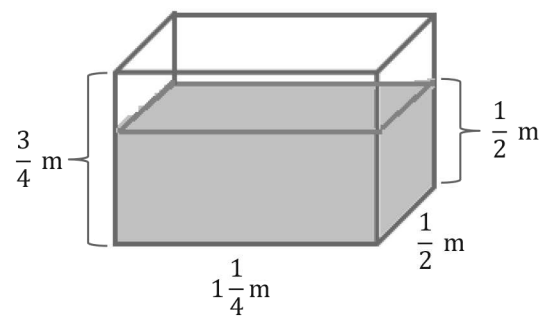
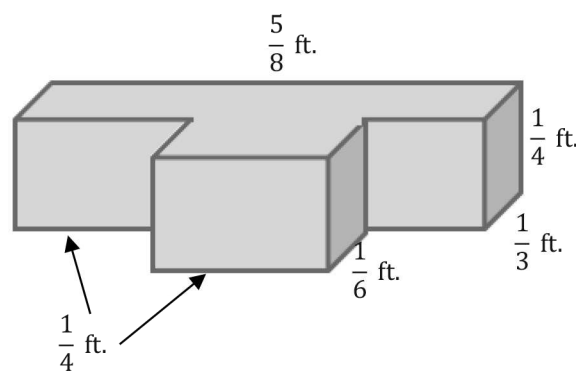
Name _____ Date _____

Volume in the Real World

1. Determine the volume of the water that would be needed to fill the rest of the tank.



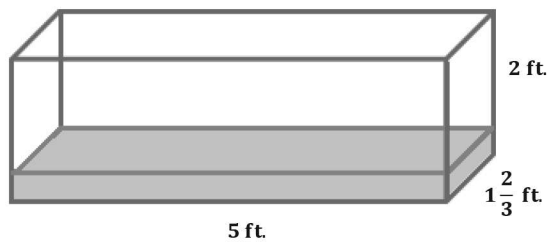
2. Determine the volume of the composite figure.



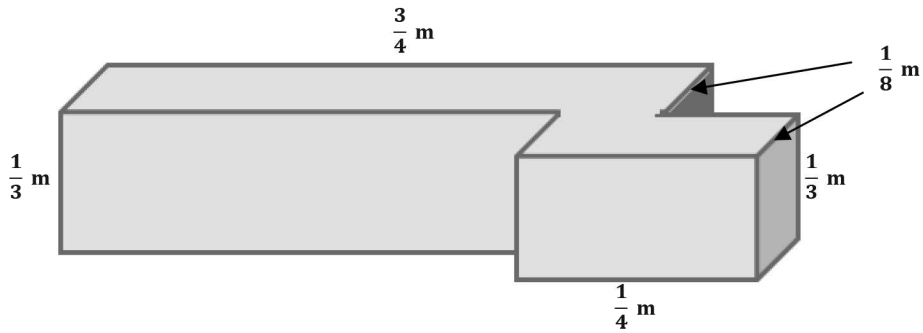
1. The volume of a rectangular prism is $\frac{21}{12}$ ft^3, and the height of the prism is $\frac{3}{4}$ ft. Determine the area of the base.

2. The volume of a rectangular prism is $\frac{10}{21}$ ft^3. The area of the base is $\frac{2}{3}$ ft^2. Determine the height of the rectangular prism.

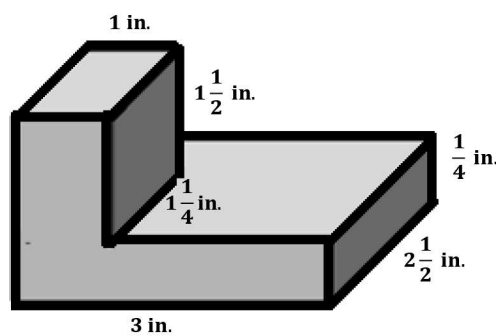
3. Determine the volume of the space in the tank that still needs to be filled with water if the water is $\frac{1}{3}$ ft. deep.



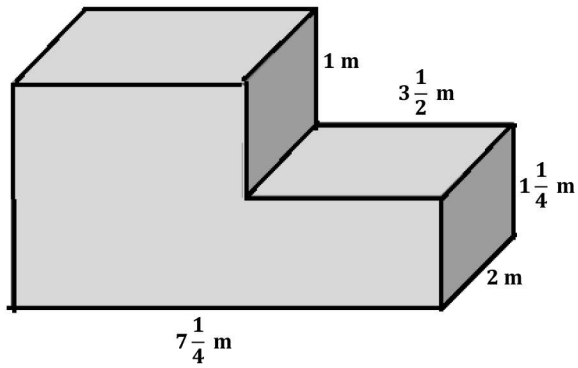
4. Determine the volume of the composite figure.



5. Determine the volume of the composite figure.



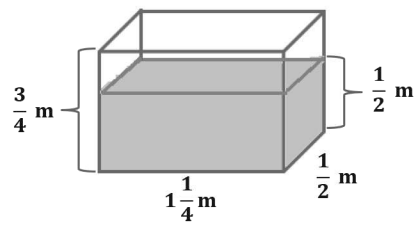
6.



a. Write an equation to represent the volume of the composite figure.

b. Use your equation to calculate the volume of the composite figure.

1. **Determine the volume of the water that would be needed to fill the rest of the tank.**



$$\text{Volume of tank} = l\,w\,h$$

$$\text{Volume of tank} = \left(1\frac{1}{4}\text{ m}\right)\left(\frac{1}{2}\text{ m}\right)\left(\frac{3}{4}\text{ m}\right)$$

$$\text{Volume of tank} = \frac{15}{32}\text{ m}^3$$

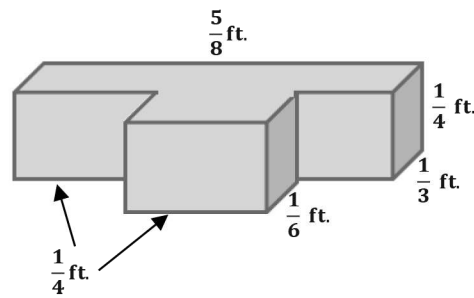
$$\text{Volume of water} = l\,w\,h$$

$$\text{Volume of water} = \left(1\frac{1}{4}\text{ m}\right)\left(\frac{1}{2}\text{ m}\right)\left(\frac{1}{2}\text{ m}\right)$$

$$\text{Volume of water} = \frac{5}{16}\text{ m}^3 = \frac{10}{32}\text{ m}^3$$

$$\text{Remaining water needed} = \frac{15}{32}\text{ m}^3 - \frac{10}{32}\text{ m}^3 = \frac{5}{32}\text{ m}^3$$

2. **Determine the volume of the composite figure.**



$$\text{Volume of back piece} = l\,w\,h$$

$$\text{Volume of back piece} = \left(\frac{5}{8}\text{ ft.}\right)\left(\frac{1}{3}\text{ ft.}\right)\left(\frac{1}{4}\text{ ft.}\right)$$

$$\text{Volume of back piece} = \frac{5}{96}\text{ ft}^3$$

$$\text{Volume of front piece} = l\,w\,h$$

$$\text{Volume of front piece} = \left(\frac{1}{4}\text{ ft.}\right)\left(\frac{1}{6}\text{ ft.}\right)\left(\frac{1}{4}\text{ft.}\right)$$

$$\text{Volume of front piece} = \frac{1}{96}\text{ ft}^3$$

$$\text{Total volume} = \frac{5}{96}\text{ ft}^3 + \frac{1}{96}\text{ ft}^3 = \frac{6}{96}\text{ ft}^3$$

1. **The volume of a rectangular prism is $\frac{21}{12}$ ft^3, and the height of the prism is $\frac{3}{4}$ ft. Determine the area of the base.**

$$\text{Area of base} = \text{volume} \div \text{height}$$

$$\text{Area of base} = \frac{21}{12}\text{ ft}^3 \div \frac{3}{4}\text{ ft.}$$

$$\text{Area of base} = \frac{21}{12}\text{ ft}^3 \div \frac{9}{12}\text{ ft.}$$

$$\text{Area of base} = 21\text{ ft}^3 \div 9\text{ ft.}$$

$$\text{Area of base} = \frac{7}{3}\text{ ft}^2$$

2. The volume of a rectangular prism is $\frac{10}{21}$ ft^3. The area of the base is $\frac{2}{3}$ ft^2. Determine the height of the rectangular prism.

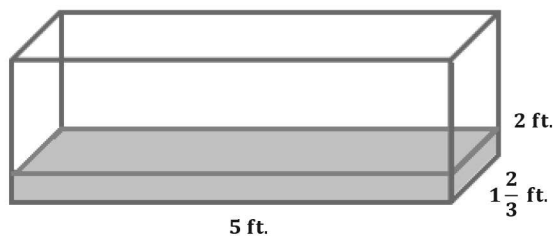
$\text{Height} = \text{volume} \div \text{area of the base}$

$\text{Height} = \frac{10}{21}\text{ ft}^3 \div \frac{2}{3}\text{ ft}^2$

$\text{Height} = \frac{10}{21}\text{ ft}^3 \div \frac{14}{21}\text{ ft}^2$

$\text{Height} = \frac{10}{14}\text{ ft. OR } \frac{5}{7}\text{ ft.}$

3. Determine the volume of the space in the tank that still needs to be filled with water if the water is $\frac{1}{3}$ ft. deep.



$\text{Volume of tank} = l\,w\,h$

$\text{Volume of tank} = (5\text{ ft.})\left(1\frac{2}{3}\text{ ft.}\right)(2\text{ ft.})$

$\text{Volume of tank} = \frac{50}{3}\text{ ft}^3$

$\text{Volume of water} = l\,w\,h$

$\text{Volume of water} = (5\text{ ft.})\left(1\frac{2}{3}\text{ ft.}\right)\left(\frac{1}{3}\text{ ft.}\right)$

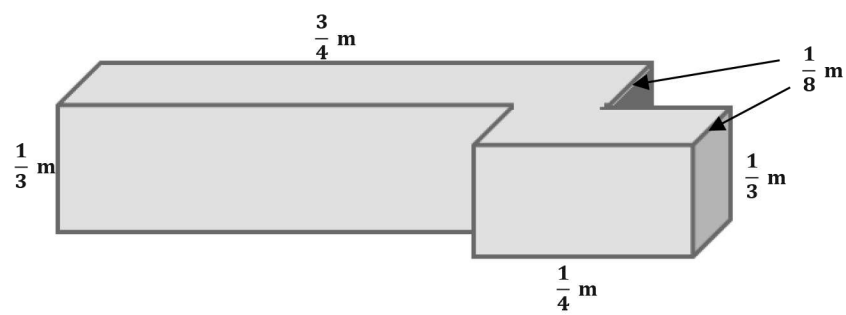
$\text{Volume of water} = \frac{25}{9}\text{ ft}^3$

$\text{Volume to be filled} = \frac{50}{3}\text{ ft}^3 - \frac{25}{9}\text{ ft}^3$

$\text{Volume to be filled} = \frac{150}{9}\text{ ft}^3 - \frac{25}{9}\text{ ft}^3$

$\text{Volume to be filled} = \frac{125}{9}\text{ ft}^3$

4. Determine the volume of the composite figure.



$\text{Volume of back piece} = l\,w\,h$

$\text{Volume of back piece} = \left(\frac{3}{4}\text{ m}\right)\left(\frac{1}{8}\text{ m}\right)\left(\frac{1}{3}\text{ m}\right)$

$\text{Volume of back piece} = \frac{3}{96}\text{ m}^3$

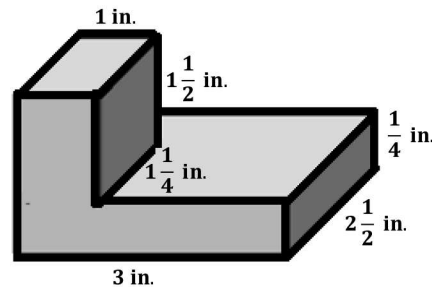
$\text{Volume of front piece} = l\,w\,h$

$\text{Volume of front piece} = \left(\frac{1}{4}\text{ m}\right)\left(\frac{1}{8}\text{ m}\right)\left(\frac{1}{3}\text{ m}\right)$

$\text{Volume of front piece} = \frac{1}{96}\text{ m}^3$

$\text{Total volume} = \frac{3}{96}\text{ m}^3 + \frac{1}{96}\text{ m}^3 = \frac{4}{96}\text{ m}^3 \text{ OR } \frac{1}{24}\text{ m}^3$

5. **Determine the volume of the composite figure.**



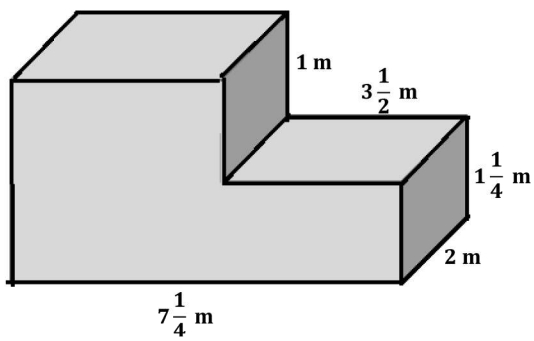
$$V = (1 \text{ in.})\left(1\frac{1}{2} \text{ in.}\right)\left(1\frac{1}{4} \text{ in.}\right) + (3 \text{ in.})\left(2\frac{1}{2} \text{ in.}\right)\left(\frac{1}{4} \text{ in.}\right)$$

$$V = (1 \text{ in.})\left(\frac{3}{2} \text{ in.}\right)\left(\frac{5}{4} \text{ in.}\right) + (3 \text{ in.})\left(\frac{5}{2} \text{ in.}\right)\left(\frac{1}{4} \text{ in.}\right)$$

$$V = \frac{15}{8} \text{ in}^3 + \frac{15}{8} \text{ in}^3$$

$$V = \frac{30}{8} \text{ in}^3 = 3\frac{6}{8} \text{ in}^3 \textit{ OR } 3\frac{3}{4} \text{ in}^3$$

6.



a. **Write an equation to represent the volume of the composite figure.**

$$V = \left(3\frac{1}{2} \text{ m} \times 2 \text{ m} \times 1\frac{1}{4} \text{ m}\right) + \left(3\frac{3}{4} \text{ m} \times 2 \text{ m} \times 2\frac{1}{4} \text{ m}\right)$$

b. **Use your equation to calculate the volume of the composite figure.**

$$V = \left(3\frac{1}{2} \text{ m} \times 2 \text{ m} \times 1\frac{1}{4} \text{ m}\right) + \left(3\frac{3}{4} \text{ m} \times 2 \text{ m} \times 2\frac{1}{4} \text{ m}\right)$$

$$V = \left(\frac{7}{2} \text{ m} \times \frac{2}{1} \text{ m} \times \frac{5}{4} \text{ m}\right) + \left(\frac{15}{4} \text{ m} \times \frac{2}{1} \text{ m} \times \frac{9}{4} \text{ m}\right)$$

$$V = \frac{70}{8} \text{ m}^3 + \frac{270}{16} \text{ m}^3$$

$$V = \frac{70}{8} \text{ m}^3 + \frac{135}{8} \text{ m}^3$$

$$V = \frac{205}{8} \text{ m}^3$$

$$V = 25\frac{5}{8} \text{ m}^3$$