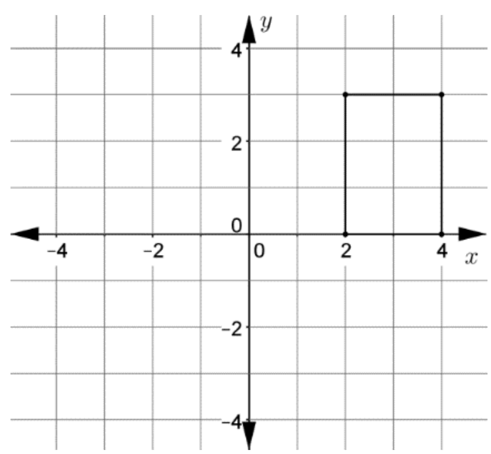


2D Rotations of Rectangles

1. Describe in detail the solid formed by rotating a 2 x 3 rectangle with vertices (2, 0), (4, 0), (2, 3) and (4, 3) about the x-axis. Include the dimensions of the solid in your description.

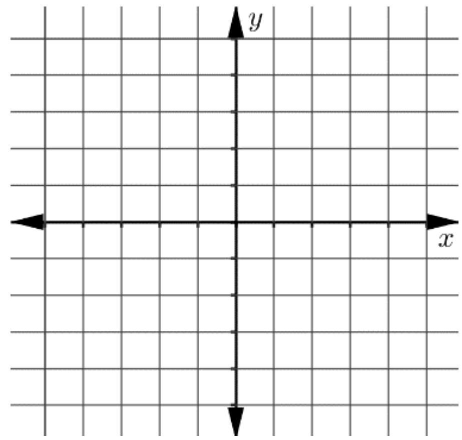


2. Describe in detail the solid formed by rotating a 2 x 3 rectangle with vertices (2, 0), (4, 0), (2, 3), and (4, 3) about the y-axis. Include the dimensions of the solid in your description.

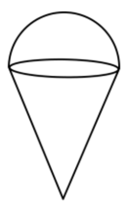


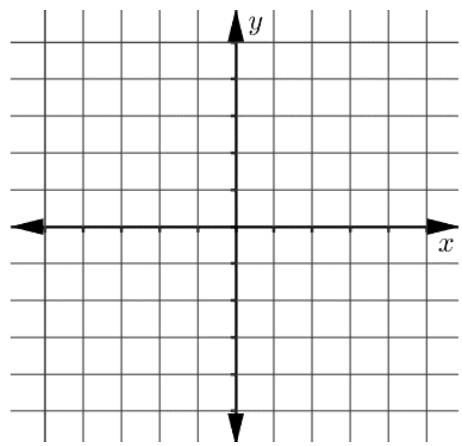
Working Backwards – 2D Rotations

1. Identify and draw a figure that can be rotated around the *y*-axis to generate a sphere.



2. Draw a figure that can be rotated about the *y*-axis to generate the following solid (a hemisphere atop a cone).





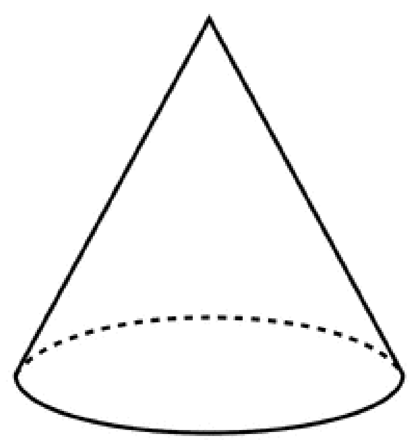
Slice It.

1. Draw and describe the shape of a two-dimensional cross-section that would be visible if you vertically slice the object, perpendicular to the base.

2. Draw and describe the shape of a two-dimensional cross-section that would be visible if you horizontally slice the object, parallel to the base.

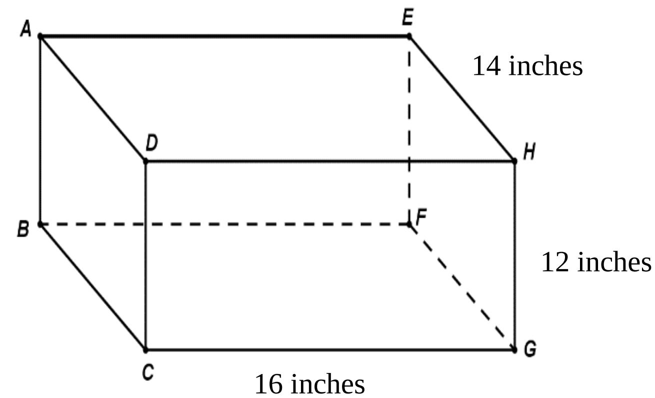
Slice of a Cone

1. Draw three different horizontal cross-sections of the cone that occur at different heights. How are these three cross-sections related?

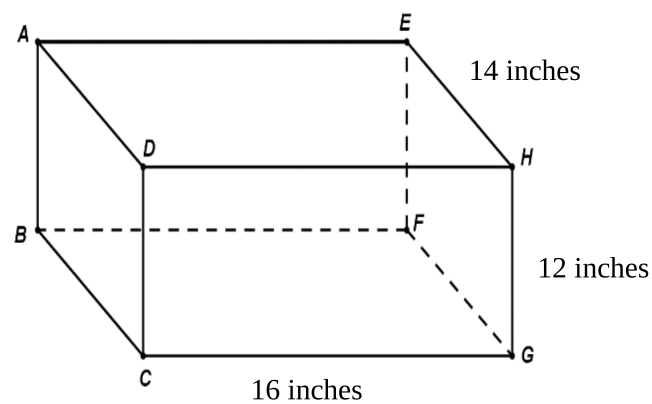


Inside the Box

1. In the space provided, sketch both a horizontal and vertical cross section of the box. Label the dimensions on your sketch.



2. Imagine a cross-section defined by plane *EBCH*. Sketch the cross-section and label the dimensions that you know or can find.

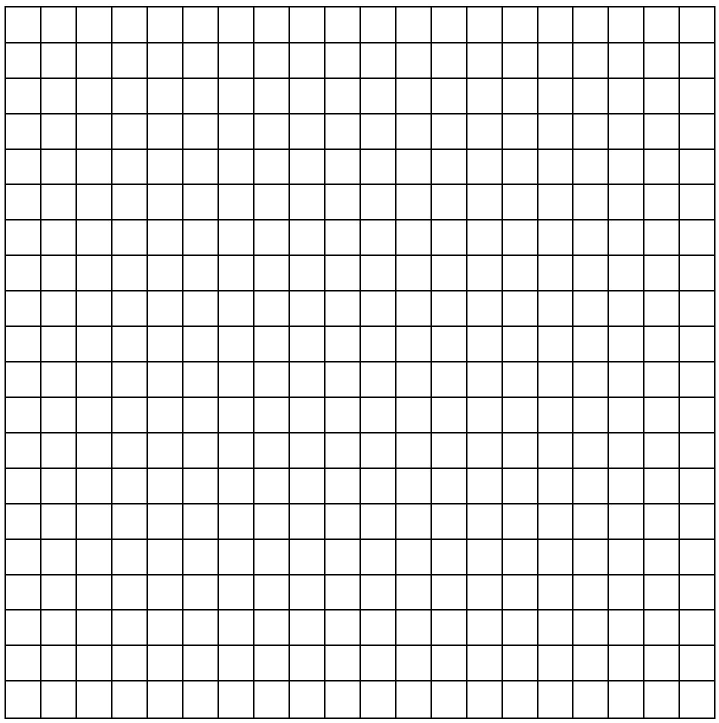


MAFS.912.G-GPE.1.1

Level 2	Level 3	Level 4	Level 5
determines the center and radius of a circle given its equation in general form	completes the square to find the center and radius of a circle given by its equation; derives the equation of a circle using the Pythagorean theorem, the coordinates of a circle's center, and the circle's radius	derives the equation of the circle using the Pythagorean theorem when given coordinates of a circle's center and a point on the circle	derives the equation of a circle using the Pythagorean theorem when given coordinates of a circle's center as variables and the circle's radius as a variable

Derive the Circle – Specific Points

1. The center of a circle is at (-5, 7) and its radius is 6 units. Derive the equation of the circle using the Pythagorean Theorem. You may use the coordinate plane to illustrate your reasoning.

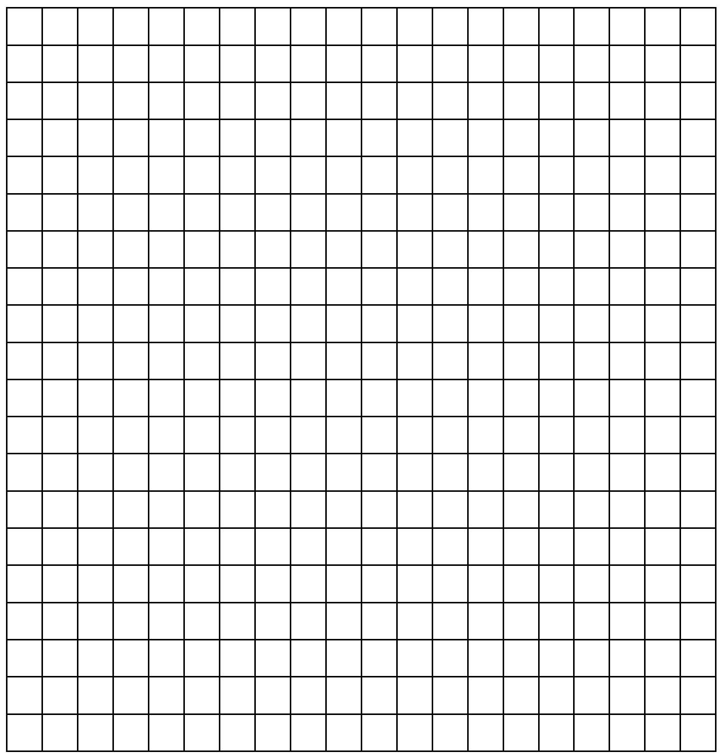


Derive the Circle – General Points

The standard form of the equation of a circle with center (h, k) and radius r is written as:

$$(x-h)^2+(y-k)^2 = r^2$$

Show how this equation can be derived from the Pythagorean Theorem. Use the coordinate plane to illustrate your reasoning.



Complete the Square for Center-Radius

The equation of a circle in general form is:

$$x^2 + 6x + y^2 + 5 = 0$$

1. Find the center and radius of the circle. Show all work neatly and completely.

Complete the Square for Center-Radius 2

The equation of a circle in general form is:

$$4x^2 - 16x + 4y^2 - 24y + 16 = 0$$

1. Find the center and radius of the circle. Show all work neatly and completely.

MAFS.912.G-GPE.2.4

Level 2	Level 3	Level 4	Level 5
uses coordinates to prove or disprove that a figure is a parallelogram	uses coordinates to prove or disprove that a figure is a square, right triangle, or rectangle; uses coordinates to prove or disprove properties of triangles, properties of circles, properties of quadrilaterals when given a graph	uses coordinates to prove or disprove properties of triangles, properties of circles, properties of quadrilaterals without a graph; provide an informal argument to prove or disprove properties of triangles, properties of circles, properties of quadrilaterals; uses coordinates to prove or disprove properties of regular polygons when given a graph	completes an algebraic proof or writes an explanation to prove or disprove simple geometric theorems

Describe the Quadrilateral

1. A quadrilateral has vertices at *A*(-3, 2), *B*(-2, 6), *C*(2, 7) and *D*(1, 3). Which, if any, of the following describe quadrilateral *ABCD*: parallelogram, rhombus, rectangle, square, or trapezoid? Justify your reasoning.

Type of Triangle

1. Triangle *PQR* has vertices at *P*(8, 2), *Q*(11, 13), and *R*(2, 6). Without graphing the vertices, determine if the triangle is scalene, isosceles, or equilateral. Show all of your work and justify your decision.

Diagonals of a Rectangle

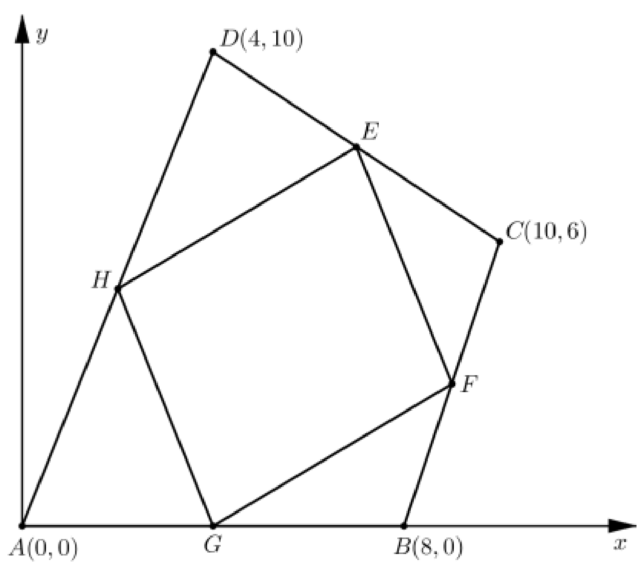
Three of the vertices of a rectangle have coordinates *D*(0, 0), *A*(*a*, 0), and *B*(0, *b*).

1. Find the coordinates of point *C*, the fourth vertex.

2. Prove that the diagonals of the rectangle are congruent.

Midpoints of Sides of a Quadrilateral

Show that the quadrilateral formed by connecting the midpoints of the sides of quadrilateral *ABCD* (points *E*, *F*, *G*, and *H*) is a parallelogram.



MAFS.912.G-GPE.2.5

Level 2	Level 3	Level 4	Level 5
identifies that the slopes of parallel lines are equal	creates the equation of a line that is parallel given a point on the line and an equation, in slope-intercept form, of the parallel line or given two points (coordinates are integral) on the line that is parallel; creates the equation of a line that is perpendicular given a point on the line and an equation of a line, in slope- intercept form	creates the equation of a line that is parallel given a point on the line and an equation, in a form other than slope-intercept; creates the equation of a line that is perpendicular that passes through a specific point when given two points or an equation in a form other than slope-intercept	proves the slope criteria for parallel and perpendicular lines; writes equations of parallel or perpendicular lines when the coordinates are written using variables or the slope and y-intercept for the given line contains a variable

Writing Equations for Parallel Lines

1. In right trapezoid *ABCD*, $\overline{BC} \parallel \overline{AD}$ and $\overline{AD}$ is contained in the line whose equation is $y = -\frac{1}{2}x + 10$.

   a. What is the slope of the line containing $\overline{BC}$? Briefly explain how you got your answer.

   b. Write an equation in **slope-intercept form** of the line that contains $\overline{BC}$ if *B* is located at $(-2, 7)$. Show your work to justify your answer.

2. In rectangle *EFGH*, $\overline{EH} \parallel \overline{FG}$ and $\overline{EH}$ crosses the *y*-axis at (0, −2). If the equation of the line containing $\overline{FG}$ is $x + 3y = 12$, write the equation of the line containing $\overline{EH}$ in **slope-intercept form.** Show your work to justify your answer.

MFAS Geometry EOC Review

Writing Equations for Perpendicular Lines

1. In right trapezoid *ABCD*, $\overline{AB} \perp \overline{AD}$ and $\overline{AD}$ is contained in the line $y = -\frac{1}{2}x + 10$.

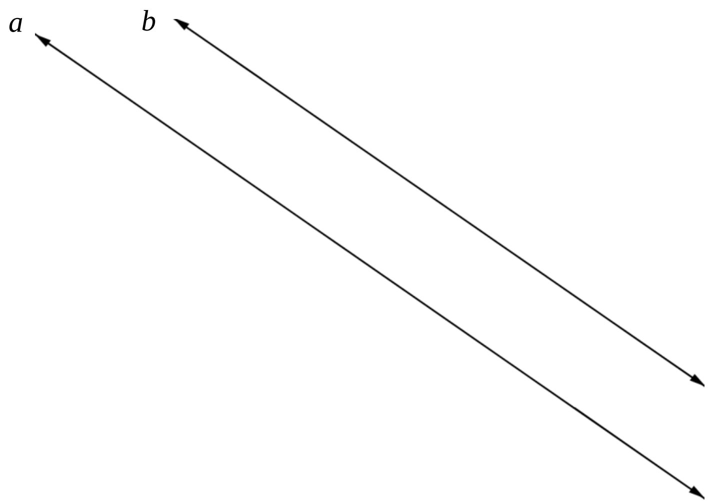
   a. What is the slope of the line containing $\overline{AB}$? Briefly explain how you got your answer.

   b. Write an equation in **slope-intercept form** of the line that contains $\overline{AB}$ if *B* is located at $(-2, 7)$. Show your work to justify your answer.

2. In rectangle *EFGH*, $\overline{EF} \perp \overline{FG}$ and $\overline{EF}$ contains the point (0, -4). If the equation of the line containing $\overline{FG}$ is $2x + 6y = 9$, write the equation of the line containing $\overline{EF}$ in **slope-intercept form.** Show your work to justify your answer.

Proving Slope Criterion for Parallel Lines – One

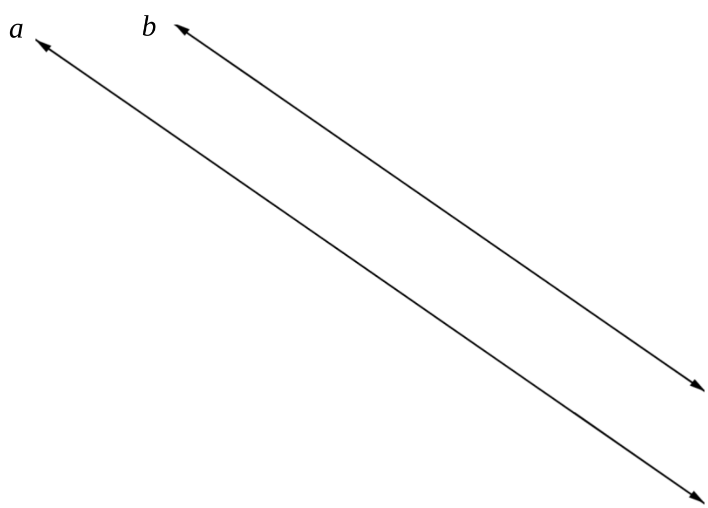
Line *a* is parallel to line *b*. Prove that the slope of line *a* equals the slope of line *b*.



Note: You may draw axes placing the lines in the coordinate plane if you prefer.

Proving Slope Criterion for Parallel Lines – Two

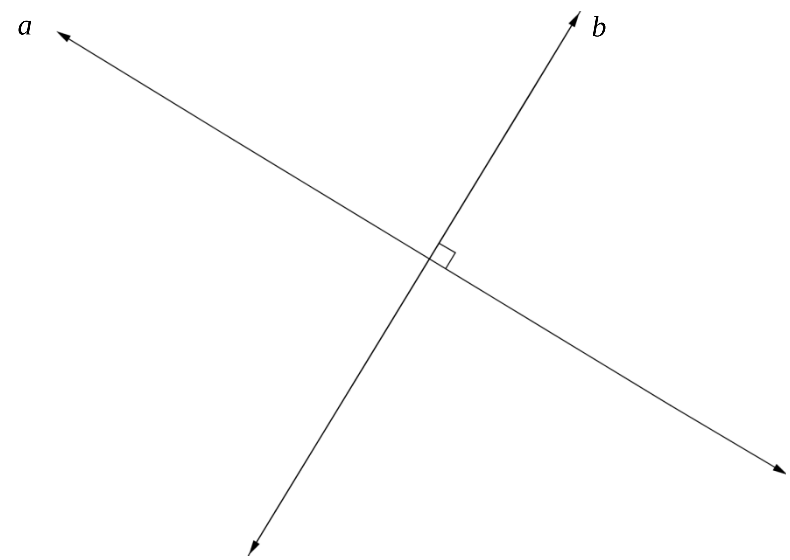
The slope of line *a* equals the slope of line *b*. Prove that line *a* is parallel to line *b*.



Note: You may draw axes placing the lines in the coordinate plane if you prefer.

Proving Slope Criterion for Perpendicular Lines – One

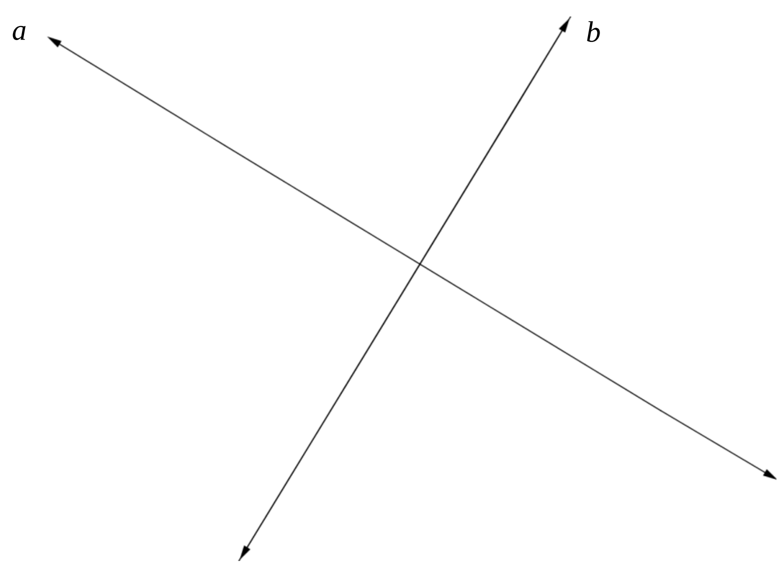
Line *a* is perpendicular to line *b*. Prove that the slopes of line *a* and line *b* are both opposite and reciprocal (or that the product of their slopes is –1).



Note: You may draw axes placing the lines in the coordinate plane if you prefer.

Proving Slope Criterion for Perpendicular Lines – Two

The slope of line *a* and the slope of line *b* are both opposite and reciprocal. Prove that line *a* is perpendicular to line *b*.



Note: You may draw axes placing the lines in the coordinate plane if you prefer.

MAFS.912.G-GPE.2.6

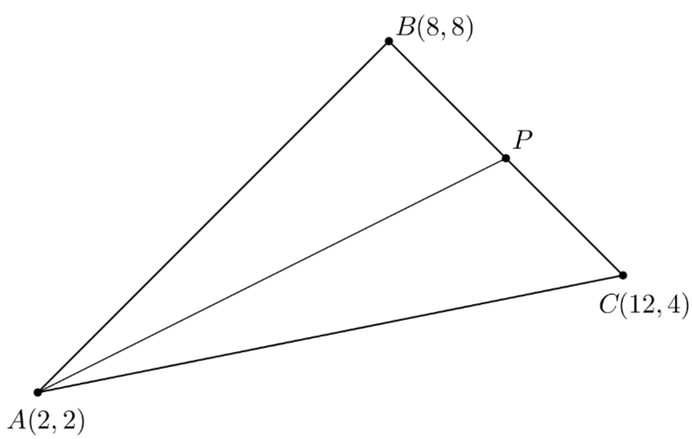
Level 2	Level 3	Level 4	Level 5
finds the point on a line segment that partitions the segment in a given ratio of 1 to 1, given a visual representation of the line segment	finds the point on a line segment that partitions, with no more than five partitions, the segment in a given ratio, given the coordinates for the endpoints of the line segment	finds the endpoint on a directed line segment given the partition ratio, the point at the partition, and one endpoint	finds the point on a line segment that partitions or finds the endpoint on a directed line segment when the coordinates contain variables

Partitioning a Segment

Given *M*(-4, 7) and *N*(12, -1), find the coordinates of point *P* on $\overline{MN}$ so that *P* partitions $\overline{MN}$ in the ratio 1:7 (i.e., so that *MP*:*PN* is 1:7). Show all of your work and explain your method and reasoning.

Centroid Coordinates

In ΔABC, $\overline{AP}$ is a median. Find the exact coordinates of a point, *D*, on $\overleftrightarrow{AP}$ so that $AD:DP = 2:1$.
Show all of your work and explain your method and reasoning.

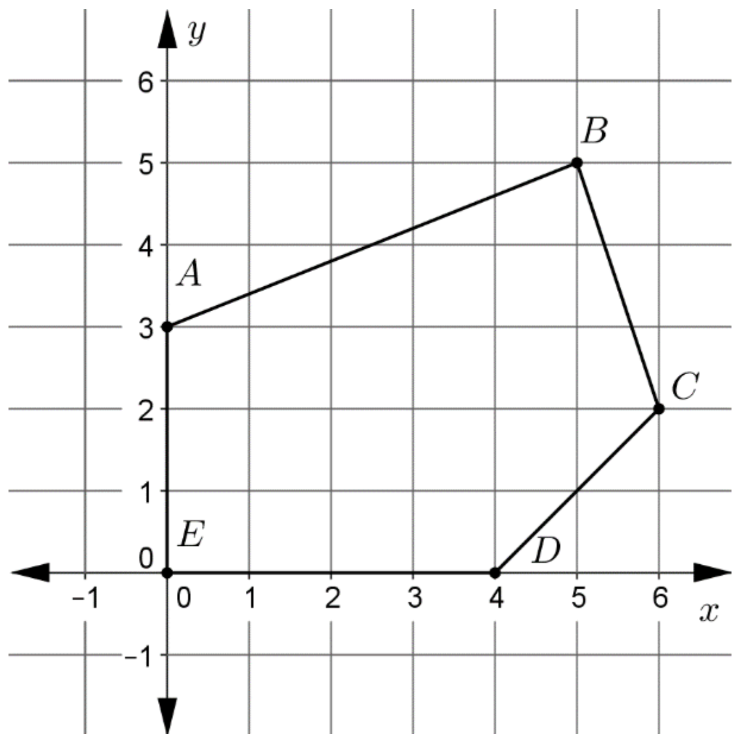


MAFS.912.G-GPE.2.7

Level 2	Level 3	Level 4	Level 5
finds areas and perimeters of right triangles, rectangles, and squares when given a graphic in a real-world context	when given a graphic, finds area and perimeter of regular polygons where at least two sides have a horizontal or vertical side; finds area and perimeter of parallelograms	finds area and perimeter of irregular polygons that are shown on the coordinate plane; finds the area and perimeter of shapes when given coordinates	finds area and perimeter of shapes when coordinates are given as variables

Pentagon's Perimeter

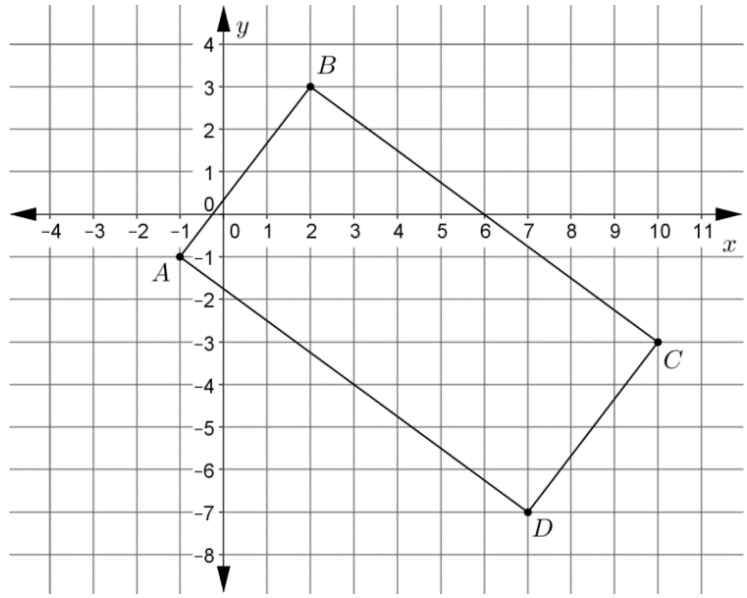
Find the perimeter of polygon *ABCDE* with vertices *A*(0, 3), *B*(5, 5), *C*(6, 2), *D*(4, 0) and *E*(0, 0). Show your work.



Perimeter and Area of a Rectangle

Find the perimeter and the area of rectangle *ABCD* with vertices *A*(-1, -1), *B*(2, 3), *C*(10, -3) and *D*(7, -7). Show your work.

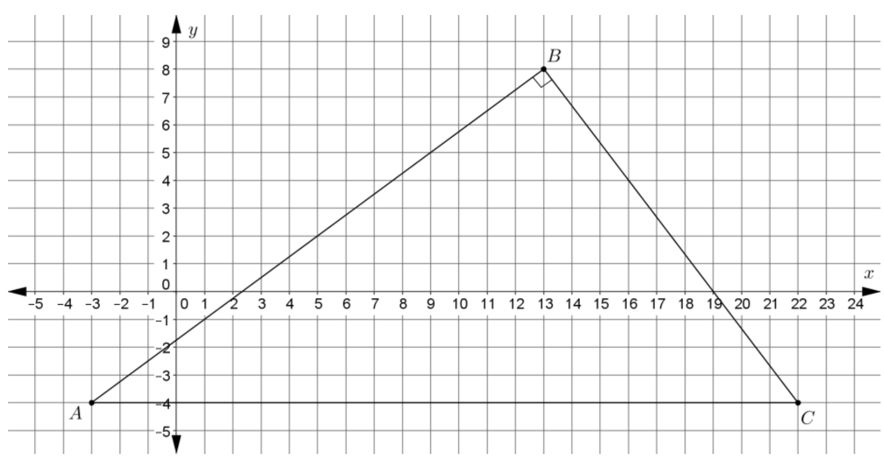
Perimeter _______________ Area _______________



Perimeter and Area of a Right Triangle

Find the perimeter and the area of right triangle *ABC* with vertices *A*(-3, -4), *B*(13, 8) and *C*(22, -4). Show your work.

Perimeter _______________ Area _______________



Perimeter and Area of an Obtuse Triangle

Find the perimeter and the area of ΔABC with vertices $A(3, 1)$, $B(9, 1)$ and $C(-3, 7)$. Show your work. Round to the nearest tenth if necessary.

Perimeter ________________ Area __________________