8.5 Pre-Exam: Area, volume, solids, circles review

Unless otherwise instructed, find an exact answer, in terms of π or using radicals if necessary.

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

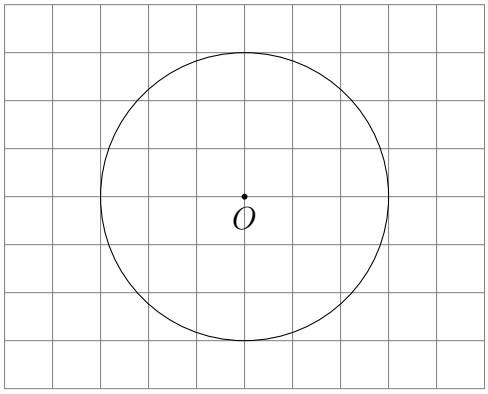
$$A = \pi r^2$$

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

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

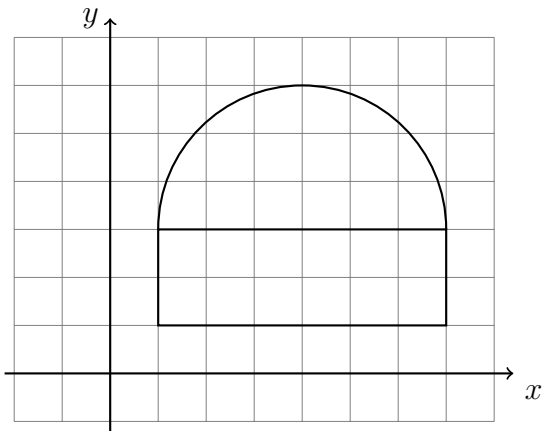
   (a) Find the circumference of circle O.

   (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.

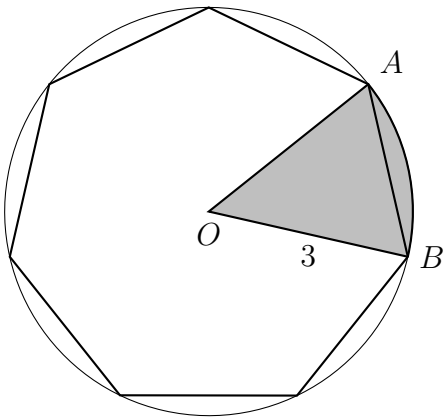


5. A regular heptagon (7 sides) is inscribed in circle O, having a radius $r = 3$.

   (a) Find the area of the sector AOB.

   (b) Find the perimeter of sector AOB.

   (c) Find the measure of central angle $\angle AOB$



6. Given the circle with center P with central angle $\angle APB$ and inscribed angle $\angle AQB$. The intercepted arc has a measure $m\widehat{AB} = 82°$.

   (a) Find $m\angle APB =$

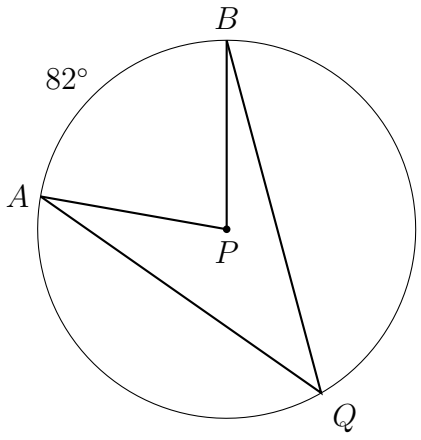
   (b) Find $m\angle AQB =$

   Circle True or False:

   i. T F $\overline{AP}$ is a radius

   ii. T F $\overline{AQ}$ is a diameter

   iii. T F $\angle AQB$ is an 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. Perform each calculation, writing down the full calculator display and then rounding to the *nearest hundredth*.

(a) $A = 15.944732$

(b) $W = 3.4 \times 9.8 \times 4.3 \times 0.15$

(c) $V = \frac{1}{3}\pi(3.4)^2(6.1)$

(d) $P = 8.6 + \frac{1}{2}\pi(8.6)$

(e) $V = 199.19711$

(f) $W = \frac{1}{3}(13)3.3^2 \times 1.175$

(g) $V = \frac{1}{3}\pi(12.4)^2(8.1)$

(h) $P = 12 + \frac{1}{4}\pi(12)$