

4

Volume and Capacity

Units of Measurement

1. Draw a line to match each volume to an object.

- | | |
|---------------------|------------------------------|
| 5 cu ft | semi-trailer for a truck |
| 60 m ³ | suitcase |
| 12 cu yd | softball |
| 30 cu in. | full tube of toothpaste |
| 120 cm ³ | load of dirt in a dump truck |

Hint

Volume measures the space that an object occupies.

2. Draw a line to match each capacity to a container.

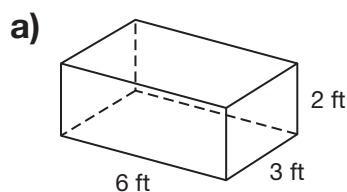
- | | |
|--------|----------------|
| 10 gal | soup bowl |
| 80 L | hot-water tank |
| 15 mL | cooking pot |
| 2 c | aquarium |
| 1 qt | spoon |

Hint

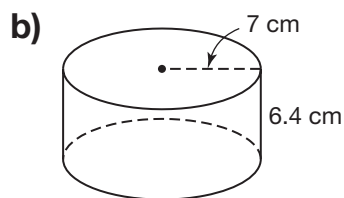
Capacity measures the amount that a container can hold.

Calculating Volume

3. Calculate the volume.



$$\begin{aligned} V &= (A_{\text{base}})(h) \\ &= (\text{___ ft} \times \text{___ ft})(\text{___ ft}) \\ &= \text{___ cu ft} \end{aligned}$$



$$\begin{aligned} V &= (A_{\text{base}})(h) \\ &= \pi r^2(h) \\ &= \pi(\text{___ cm})^2(\text{___ cm}) \\ &= \text{___ cm}^3 \end{aligned}$$

Hint

For prisms and cylinders:
Volume = (area of base)(height)

Multiplying with Fractions

4. Multiply.

$$\text{a) } \frac{1}{2}(2.8 \text{ cm})(3.5 \text{ cm})(2 \text{ cm}) = \frac{1}{2}(\text{_____ cm}^3)$$

$$= \text{_____ cm}^3$$

$$\text{b) } \left(\frac{3}{4} \text{ yd}\right)\left(\frac{2}{3} \text{ yd}\right) = \frac{3 \times 2}{4 \times 3} \text{ sq yd}$$

$$= \frac{\boxed{}}{\boxed{}} \text{ sq yd}$$

$$= \frac{\boxed{}}{\boxed{}} \text{ sq yd}$$

$$\text{c) } \frac{7}{8} \text{ mi} \times \frac{3}{4} \text{ mi} = \frac{\boxed{}}{\boxed{}} \times \frac{\boxed{}}{\boxed{}} \text{ sq mi}$$

$$= \frac{\boxed{}}{\boxed{}} \text{ sq mi}$$

$$\text{d) } \left(\frac{2}{3} \text{ ft}\right)\left(6\frac{1}{2} \text{ ft}\right) = \frac{\boxed{}}{\boxed{}} \times \frac{\boxed{}}{\boxed{}} \text{ sq ft}$$

$$= \frac{\boxed{}}{\boxed{}} \text{ sq ft}$$

$$= \text{_____} \frac{\boxed{}}{\boxed{}} \text{ sq ft}$$

Hint

Multiplying by $\frac{1}{2}$ gives the same result as dividing by 2.

Hint

To multiply two fractions, multiply the numerators and multiply the denominators.

$$\frac{4}{5} \times \frac{5}{6} = \frac{4 \times 5}{5 \times 6}$$

$$= \frac{20}{30}$$

$$= \frac{2}{3}$$

To multiply by a mixed number, write the mixed number as an improper fraction.

$$4\frac{1}{2} \times \frac{3}{4} = \frac{9}{2} \times \frac{3}{4}$$

$$= \frac{9 \times 3}{2 \times 4}$$

$$= \frac{27}{8}$$

$$= 3\frac{3}{8}$$

Working with Capacity

5. Complete each sentence.

- a) You can pour _____ pt into a 1 gal container.
- b) You can pour _____ mL into a 1 L container.
- c) You can pour _____ c into a 1 qt container.
- d) You can pour _____ c into a 2 gal container.

Hint

Use the charts inside the back cover of the Workbook.