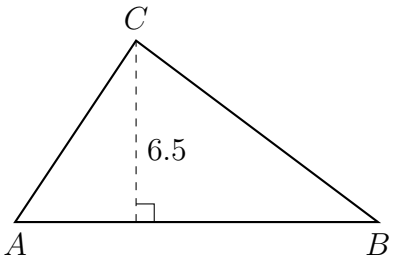
Part 1, Solid Geometry: Volume & Density

1. Find the area of a semi-circle with diameter 8. Round to the *nearest tenth*.

2. Find the volume of a cylindrical tank with radius of 6 feet and a height of 8 feet, to the *nearest cubic foot*.

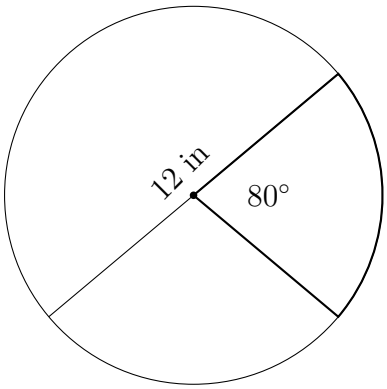
3. A box in the shape of a rectangular prism has a volume of 60 cubic feet. It's length is 5 feet and width 3 feet. How tall is it?

4. The area of $\triangle ABC$ is 68.25 square inches. The altitude of the triangle is 6.5 inches. Find the length of the base AB.

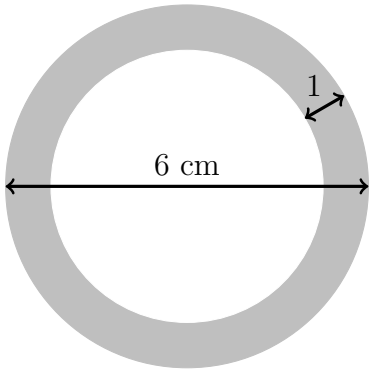


5. Find the weight of a steel ball with a diameter of 1.2 inches, to the *nearest tenth of an ounce*. (The density of steel is 4.6 ounce per cubic inch)

6. A circle with a diameter of 12 in and a central angle of 80° is drawn below. What is the area of the sector formed by the 80° angle, to the *nearest tenth of a square inch*?



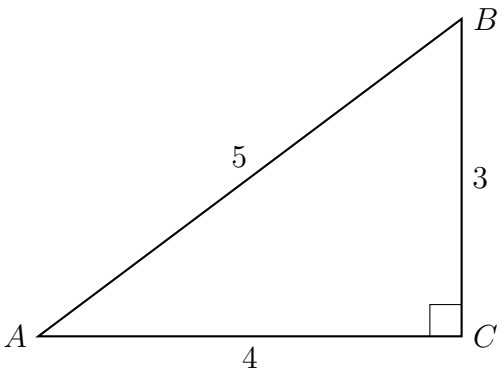
7. A bakery sells hollow chocolate spheres. The outer diameter of each sphere is 6 cm. The thickness of the chocolate of each sphere is 1 cm. Determine and state, to the *nearest tenth of a cubic centimeter*, the amount of chocolate in each hollow sphere.



8. A right cylinder is cut horizontally. The shape of the cross section is a
   (a) circle
   (b) cylinder
   (c) rectangle
   (d) triangular prism

9. Which three-dimensional figure will result when a right triangle 8 inches tall and 3 inches wide is continuously rotated about the longer side?
   (a) a cone with a height of 6 inches and radius of 8 inches
   (b) a cone with a height of 8 inches and diameter of 6 inches
   (c) a cylinder with a radius of 8 inches and a height of 6 inches
   (d) a cylinder with a diameter of 6 inches and a height of 8 inches

10. $\triangle ABC$ is shown with $m\angle C = 90°$ and the lengths of the triangle's sides are $BC = 3$, $AC = 4$, and $AB = 5$.



(a) State, as a decimal, the value of $\sin A$.

(b) Find the measure of $\angle A$, to the *nearest degree*.

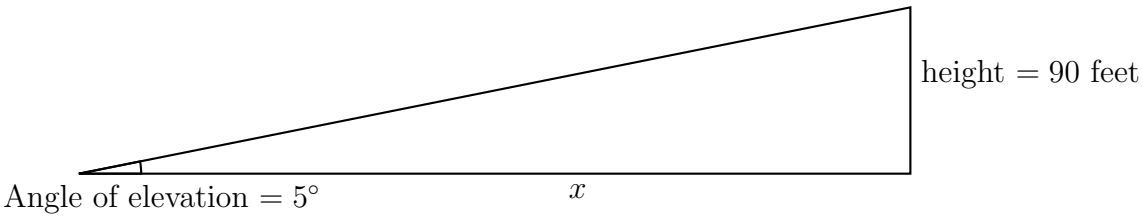
(c) Find the degree measure of $\angle B$.

11. Express each trigonometric ratio to the *nearest thousandth* and each angle measure to the nearest degree.

(a) $\sin 55° =$

(b) $\cos^{-1} 0.766 =$

12. A sailor observes the top of a lighthouse with an angle of elevation of 5°. She knows the lighthouse is 90 feet tall. Determine and state the distance x between the sailor and the lighthouse, to the *nearest foot*.



13. Solve for the value of x.

    $\frac{1}{3}(4x + 1) = 3$

14. Given $f(x) = \frac{3}{2}x - 5$. Solve for x such that for $f(x) = 1$.

15. Given $g(x) = 2x^2 - 3x + 2$. Simplify $g(0)$.

16. Given $h(x) = x^2 + 8x + 7$. Solve $h(x) = 0$.

17. Simplify each expression. (Leave it in radical form if necessary, not a decimal.)

    (a) $\sqrt{18}$

    (b) $\sqrt{\frac{81}{16}}$