

Volume Problems



You may use a calculator in all problems in this lesson.

1. Memorize the above formulas.

Hint: notice how the formula for the volume of a sphere is similar to the formula for the area of a circle. The area of a circle is "pi r squared." The formula for volume has "pi r cubed", and then it is multiplied by the fraction 4/3.

2. A large tank consisting of a cylindrical top and a conical bottom (for easy drainage) is being filled with biodiesel at a rate of 2 cubic feet per minute. How long will it take to fill it?

The diagram below will help you figure out how many cubic inches are in one cubic foot.





- 3. Many objects are in the shape of a **frustum**, or a cut cone. It is like a cone from which a smaller cone is cut off. There exists a formula for its volume, but you can calculate the volume without it, if you know the dimensions of the "cut" part. (Think subtraction.)
 - **a.** Find the volume of the frustum on the right, to the nearest hundred cubic centimeters.
 - **b.** Convert that to liters $(1 L = 1,000 \text{ cm}^3)$.

