

10 TAKS PREPARATION



TAKS Obj. 8
TEKS 8.8.C

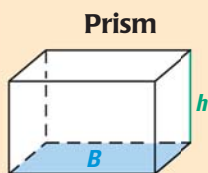
REVIEWING MULTI-STEP VOLUME PROBLEMS

Finding the volume of a figure is just one step in solving a multi-step volume problem. The problem may also involve:

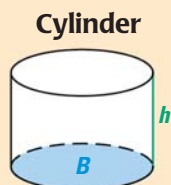
- finding how many objects of a certain size can fill a space
- finding the time it will take to fill a space at a certain rate
- finding a cost associated with the volume of a figure

You need to be familiar with the following formulas.

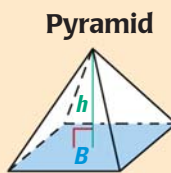
Common Volume Formulas



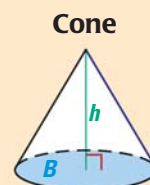
$$V = Bh$$



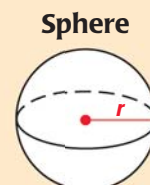
$$V = Bh$$



$$V = \frac{1}{3}Bh$$



$$V = \frac{1}{3}Bh$$



$$V = \frac{4}{3}\pi r^3$$

EXAMPLE

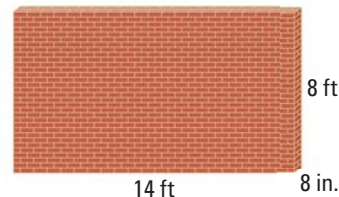
A brick wall is 8 feet high, 14 feet long, and 8 inches thick. If you include the mortar that surrounds each brick, each brick is 8 inches long, 3 inches high, and 4 inches thick. How many bricks are in the wall?

Solution

STEP 1 Convert the length and width of the wall to inches.

$$\text{Length } \ell = 14 \text{ ft} \cdot \frac{12 \text{ in.}}{\text{ft}} = 168 \text{ in.}$$

$$\text{Height } h = 8 \text{ ft} \cdot \frac{12 \text{ in.}}{\text{ft}} = 96 \text{ in.}$$



STEP 2 Find the volumes of the wall and a brick, both of which are rectangular prisms.

$$\text{Volume of wall: } V = Bh = \ell wh = 168 \cdot 96 \cdot 8 = 129,024 \text{ in.}^3$$

$$\text{Volume of a brick: } V = Bh = \ell wh = 8 \cdot 3 \cdot 4 = 96 \text{ in.}^3$$

STEP 3 Divide the volume of the wall by the volume of a brick.

$$129,024 \div 96 = 1344$$

► The wall contains 1344 bricks.