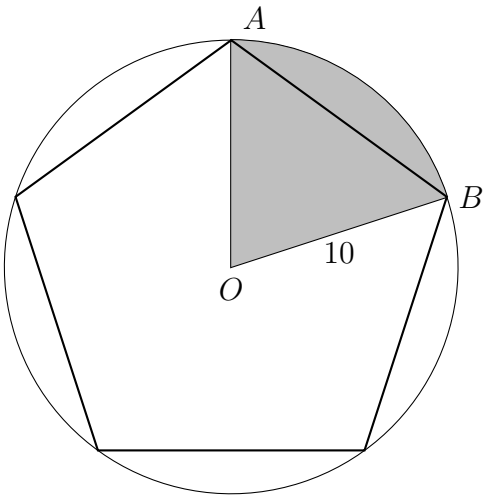
8.3 Do Now: Density

1. A pentagon is inscribed in circle O, as shown below. The circle has radius $r = 10$.

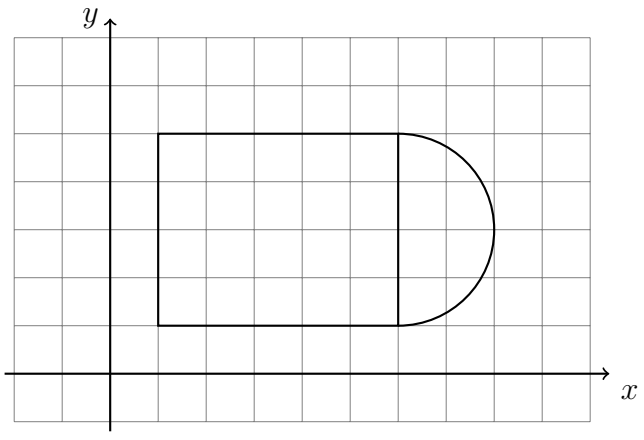
   (a) Find the area of the sector AOB.

   (b) Find the perimeter of the sector AOB.



2. A cylinder is 12.3 cm tall and has a volume of 966 cubic cm. Find the area of the base of the cylinder. Express your result to the *nearest hundredth of a square centimeter.*

3. Find the area of the shape shown below composed of a rectangle and a semi-circle.



Estimating and measuring

4. The diagram below shows $\triangle ABC$, with $\overline{AEB}$, $\overline{ADC}$. $AB = 12$, $AD = 6$. Estimate BC, assuming that the diagram below is drawn to scale.

   Write the actual lengths of

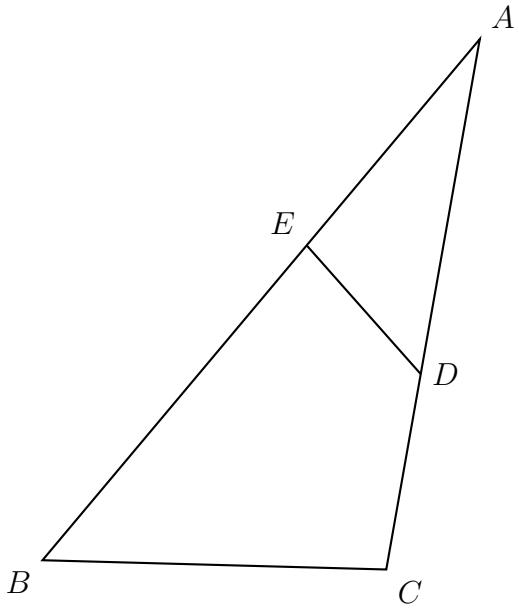
   (a) $AB =$

   (b) $AD =$

   (c) $BC =$

   (d) Find the scale factor, k

   (e) Calculate $BC =$

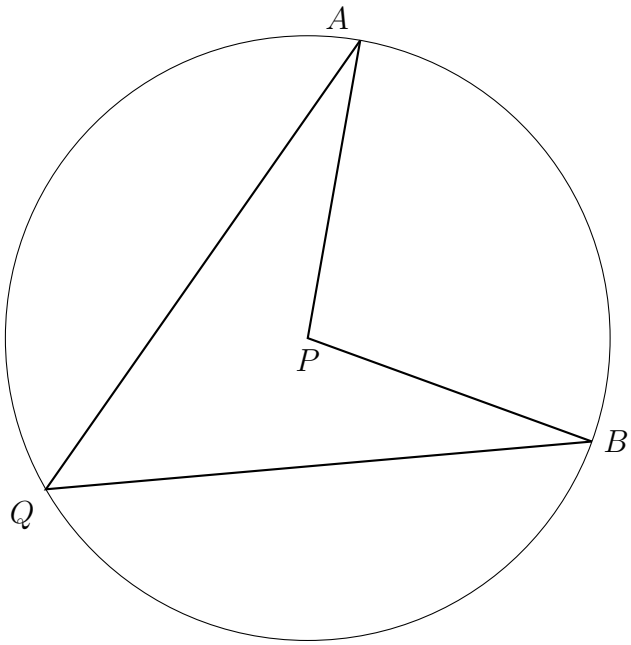


5. Given the circle with center P with central angle $\angle APB$ and inscribed angle $\angle AQB$. Using a protractor, measure each angle.

   (a) $m\angle APB =$

   (b) $m\angle AQB =$

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



Applying density ratios

6. Find the weight of a metal block with a volume of 20 cubic inches and a density of 0.75 pounds per cubic inch.

7. A large block of ice has a volume of 45 liters. The density of ice (water) is one kilogram per liter. Find the weight of the ice.

8. A tank of gasoline holds 20 gallons. Find the cost to completely fill the tank if gasoline costs \$2.35 per gallon.

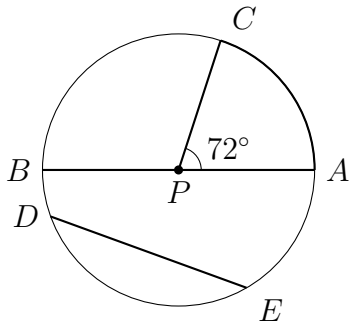
9. A bar of solid gold is in the shape of a rectangular prism having a length of 10 cm, width of 4 cm, and thickness of 1.5 cm. The density of gold is 19.3 grams per cubic cm, and its approximate market value is \$50 per gram.

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

   (b) Find its value in dollars.

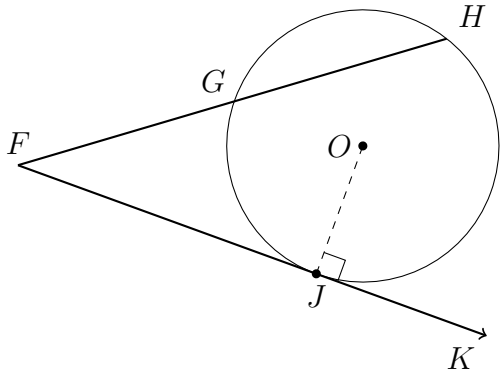
Vocabulary self-assessment: Circles (fill in the blank with the correct term)

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



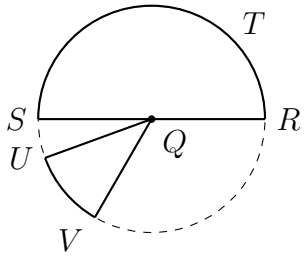
- $\overline{AB}$ _____
- $\overline{CP}$ _____
- $\overline{DE}$ _____
- $\angle APC$ _____
- $\overline{\overset{\frown}{AC}}$ _____

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



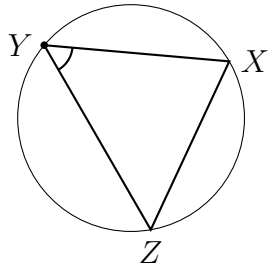
- $\overline{FGH}$ _____
- $\overline{OJ}$ _____
- $\overline{FJK}$ _____
- J _____

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



- $\overline{RS}$ _____
- RST _____
- QUV _____

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



- $\triangle XYZ$ _____
- $\angle XYZ$ _____