FSA Geometry End-of-Course Review Packet

Circles Geometric Measurement and Geometric Properties

FSA Geometry EOC Review

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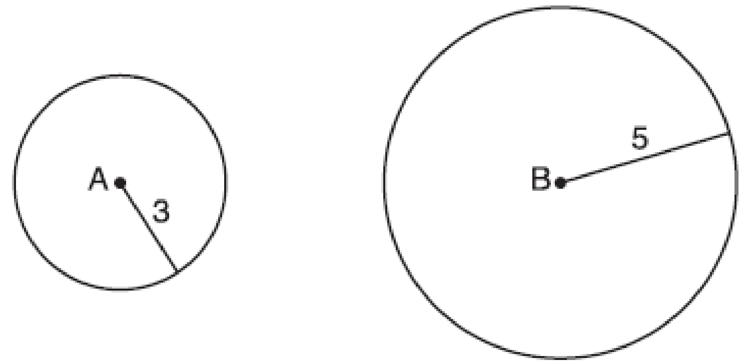
MAFS.912.G-C.1.1 EOC Practice

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

1. As shown in the diagram below, circle A as a radius of 3 and circle B has a radius of 5.

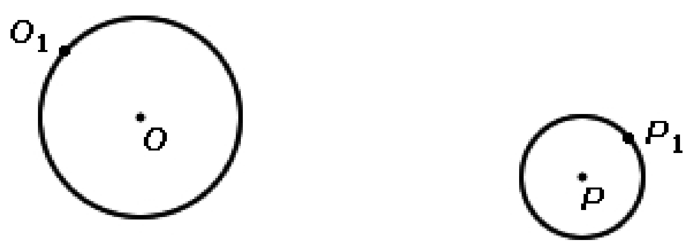
   Use transformations to explain why circles A and B are similar.



2. Which can be accomplished using a sequence of similarity transformations?

   I. mapping circle O onto circle P so that O_1 matches P_1

   II. mapping circle P onto circle O so that P_1 matches O_1



   A. I only
   B. II only
   C. both I and II
   D. neither I nor II

3. Which statement explains why all circles are similar?

   A. There are 360° in every circle.
   B. The ratio of the circumference of a circle to its diameter is same for every circle.
   C. The diameter of every circle is proportional to the radius.
   D. The inscribed angle in every circle is proportional to the central angle.

4. Which method is valid for proving that two circles are similar?

   A. Calculate the ratio of degrees to the area for each circle and show that they are equal.
   B. Calculate the ratio of degrees to the radius for each circle and show that they are equal.
   C. Calculate the ratio of the area to the diameter for each circle and show that they are equal.
   D. Calculate the ratio of radius to circumference for each circle and show that they are equal.

5. Which statement is true for any two circles?

   A. The ratio of the areas of the circles is the same as the ratio of their radii.
   B. The ratio of the circumferences of the circles is the same as the ratio of their radii.
   C. The ratio of the areas of the circles is the same as the ratio of their diameters.
   D. The ratio of the areas of the circles is the same as the ratio of their circumferences.

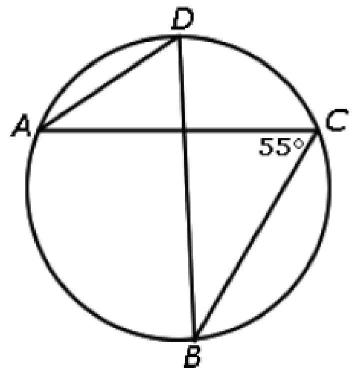
6. Circle J is located in the first quadrant with center (a, b) and radius s. Felipe transforms Circle J to prove that it is similar to any circle centered at the origin with radius t.
   Which sequence of transformations did Felipe use?

   A. Translate Circle J by $(x + a, y + b)$ and dilate by a factor of $\frac{t}{s}$.
   B. Translate Circle J by $(x + a, y + b)$ and dilate by a factor of $\frac{s}{t}$.
   C. Translate Circle J by $(x - a, y - b)$ and dilate by a factor of $\frac{t}{s}$.
   D. Translate Circle J by $(x - a, y - b)$ and dilate by a factor of $\frac{s}{t}$.

MAFS.912.G-C.1.2 EOC Practice

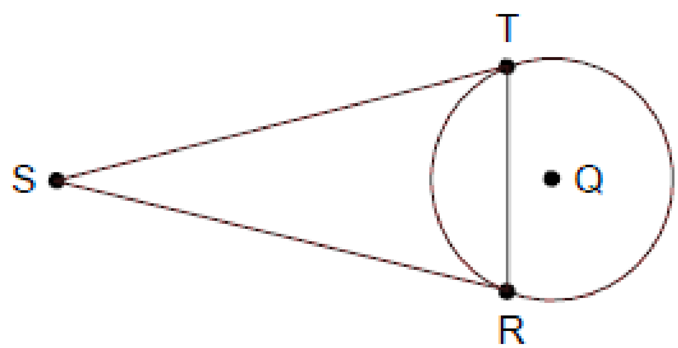
Level 2	Level 3	Level 4	Level 5
solves problems using the properties of central angles, diameters, and radii	solves problems that use no more than two properties including using the properties of inscribed angles, circumscribed angles, and chords	solves problems that use no more than two properties,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

1. If $m\angle C = 55°$, then what is $m\angle D$?



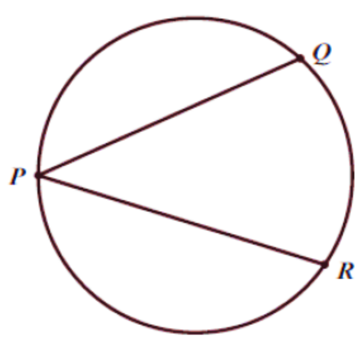
   A. 27.5°
   B. 35°
   C. 55°
   D. 110°

2. Triangle STR is drawn such that segment ST is tangent to circle Q at point T, and segment SR is tangent to circle Q at point R. If given any triangle STR with these conditions, which statement must be true?



   A. Side TR could pass through point Q.
   B. Angle S is always smaller than angles T and R.
   C. Triangle STR is always an isosceles triangle.
   D. Triangle STR can never be a right triangle.

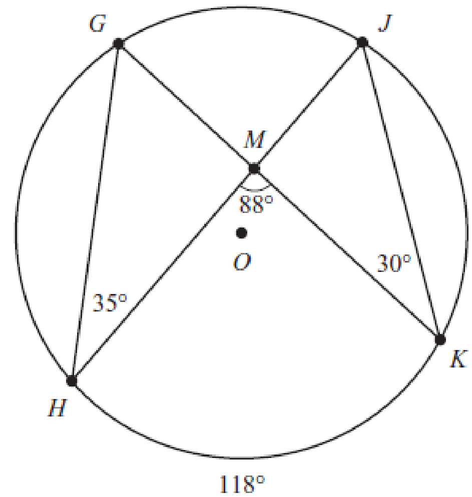
3. In this circle, $\boldsymbol{mQR} = \mathbf{72°}$.



   What is m∠QPR?

   A. 18°
   B. 24°
   C. 36°
   D. 72°

4. Use the diagram to the right to answer the question.



What is wrong with the information given in the diagram?

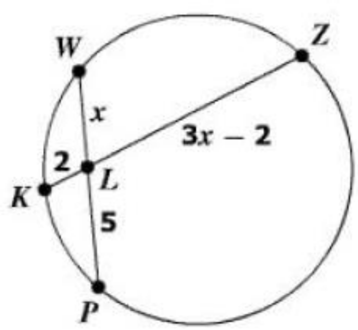
A. $\overline{HJ}$ should pass through the center of the circle.

B. The length of $\overline{GH}$ should be equal to the length of $\overline{JK}$.

C. The measure of $\angle GHM$ should be equal to the measure of $\angle JKM$.

D. The measure of $\angle HMK$ should be equal to half the measure of HK

5. Chords $\overline{WP}$ and $\overline{KZ}$ intersect at point L in the circle shown.



What is the length of $\overline{KZ}$?

A. 7.5

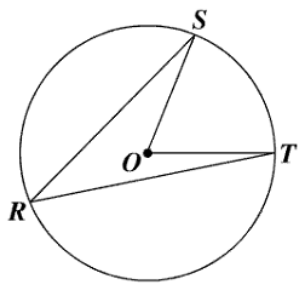
B. 9

C. 10

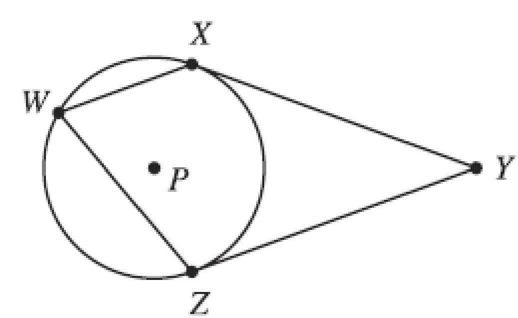
D. 12

6. In circle O, $m\angle SOT = 68°$. What is $m\angle SRT$?

$m\angle SRT =$ $\boxed{}$



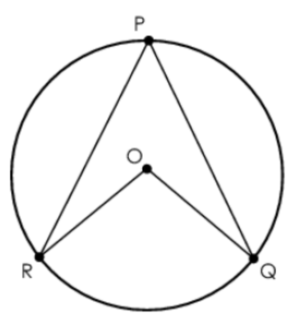
7. Circle P has tangents $\overline{XY}$ and $\overline{ZY}$ and chords $\overline{WX}$ and $\overline{WZ}$, as shown in this figure. The measure of $\angle ZWX = 70°$.



What is the measure, in degrees, of $\angle XYZ$?

A. 20°
B. 35°
C. 40°
D. 55°

8. A teacher draws Circle O, $\angle RPQ$ and $\angle ROQ$, as shown.



The teacher asks students to select the correct claim about the relationship between $m\angle RPQ$ and $m\angle ROQ$.

- Claim 1: The measure of $\angle RPQ$ is equal to the measure of $\angle ROQ$
- Claim 2: The measure of $\angle ROQ$ is twice the measure of $\angle RPQ$

Which claim is correct? Justify your answer

FSA Geometry EOC Review

MAFS.912.G-C.1.3 EOC Practice

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

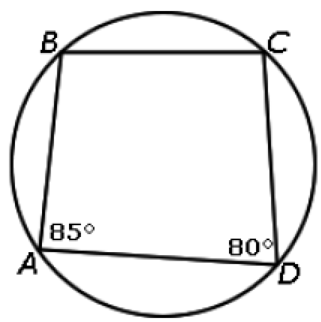
1. The center of the inscribed circle of a triangle has been established. Which point on one of the sides of a triangle should be chosen to set the width of the compass?

   A. intersection of the side and the median to that side
   B. intersection of the side and the angle bisector of the opposite angle
   C. intersection of the side and the perpendicular passing through the center
   D. intersection of the side and the altitude dropped from the opposite vertex

2. Quadrilateral ABCD is inscribed in a circle as shown in the diagram below.

   If $m\angle A = 85°$ and $m\angle D = 80°$, what is the $m\angle B$?

   A. 80°
   B. 85°
   C. 95°
   D. 100°



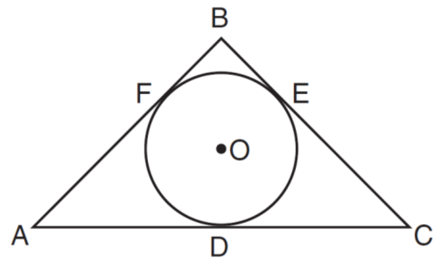
3. Quadrilateral ABCD is inscribed in a circle. Segments AB and BC are not the same length. Segment AC is a diameter. Which must be true?

   A. ABCD is a trapezoid.
   B. ABCD is a rectangle.
   C. ABCD has at least two right angles.
   D. ABCD has an axis of symmetry.

4. Which statement is valid when a circumscribed circle of an obtuse triangle is constructed?

   A. The longest side of the triangle lies on the diameter of the circle.
   B. The circle is drawn inside the triangle touching all 3 sides.
   C. The center of the circle is in the interior of the triangle.
   D. The vertices of the triangle lie on the circle.

5. In the diagram below, $\overline{AB}$, $\overline{BC}$, and $\overline{AC}$ are tangents to circle O at points F, E, and D, respectively, $AF = 6$, $CD = 5$, and $BE = 4$.



What is the perimeter of ΔABC?

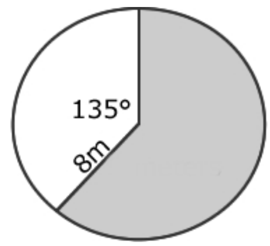
A. 15
B. 25
C. 30
D. 60

FSA Geometry EOC Review

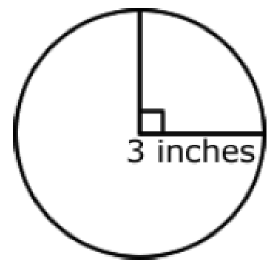
MAFS.912.G-C.2.5 EOC Practice

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

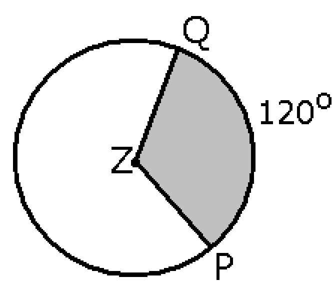
1. What is the area of the shaded sector?
   A. 5π square meters
   B. 10π square meters
   C. 24π square meters
   D. 40π square meters



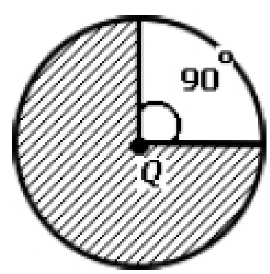
2. What is the area of the 90° sector?
   A. $\frac{3\pi}{4}$ square inches
   B. $\frac{3\pi}{2}$ square inches
   C. $\frac{9\pi}{4}$ square inches
   D. $\frac{9\pi}{2}$ square inches



3. What is the area of the shaded sector if the radius of circle Z is 5 inches?
   A. $\frac{25\pi}{3}$ square inches
   B. 25π square inches
   C. $\frac{25\pi}{4}$ square inches
   D. 5π square inches



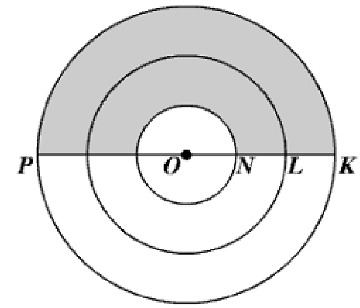
4. What is the area of the shaded sector, given circle Q has a diameter of 10?
   A. $18\frac{3}{4}\pi$ square units
   B. 25π square units
   C. $56\frac{1}{4}\pi$ square units
   D. 75π square units



5. Given: Three concentric circles with the center O.

   $\overline{KL} \cong \overline{LN} \cong \overline{NO}$
   $KP = 42\ inches$

   Which is closest to the area of the shaded region?



   A. $231\ sq\ in.$
   B. $308\ sq\ in.$
   C. $539\ sq\ in.$
   D. $616\ sq\ in.$

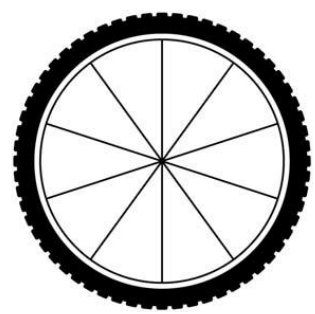
6. The minute hand on a clock is 10 centimeters long and travels through an arc of $108°$ every 18 minutes.

   Which measure is closest to the length of the arc the minute hand travels through during this 18 –minute period?

   A. $3\ cm$
   B. $6\ cm$
   C. $9.4\ cm$
   D. $18.8\ cm$

7. The spokes of a bicycle wheel form 10 congruent central angles. The diameter of the circle formed by the outer edge of the wheel is 18 inches.

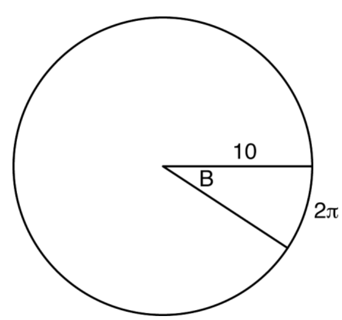
   What is the length, to the nearest 0.1 inch, of the outer edge of the wheel between two consecutive spokes?



   A. 1.8 inches
   B. 5.7 inches
   C. 11.3 inches
   D. 25.4 inches

8. In the diagram below, the circle shown has radius 10. Angle B intercepts an arc with a length of 2π.

   What is the measure of angle B, in radians?

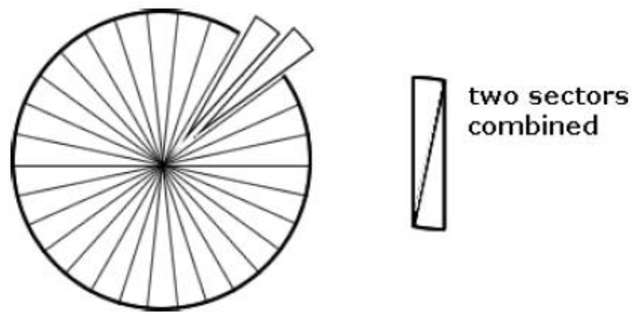


   A. $10 + 2\pi$
   B. 20π
   C. $\frac{\pi}{5}$
   D. $\frac{5}{\pi}$

MAFS.912.G-GMD.1.1 EOC Practice

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

1. To estimate the area of a circle, Irene divided the circle into 30 congruent sectors. Then she combined pairs of sectors into shapes as shown below. As the shapes resemble rectangles, she treats the shapes as rectangles with the height r (radius) and the base equal to the length of the curved side of one sector. What is the area of each shape?



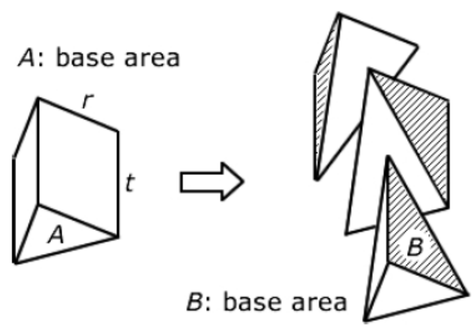
A. $r\frac{nr}{15}$

B. $r\frac{nr}{30}$

C. $r\frac{nr}{60}$

D. $r\frac{nr}{120}$

2. The prism can be cut into three pyramids with the shaded faces congruent. If the shaded faces are considered as bases, then all three pyramids have the same height, h. Therefore the pyramids have equal volumes. What is the volume of each pyramid?



A. $\frac{1}{3}Bt$

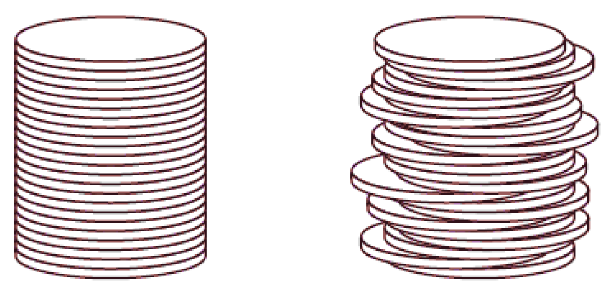
B. $\frac{1}{3}Ah$

C. $\frac{1}{3}Ar$

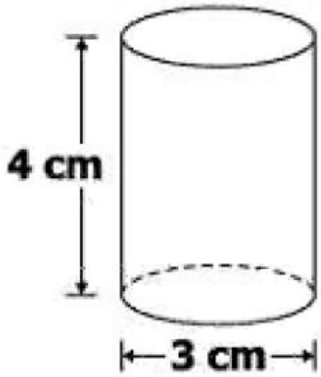
D. $\frac{1}{3}At$

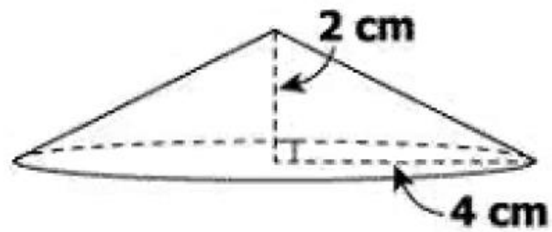
3. Two stacks of 23 quarters each are shown below. One stack forms a cylinder but the other stack does not form a cylinder.

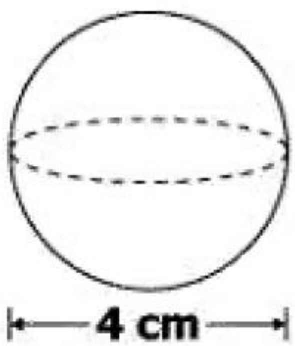
Use Cavelieri's principle to explain why the volumes of these two stacks of quarters are equal.

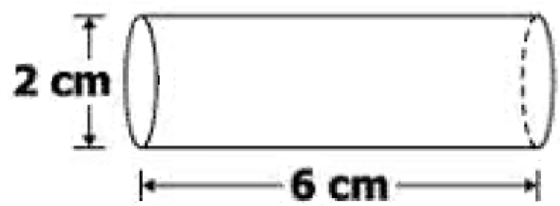


4. Two cylinders, a sphere, and a cone are shown. Select the two objects with the same volume.





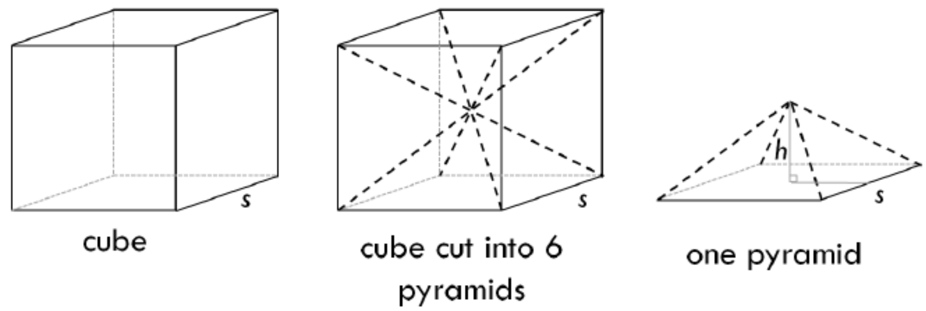




5. According to Cavalieri's principle, under what conditions are the volumes of two solids equal?

   A. When the cross-sectional areas are the same at every level
   B. When the areas of the bases are equal and the heights are equal
   C. When the cross-sectional areas are the same at every level and the heights are equal
   D. When the bases are congruent and the heights are equal

6. Sasha derived the formula for the volume of a square pyramid. She started by dividing a cube into 6 identical square pyramids. The top vertex of each pyramid meets at the central point in the cube, with the cube's diagonals as the edges.



$$V = \text{ the volume of a pyramid}; s = \text{ side length of base}, h = \text{ height of pyramid}$$

The steps of Sasha's work are shown.

- Step 1: $\boldsymbol{6V = s^3}$
- Step 2: $\boldsymbol{V = \frac{1}{3}s^3}$

Maggie also derived the formula for volume of a square pyramid.

- Maggie's result is $\boldsymbol{V = \frac{1}{3}s^2h}$.

The formulas derived by Sasha and Maggie can both be used to correctly calculate the volume of a square pyramid. What are the best next steps for Sasha to take to prove that either formula can be used to find the volume of a square pyramid?

A.

step 3	$2h = s$
step 4	$V = \frac{1}{6}(2h)^3$
step 5	$V = \frac{1}{3}8h^3$

B.

step 3	$2h = s$
step 4	$V = \frac{1}{6}s^2(s)$
step 5	$V = \frac{1}{6}s^2(2h)$

C.

step 3	$2s = h$
step 4	$s = \frac{1}{2}h$
step 5	$V = \frac{1}{6}s^2(s)$
step 6	$V = \frac{1}{6}s^2\left(\frac{1}{2}h\right)$

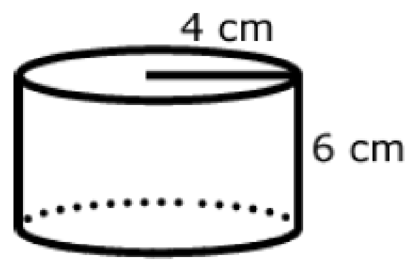
D.

step 3	$2s = h$
step 4	$s = \frac{1}{2}h$
step 5	$V = \frac{1}{6}\left(\frac{1}{2}h\right)^3$
step 6	$V = \frac{1}{6}\left(\frac{1}{8}\right)h^3$

MAFS.912.G-GMD.1.3 EOC Practice

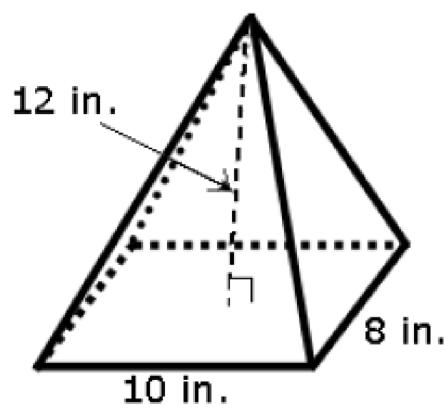
Level 2	Level 3	Level 4	Level 5
substitutes given dimensions into the formulas for the volume of cylinders, pyramids, cones, and spheres, given a graphic, in a real-world context	finds a dimension, when given a graphic and the volume for cylinders, pyramids, cones, or spheres	solves problems involving 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

1. Find the volume of the cylinder.



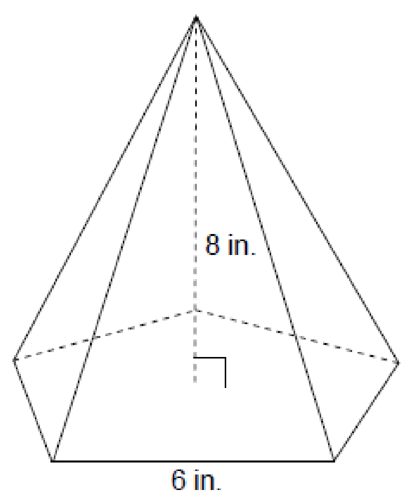
A. 452.2 cubic cm
B. 301.4 cubic cm
C. 150.7 cubic cm
D. 75.4 cubic cm

2. Find the volume of the rectangular pyramid.



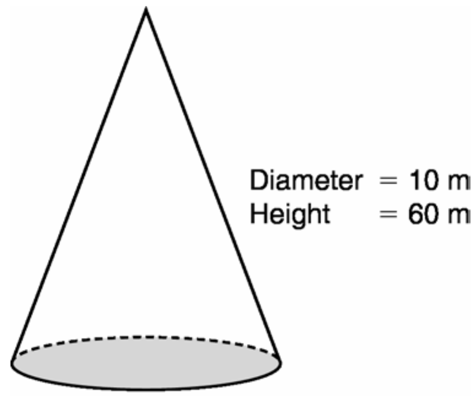
A. 72 cubic inches
B. 200 cubic inches
C. 320 cubic inches
D. 960 cubic inches

3. This right pentagonal pyramid has a height of 8 inches and a base area of 61.94 square inches. To the nearest hundredth, what is the volume of the pyramid?



A. 80.00 cubic inches
B. 165.17 cubic inches
C. 240.00 cubic inches
D. 495.52 cubic inches

4. What is the volume of the cone shown?



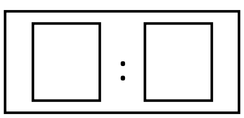
(Not drawn to scale)

A. $500\pi\ m^3$
B. $1{,}500\pi\ m^3$
C. $2{,}000\pi\ m^3$
D. $3{,}000\pi\ m^3$

5. A cylinder has a volume of 300π cubic centimeters and a base with a circumference of 10π centimeters. What is the height of the cylinder?

A. 30 cm
B. 15 cm
C. 12 cm
D. 3 cm

6. The ratio of the volume of two spheres is 8:27. What is the ratio of the lengths of the radii of these two spheres?



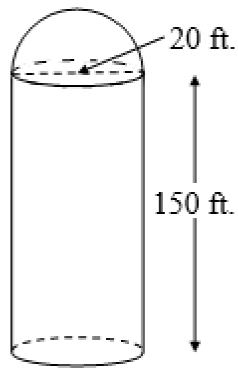
7. The height of a cylinder is 9.5 centimeters. The diameter of this cylinder is 1.5 centimeters longer than the height. Which is closest to the volume of the cylinder?

A. $1{,}150\pi$
B. 287π
C. 165π
D. 105π

8. The diameter of a basketball is approximately 9.5 inches and the diameter of a tennis ball is approximately 2.5 inches. The volume of the basketball is about how many times greater than the volume of the tennis ball?

A. 3591
B. 65
C. 55
D. 4

9. A grain storage silo consists of a cylinder and a hemisphere. The diameter of the cylinder and the hemisphere is 20 feet. The cylinder is 150 feet tall.



What is the volume of the silo?

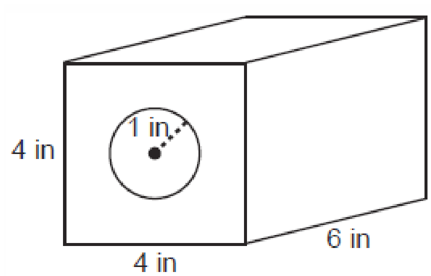
A. $\frac{17000\pi}{3}\ ft^3$

B. $\frac{47000\pi}{3}\ ft^3$

C. $\frac{49000\pi}{3}\ ft^3$

D. $\frac{182000\pi}{3}\ ft^3$

10. A solid metal prism has a rectangular base with sides of 4 inches and 6 inches, and a height of 4 inches. A hole in the shape of a cylinder, with a radius of 1 inch, is drilled through the entire length of the rectangular prism.



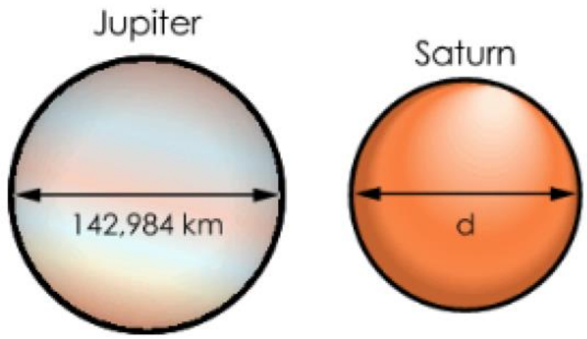
What is the approximate volume of the remaining solid, in cubic inches?

A. 19
B. 77
C. 93
D. 96

11. A water cup in the shape of a cone has a height of 4 inches and a maximum diameter of 3 inches. What is the volume of the water in the cup, to the nearest tenth of a cubic inch, when the cup is filled to half its height?

A. 1.2
B. 3.5
C. 4.7
D. 14.1

12. The planets in our solar system can be modeled using spheres. The diameters for Jupiter and Saturn are shown in the diagram below.



The volume of Saturn is 59.9% the volume of Jupiter.

What is Saturn's diameter, d, in kilometers? Round your answer to the nearest thousandth.

[ ] km

MAFS.912.G-GMD.2.4 EOC Practice

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

1. An isosceles right triangle is placed on a coordinate grid. One of its legs is on the *x-axis* and the other on the *y-axis*. Which describes the shape created when the triangle is rotated about the $x - axis$?

   A. Cone
   B. Cylinder
   C. Pyramid
   D. Sphere

2. A rectangle will be rotated 360° about a line which contains the point of intersection of its diagonals and is parallel to a side. What three-dimensional shape will be created as a result of the rotation?

   A. Cube
   B. Rectangular Prism
   C. Cylinder
   D. a sphere

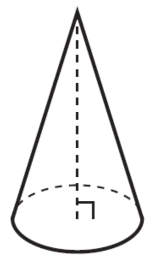
3. Which of the following figures could be produced by translating a polygon back and forth in a direction perpendicular to the plane containing the figure?

   A. Cone
   B. Cylinder
   C. Prism
   D. Sphere

4. Which of the following is the best description for the resulting three-dimensional figure if a right triangle is rotated about the line containing its hypotenuse?

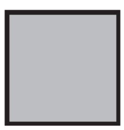
   A. a cone with slant height the same length as the longest leg
   B. a pyramid with triangular base
   C. two cones sharing the same circular base with apexes opposite each other
   D. a cone with slant height the same length as the shortest leg

5. William is drawing pictures of cross sections of the right circular cone below.

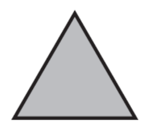


Which drawing cannot be a cross section of a cone?

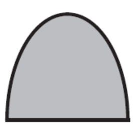
A.



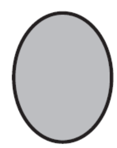
B.



C.

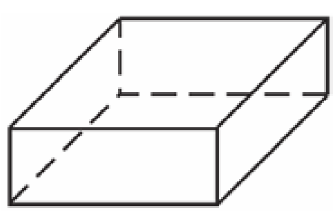


D.

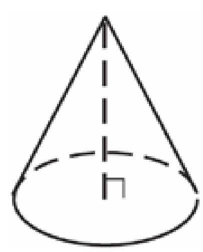


6. Which figure can have the same cross section as a sphere?

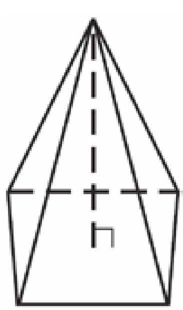
A.



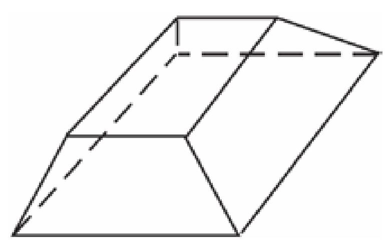
B.



C.



D.



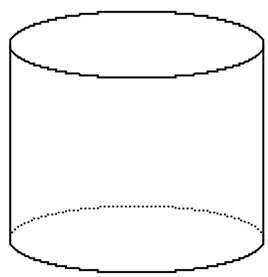
7. If the rectangle below is continuously rotated about side w, which solid figure is formed?

   A. pyramid
   B. rectangular prism
   C. cone
   D. cylinder

8. What shape is the cross section formed by the intersection of a cone and a plan parallel to the base of the cone?

   A. circle
   B. trapezoid
   C. oval
   D. triangle

9. Andrea claims that any two cross sections of a cylinder that lie on parallel planes are congruent.



   Is Andrea correct? If not, how can she modify her claim to be correct?

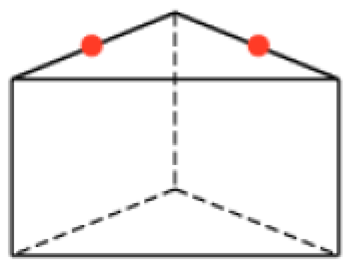
   A. No; any two cross sections of a cylinder that lie on planes parallel to the bases of the cylinder are congruent.
   B. No; any two cross sections of a cylinder that lie on planes parallel to a plane containing the axis of rotation are congruent.
   C. No; any two cross sections of a cylinder that lie on planes containing the axis of rotation are congruent.
   D. Andrea is correct.

10. Erin drew a three-dimensional figure with an intersecting plane to show a circular cross section. She then noticed that all cross sections parallel to the one she drew would also be circles. What additional information would allow you to conclude that Erin's figure was a cylinder?

   A. The centers of the circular cross sections lie on a line.
   B. The circular cross sections are congruent.
   C. The circular cross sections are similar but not congruent.
   D. The figure also has at least one rectangular cross section.

11. A plane intersects a hexagonal prism. The plane is perpendicular to the base of the prism. Which two-dimensional figure is the cross section of the plane intersecting the prism?
    A. Triangle
    B. Trapezoid
    C. Hexagon
    D. Rectangle

12. A cross section of a right triangular prism is created by a plane cut through the points shown and is also perpendicular to the opposite base.



What is the most specific name of the shape representing the cross section?
    A. Triangle
    B. Rectangle
    C. Trapezoid
    D. Parallelogram

MAFS.912.G-GPE.1.1 EOC Practice

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

1. A circle has this equation.

$$x^2 + y^2 + 4x - 10y = 7$$

What are the center and radius of the circle?

A. center: (2, –5)
radius: 6
B. center: (–2, 5)
radius: 6
C. center: (2, –5)
radius: 36
D. center: (–2, 5)
radius: 36

2. The equation $x^2 + y^2 - 4x + 2y = b$ describes a circle.

Part A
Determine the y-coordinate of the center of the circle. Enter your answer in the box.

Part B
The radius of the circle is 7 units. What is the value of b in the equation? Enter your answer in the box.

3. What is the radius of the circle described by the equation $(x-2)^2 + (y+3)^2 = 25$?

A. 4
B. 5
C. 25
D. 625

4. What is the equation of a circle with radius 3 and center $(3, 0)$?

   A. $x^2 + y^2 - 6x = 0$
   B. $x^2 + y^2 + 6x = 0$
   C. $x^2 + y^2 - 6x + 6 = 0$
   D. $x^2 + y^2 - 6y + 6 = 0$

5. Given: Circle W

   $W(-4, 6)$
   $Radius\ =\ 10\ units$
   Which point lies on circle W?

   A. $A(0, 4)$
   B. $B(2, 10)$
   C. $C(4, 0)$
   D. $D(6, 16)$

6. The equation $(x - 1)^2 + (y - 3)^2 = r^2$ represents circle A. The point $B(4, 7)$ lies on the circle. What is r, the length of the radius of circle A?

   A. $\sqrt{13}$
   B. 5
   C. $5\sqrt{5}$
   D. $\sqrt{137}$

7. Which is the equation of a circle that passes through $(2, 2)$ and is centered at $(5, 6)$?

   A. $(x - 6)^2 + (y - 5)^2 = 25$
   B. $(x - 5)^2 + (y - 6)^2 = 5$
   C. $(x + 5)^2 + (y + 6)^2 = 25$
   D. $(x - 5)^2 + (y - 6)^2 = 25$

8. Which is the equation of a circle that has a diameter with endpoints $(1, 3)$ and $(-3, 1)$?

   A. $(x + 1)^2 + (y - 2)^2 = 10$
   B. $(x + 1)^2 + (y - 2)^2 = 20$
   C. $(x + 1)^2 + (y - 2)^2 = 5$
   D. $(x - 1)^2 + (y - 2)^2 = 5$

9. The equation of a circle is $x^2 + y^2 - 6y + 1 = 0$. What are the coordinates of the center and the length of the radius of this circle?

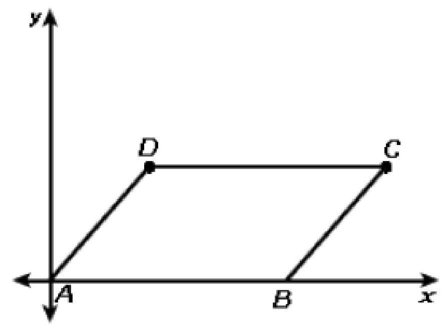
   A. Center $(0, 3)$ and radius $= 2\sqrt{2}$
   B. Center $(0, -3)$ and radius $= 2\sqrt{2}$
   C. Center $(0, 6)$ and radius $= \sqrt{35}$
   D. Center $(0, -6)$ and radius $= \sqrt{35}$

FSA Geometry EOC Review

MAFS.912.G-GPE.2.4 EOC Practice

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

1. The diagram shows quadrilateral ABCD.



Which of the following would prove that ABCD is a parallelogram?

A. Slope of $\overline{AD}$ = Slope of $\overline{BC}$
   Length of $\overline{AD}$ = Length of $\overline{BC}$
B. Slope of $\overline{AD}$ = Slope of $\overline{BC}$
   Length of $\overline{AB}$ = Length of $\overline{AD}$
C. Length of $\overline{AD}$ = Length of $\overline{BC}$ = Length of $\overline{DC}$
D. Length of $\overline{AD}$ = Length of $\overline{BC}$ = Length of $\overline{AB}$

2. Given the coordinates of A(3, 6), B(5, 2), and C(9, 4), which coordinates for D make ABCD a square?

A. (6, 7)
B. (7, 8)
C. (7, 9)
D. (8, 7)

3. Jillian and Tammy are considering a quadrilateral $ABCD$. Their task is to prove it is a square.
   - Jillian says, "We just need to show that the slope of $\overline{AB}$ equals the slope of $\overline{CD}$ and the slope of $\overline{BC}$ equals the slope $\overline{AD}$."
   - Tammy says, "We should show that $AC = BD$ and that $(slope\ of\ \overline{AC}) \times (slope\ of\ \overline{BD}) = -1$."

Whose method of proof is valid?

A. Only Jillian's is valid.
B. Only Tammy's is valid.
C. Both are valid.
D. Neither is valid.

4. Which type of triangle has vertices at the points $R(2, 1)$, $S\ (2, 5)$, and $T(4, 1)$?

   A. right
   B. acute
   C. isosceles
   D. equilateral

5. The vertices of a quadrilateral are $M(-1, 1)$, $N(1, -2)$, $O(5, 0)$, and $P(3, 3)$. Which statement describes Quadrilateral MNOP?

   A. Quadrilateral MNOP is a rectangle.
   B. Quadrilateral MNOP is a trapezoid.
   C. Quadrilateral MNOP is a rhombus but not a square.
   D. Quadrilateral MNOP is a parallelogram but not a rectangle.

6. Three vertices of parallelogram $PQRS$ are show: $Q(8, 5)$, $R(5, 1)$, $S(2, 5)$

   Place statements and reasons in the table to complete the proof that shows that parallelogram $PQRS$ is a rhombus.

Statements	**Reasons**
	Pythagorean Theorem
$SR = QR$	Substitution
$\overline{SR} \cong \overline{QR}$	Definition of congruent line segments
$\overline{PS} \cong \overline{QR}$	Property of a parallelogram
Parallelogram $PQRS$ is a rhombus	Definition of a rhombus

$SR = 5$	$SR = \sqrt{7}$	$\angle PSR = 90°$
$PQ = 5$	$PQ = \sqrt{7}$	$\overline{SR} \cong \overline{PQ}$
$QR = 5$	$QR = \sqrt{7}$	Pythagorean Theorem
Definition of perpendicular lines	Property of a parallelogram	Definition of parallel lines

7. Triangle ABC has vertices with $A(x,3)$, $B(-3,-1)$, and $C(-1,-4)$. Determine and state a value of x that would make triangle a right triangle.

8. In square $GEOM$, the coordinates of G are $(2,-2)$ and the coordinates of O are $(-4,2)$. Determine and state the coordinates of vertices E and M.

MAFS.912.G-GPE.2.5 EOC Practice

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

1. Which statement is true about the two lines whose equations are given below?

$$3x - 5y = -3$$

$$-2x + y = -8$$

   A. The lines are perpendicular.
   B. The lines are parallel.
   C. The lines coincide.
   D. The lines intersect, but are not perpendicular.

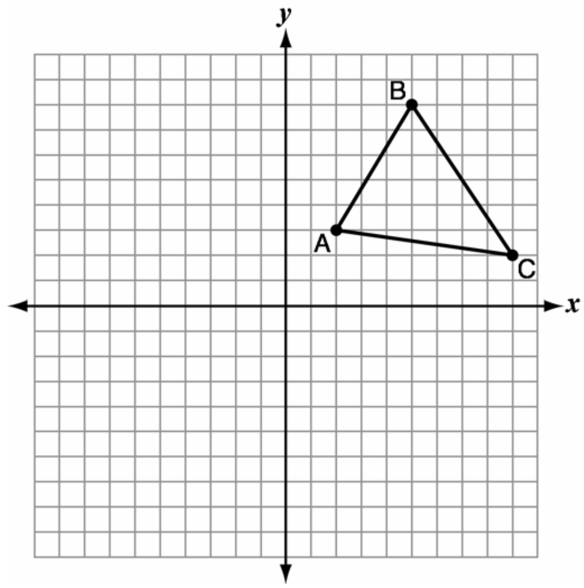
2. An equation of a line perpendicular to the line represented by the equation $y = -\frac{1}{2}x - 5$ and passing through $(6, -4)$ is

   A. $y = -\frac{1}{2}x + 4$
   B. $y = -\frac{1}{2}x - 1$
   C. $y = 2x + 14$
   D. $y = 2x - 16$

3. The equation of a line containing one leg of a right triangle is $y = -4x$. Which of the following equations could represent the line containing the other leg of this triangle?

   A. $y = -\frac{1}{4}x$
   B. $y = \frac{1}{4}x + 2$
   C. $y = 4x$
   D. $y = -4x + 2$

4. ΔABC with vertices $A(2, 3)$, $B(5, 8)$, and $C(9, 2)$ is graphed on the coordinate plane below.



Which equation represents the altitude of ΔABC from vertex B?

A. $y = -11x + 55$
B. $y = -11x + 63$
C. $y = 7x - 36$
D. $y = 7x - 27$

5. Which equation describes a line that passes through $(6, -8)$ and is perpendicular to the line described by $4x - 2y = 6$?

A. $y = -\frac{1}{2}x - 5$
B. $y = -\frac{1}{2}x - 3$
C. $y = 2x - 3$
D. $y = 2x - 20$

6. Write an equation in point-slope form for the perpendicular bisector of the segment with endpoints $A(-2, 2)$ and $B(5, 4)$.

A. $y - 3 = -\frac{7}{2}(x - 1.5)$
B. $y - 3 = \frac{2}{3}(x - 1.5)$
C. $y - 1 = -\frac{2}{7}(x - 3.5)$
D. $y - 1 = \frac{7}{2}(x - 3.5)$

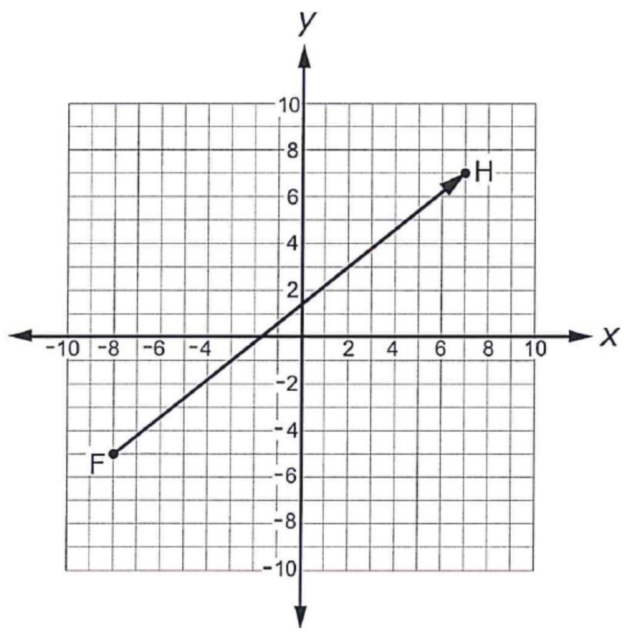
MAFS.912.G-GPE.2.6 EOC Practice

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

1. Given $A(0, 0)$ and $B(60, 60)$, what are the coordinates of point M that lies on segment AB, such that $AM: MB = 2: 3$?

   A. (24, 24)
   B. (24, 36)
   C. (40, 40)
   D. (40, 90)

2. Point G is drawn on the line segment so that the ratio of FG to GH is 5 to 1. What are the coordinates of point G?

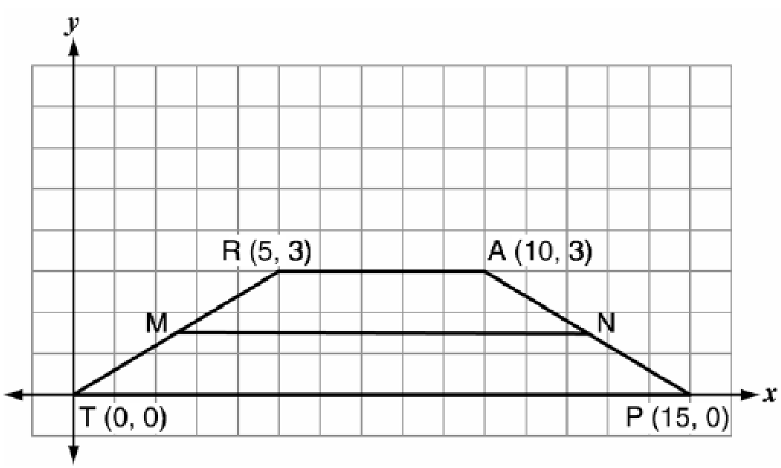


   A. (4, 4.6)
   B. (4.5, 5)
   C. (−5.5, −3)
   D. (−5, −2.6)

3. A city map is placed on a coordinate grid. The post office is located at the point $P(5, 35)$, the library is located at the point $L(15, 10)$, and the fire station is located at the point $F(9, 25)$. What is the ratio of the length of $\overline{PF}$ to the length of $\overline{LF}$?

   A. $2:3$
   B. $3:2$
   C. $2:5$
   D. $3:5$

4. Trapezoid TRAP is shown below.



   What is the length of midsegment $\overline{MN}$?

   A. 10
   B. $\frac{25}{2}$
   C. $\sqrt{234}$
   D. 100

5. Directed line segment PT has endpoints whose coordinates are $P(-2, 1)$ and $T(4, 7)$. Determine the coordinates of point J that divides the segment in the ratio 2 to 1.

6. What are the coordinates of the point on the directed line segment from $K(-5, -4)$ to $L(5,1)$ that partitions the segment into a ratio of 3 to 2?

   A. (-3, -3)
   B. (-1, -2)
   C. $(0, -\frac{3}{2})$
   D. $(1, -1)$

7. Point Q is on $\overline{MN}$ such that $MQ: QN = 2: 3$. If M has coordinates $(3,5)$ and N has coordinates $(8, -5)$, the coordinates of Q are
   A. $(5, 1)$
   B. $(5, 0)$
   C. $(6, -1)$
   D. $(6, 0)$

8. Line segment AC has endpoints $A(-1, -3.5)$ and $C(5, -1)$.

   Point B is on line segment AC and is located at $(0.2, -3)$.

   What is the ration of $\frac{AB}{BC}$?

FSA Geometry EOC Review

MAFS.912.G-GPE.2.7 EOC Practice

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

1. Two of the vertices of a triangle are (0, 1) and (4, 1). Which coordinates of the third vertex make the area of the triangle equal to 16?

   A. (0, -9)
   B. (0, 5)
   C. (4, -7)
   D. (4, -3)

2. On a coordinate plane, a shape is plotted with vertices of (3, 1), (0, 4), (3, 7), and (6, 4). What is the area of the shape if each grid unit equals one centimeter?

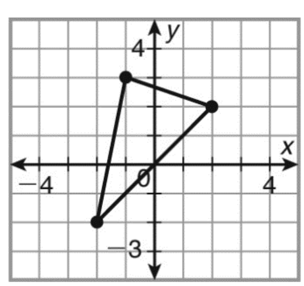
   A. 18 cm^2
   B. 24 cm^2
   C. 36 cm^2
   D. 42 cm^2

3. The endpoints of one side of a regular pentagon are $(-1, 4)$ and $(2, 3)$. What is the perimeter of the pentagon?

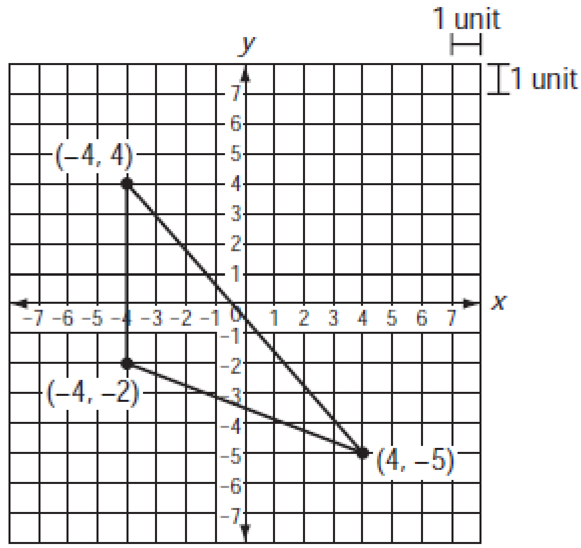
   A. $\sqrt{10}$
   B. $5\sqrt{10}$
   C. $5\sqrt{2}$
   D. $25\sqrt{2}$

4. Find the perimeter of the triangle to the nearest whole unit.

   A. 12
   B. 14
   C. 16
   D. 18



5. A triangle is shown on the coordinate plane below.



What is the area of the triangle?

A. 12 square units
B. 24 square units
C. 36 square units
D. 48 square units

6. Triangle ABC has vertices at $(-4, 0)$, $(-1, 6)$ and $(3, -1)$.

What is the perimeter of triangle ABC, rounded to the nearest tenth?