

1.3

Using Formulas for Surface Area of 3-D Objects

What we will focus on:

1. Label Diagrams
2. Write formulas
3. Fill in formulas (Shows understanding!)
4. Calculate

Use a Formula to Calculate the Surface Area of a Rectangular Prism

For big paint jobs, the surface area measurement must be more exact than for a small job such as painting a closet. Calculate the surface area of the exterior of an industrial storage container that is 45 feet long, 9 feet 6 inches wide, and 8 feet high.



The total surface area of a rectangular prism equals the area of all six sides.

$$SA = 2(\text{length} \times \text{width}) + 2(\text{length} \times \text{height}) + 2(\text{width} \times \text{height})$$

Calculate the surface area using the formula

$$SA = 2(lw + lh + wh), \text{ where } l = \text{length, } w = \text{width, and } h = \text{height}$$

$$SA = 2[(45 \text{ ft} \times 9.5 \text{ ft}) + (45 \text{ ft} \times 8 \text{ ft}) + (9.5 \text{ ft} \times 8 \text{ ft})]$$

$$SA = 2(427.5 \text{ ft}^2 + 360 \text{ ft}^2 + 76 \text{ ft}^2)$$

$$SA = 2 \times 863.5 \text{ ft}^2$$

$$SA = 1727 \text{ ft}^2$$

$$\begin{aligned} 6 \text{ in.} &= \frac{1}{2} \text{ ft} \\ &= 0.5 \text{ ft} \end{aligned}$$

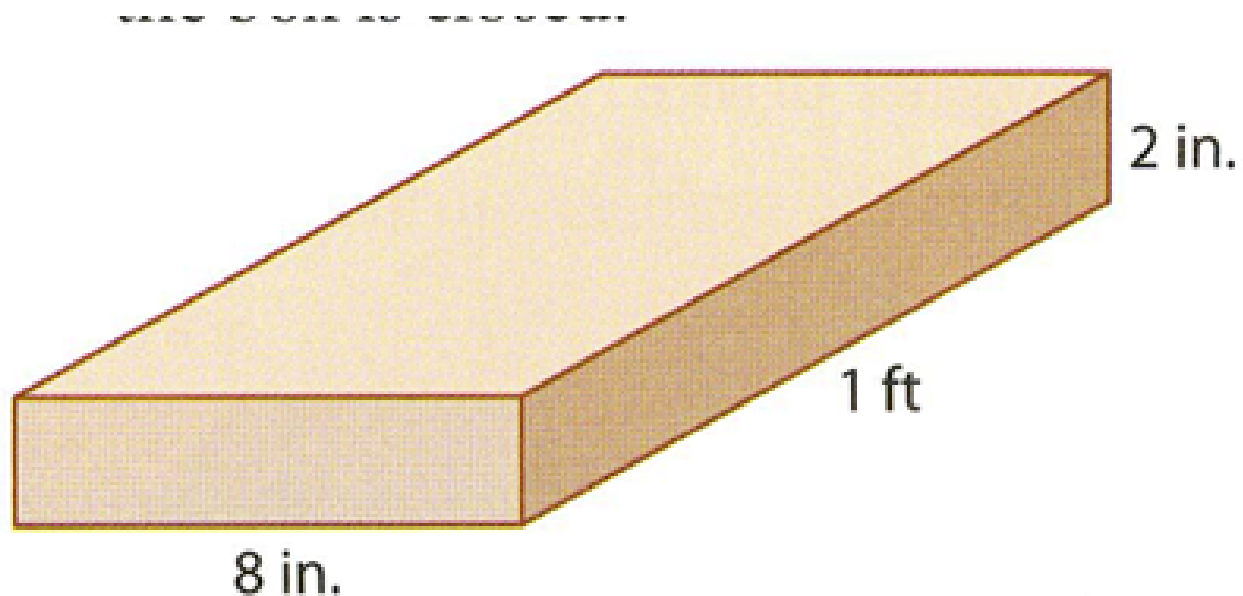
The surface area of the storage container is 1727 square feet.

Our variables for surface area of rectangular prisms are:

Length

Width

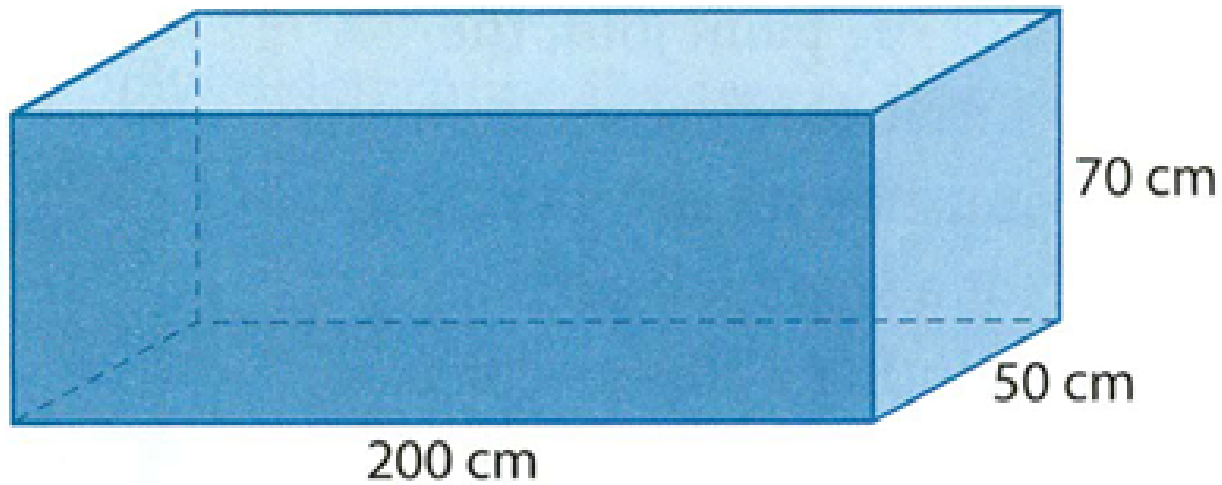
Height



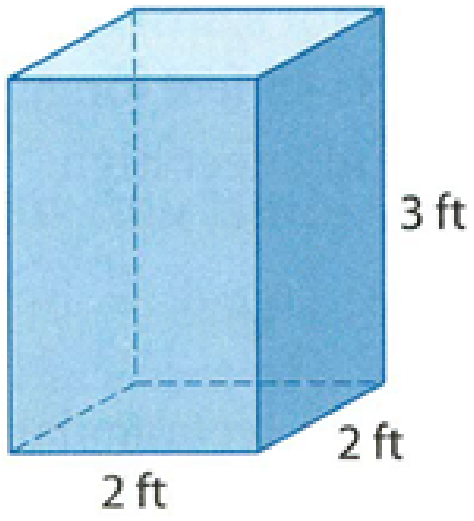
The surface area of a rectangular prism is given by:

1. Calculate the surface area of each rectangular prism.

a)



b)



3. Kevin purchased a filing cabinet for his home office. He wants to paint the exterior a different colour. The dimensions of the cabinet are 140 cm high by 40 cm wide by 70 cm deep.

- a)** Calculate the surface area of the filing cabinet.
- b)** Kevin will not paint the bottom of the cabinet, since it sits on the floor. What is the total area that he will paint?

