8.8 Exam: Area, volume, solids, circles review

1. Use the formulas for the area and circumference of circles:

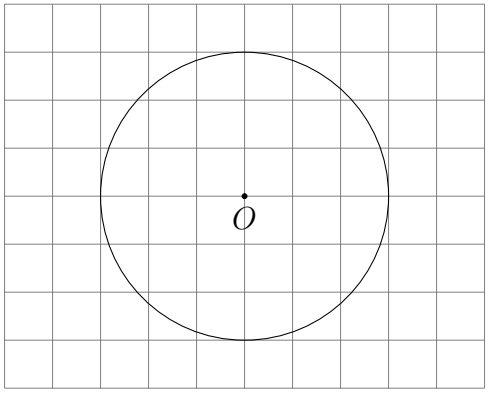
$$A = \pi r^2$$

$$C = \pi D = 2\pi r$$

2. Given the circle centered at O with radius $r = 3$. Leave an exact answer, in terms of π if necessary.

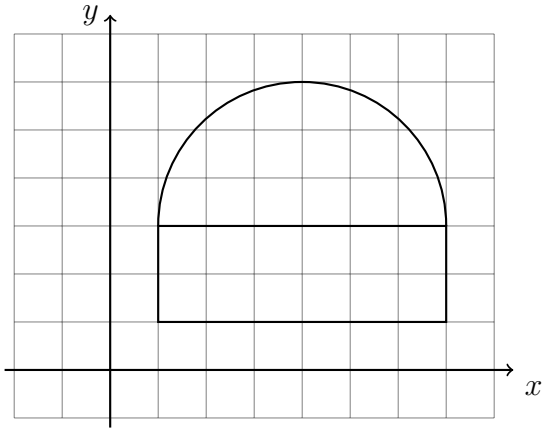
   (a) Find the circumference of circle O.

   (b) Find the area of the circle.



3. Find the radius of a circle having an area of 25π.

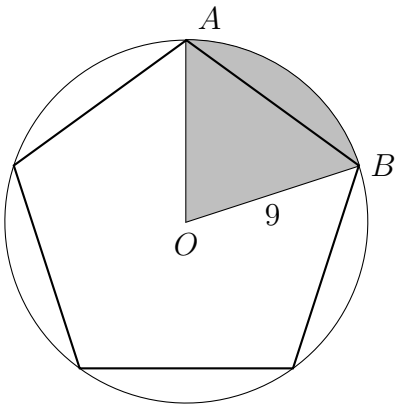
4. Find the area of the shape shown below composed of a rectangle and circular cap. Leave your answer as an exact value in terms of π.



5. A pentagon is inscribed in circle O, as shown below. The circle has radius $r = 9$.

   (a) Find the area of the sector AOB.

   (b) Find the perimeter of the sector AOB.

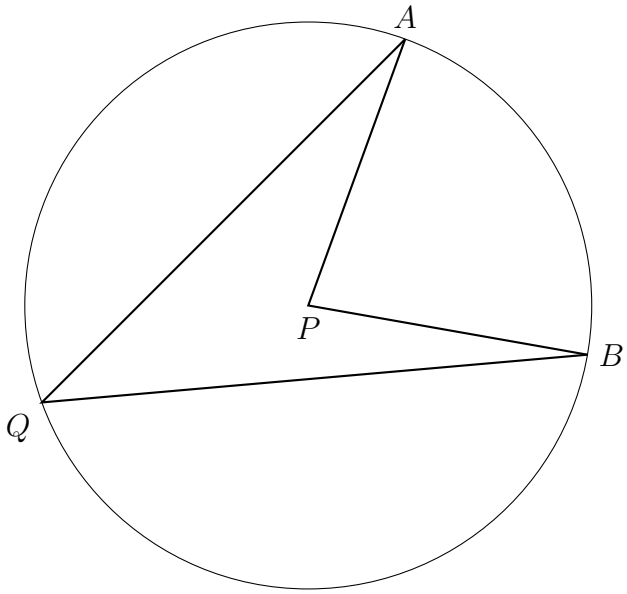


6. Given the circle with center P with central angle $\angle APB$ and inscribed angle $\angle AQB$. Using a protractor, measure each angle.

   (a) $m\angle APB =$

   (b) $m\angle AQB =$

   (c) What do you think is the ratio of the central angle to the inscribed angle?



7. Given $R(-3, 1)$ and $S(5, 7)$, find the length of $\overline{RS}$. Note: $l = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$.

8. Perform each calculation, writing down the full calculator display and then rounding to the *nearest hundredth*.

   (a) $V = \frac{1}{3}\pi(2.4)^2(5.1)$ (b) $P = 3.6 + \frac{1}{2}\pi(3.6)$

9. Solve each equation for the appropriate variable. Do not round. Simplify radicals.

   (a) $A = \pi r^2 = 27\pi$ (b) $V = \frac{1}{3}(6.0)^2 h = 153$

Model the situation with an equation. Use the formula sheet. You must start with a labeling variable. Do NOT solve!

10. A large concrete post in the shape of a cylinder has a volume of 250 cubic feet. Its height is 12 feet. Find the radius of the base of the post.

11. A spherical cork fishing net float has a volume of 4000 cubic centimeters. Find its radius.

12. The volume of a cone having a **diameter** of 10 inches is 200 cubic inches. Find the cone's height.

Applying density ratios

13. A tank of gasoline holds 15 gallons. Find the cost to completely fill the tank if gasoline costs \$3.15 per gallon.

14. A stick of butter has a volume of 90 cubic centimeters. If the density of butter is 0.9 grams per cubic centimeter, find the weight of a stick of butter.

15. A large glass marble has a diameter of 3 cm. The density of glass is 2.70 g/cm^3. Find the weight of the marble.

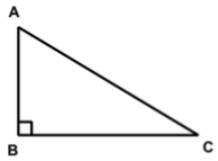
16. A bar of solid gold is in the shape of a rectangular prism having a length of 12 cm, width of 2 cm, and thickness of 2 cm. The density of gold is 19.3 grams per cubic cm, and its approximate market value is \$50 per gram.

    (a) Find the weight of the bar of gold.

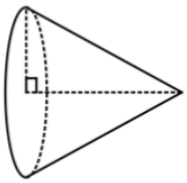
    (b) Find its value in dollars.

17. Circle the number of the correct choice.

If right triangle ABC, shown, was rotated around segment $\overline{BC}$, then the solid produced would look like

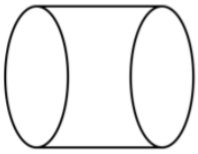


(1)



(3)

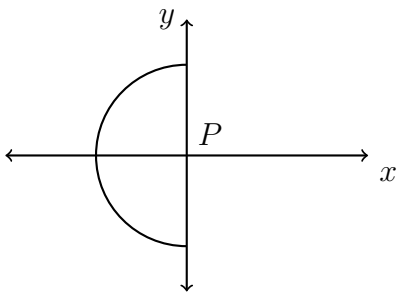
(2)



(4)

_____

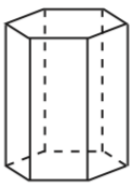
18. Circle P is centered at the origin. In the diagram below, half of circle P is graphed.



Which three-dimensional figure is generated when the semi-circle is continuously rotated about the y-axis?

(a) cone
(b) sphere
(c) cylinder
(d) hemisphere

19. A right hexagonal prism is shown below. A two-dimensional cross section that is parallel to the base is taken from the prism.

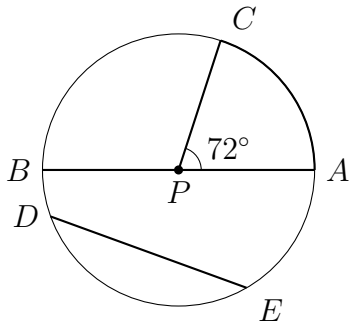


Which figure describes the two-dimensional cross section?

(a) rectangle
(b) trapezoid
(c) pentagon
(d) hexagon

Vocabulary: Circles (fill in the blank with the correct term)

20. **Internal line segments:** Circle with center at point P, as shown.



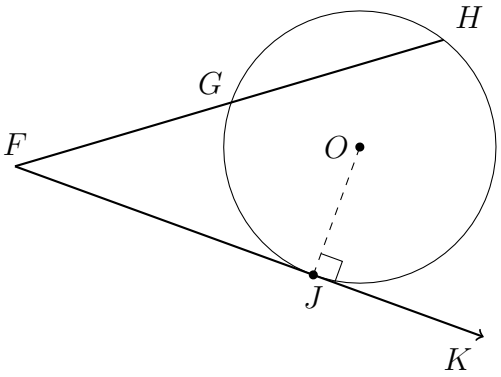
(a) $\overline{CP}$ _____

(b) $\overline{DE}$ _____

(c) $\angle APC$ _____

(d) $\overline{\overset{\frown}{AC}}$ _____

21. **External lines:** Circle with center at point O, at right.



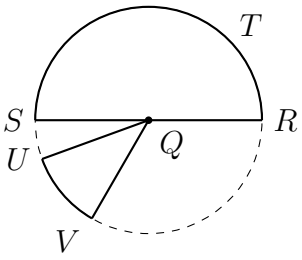
(a) $\overline{FGH}$ _____

(b) $\overline{OJ}$ _____

(c) $\overline{FJK}$ _____

(d) J _____

22. **Areas:** Circle with center at point Q.

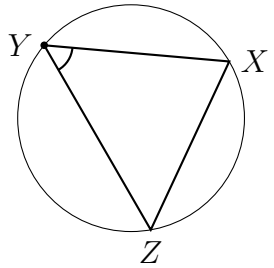


(a) $\overline{RS}$ _____

(b) RST _____

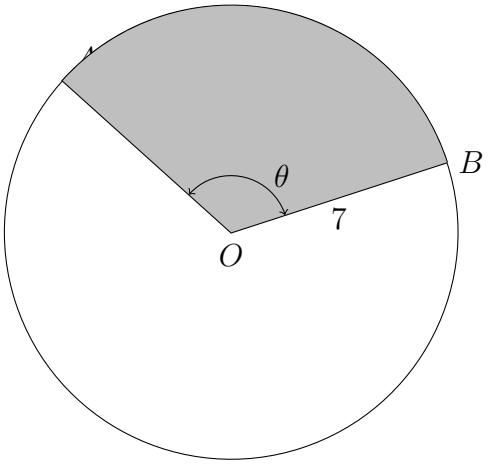
(c) QUV _____

23. **Polygons and angles in circles:**



(a) $\triangle XYZ$ _____

24. The diagram shows the sector AOB in circle O. The circle has radius $r = 7$.

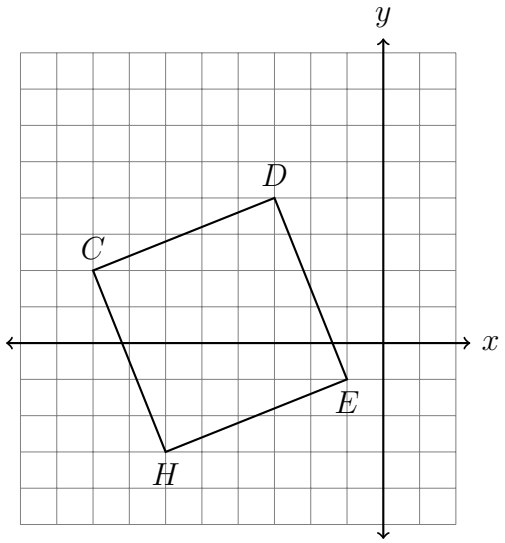


(a) Find the area of the entire circle O in terms of π.

(b) The sector AOB has an area of $16\frac{1}{3}\pi$. What fraction of the entire circle is it?

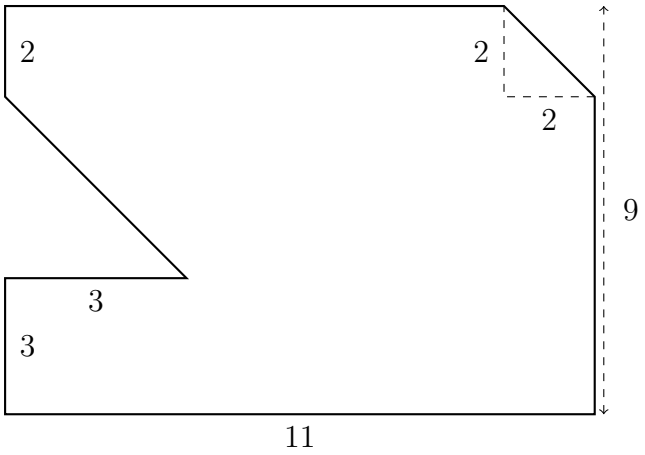
(c) Find the measure of central angle θ.

25. Given quadrilateral $CDEH$ with $C(-8, 2)$, $D(-3, 4)$, $E(-1, -1)$, and $H(-6, -6)$. Find its perimeter.



Justify that $CDEH$ is a rhombus.

26. A rectangle has two triangular cutouts as shown with lengths marked. Find the area of the figure. (the figure is not drawn to scale)



27. A trapezoid has a height of 11.5 and one perpendicular side, as shown below. One base is six longer than the shorter base.

    If the trapezoid has an area of 276, find the lengths of the bases.