

## Lesson 10-3

## Example 1

Find the surface area of the rectangular prism.

## Solution

A rectangular prism has three pairs of congruent faces. The surface area is the sum of the areas of all the faces. Use the formula  $SA = 2(\text{area A}) + 2(\text{area B}) + 2(\text{area C})$ , where each area can be found using the formula for the area of a rectangle,  $A = \ell w$ .

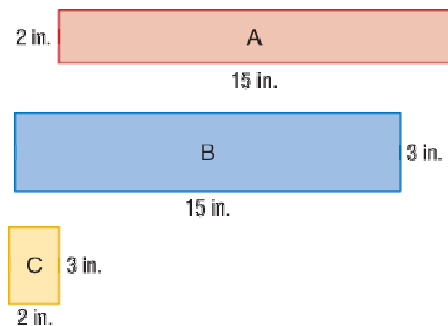
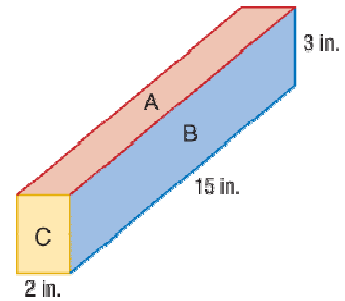
$$\begin{aligned} \text{Area of A} \quad A &= 2 \cdot 15 \\ A &= 30 \end{aligned}$$

$$\begin{aligned} \text{Area of B} \quad A &= 3 \cdot 15 \\ A &= 45 \end{aligned}$$

$$\begin{aligned} \text{Area of C} \quad A &= 2 \cdot 3 \\ A &= 6 \end{aligned}$$

$$\begin{aligned} SA &= 2 \cdot 30 + 2 \cdot 45 + 2 \cdot 6 \\ SA &= 60 + 90 + 12 \\ SA &= 162 \end{aligned}$$

The surface area is  $162 \text{ in}^2$ .



**Example 2**

**HISTORY** An ancient pyramid had a square base that measured 440 feet on each side. The slant height of the triangular sides was 325 feet on each side. What was the surface area of the faces of the pyramid?

**Solution**

The four faces of the pyramid are congruent triangles. Calculate the surface area of one of the faces and multiply by 4.

$$A = \frac{1}{2}bh$$

$$A = \frac{1}{2} \cdot 440 \cdot 325 = 71,500$$

$$SA = 4 \cdot 71,500 = 286,000$$

The surface area of the ancient pyramid was 286,000 ft<sup>2</sup>.

**Example 3**

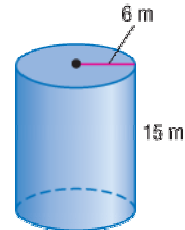
**Find the surface area of the cylinder.**

**Solution**

$$SA = 2\pi rh + 2\pi r^2$$

$$SA \approx 2 \cdot 3.14 \cdot 6 \cdot 15 + 2 \cdot 3.14 \cdot 6^2 \quad \pi \approx 3.14$$

$$SA \approx 565.2 + 226.08 \approx 791.28$$



The surface area of the cylinder is approximately 791.28 m<sup>2</sup>.

**Example 4**

Find the surface area of the cone.

**Solution**

$$SA = \pi rs + \pi r^2$$

$$SA \approx 3.14 \cdot 6 \cdot 20 + 3.14 \cdot 6^2 \quad \pi \approx 3.14$$

$$SA \approx 376.8 + 113.04 \approx 489.84$$

The surface area of the cone is approximately  $489.84 \text{ ft}^2$ .

