

## 10-6

Name \_\_\_\_\_ Date \_\_\_\_\_

# Surface Area of Rectangular Prisms

(pages 421–424)

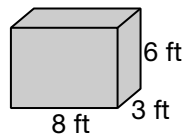
The **surface area** of a three-dimensional object is the total area of its faces and curved surfaces. The opposite sides of a rectangular prism have the same area.

### Finding the Surface Area of a Rectangular Prism

- Find the area of the top and bottom bases.
  - Find the area of the front and back faces.
  - Find the area of the right and left sides.
- Add all these areas to find the total surface area of the prism.

## EXAMPLES

- A** Find the surface area of a box that is 8 ft by 6 ft by 3 ft.



Area of the top is  $8 \times 3$ .  
 Area of the front is  $6 \times 8$ .  
 Area of the side is  $3 \times 6$ .  
 There are 2 of each face.  
 Total area =  $2(24) + 2(48) + 2(18)$  or  $180 \text{ ft}^2$

- B** What is the surface area of a rectangular prism with length = 3 in., width = 7 in., and height = 2 in.?

Area =  $2(3 \times 7) + 2(3 \times 2) + 2(7 \times 2)$   
 Area =  $2(21 + 6 + 14)$   
 Area =  $2(41)$   
 Area =  $82 \text{ in}^2$

## Try These Together

1. Find the surface area of a cube that has an edge of 3 yards.

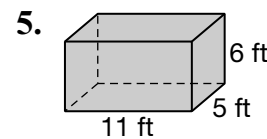
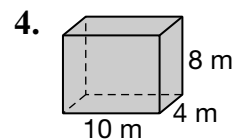
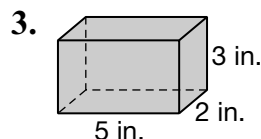
*HINT: A cube is a rectangular prism with 6 congruent faces.*

2. Find the surface area of a rectangular prism that is 1.3 cm by 2.4 cm by 5.7 cm.

*HINT: Begin by making a sketch and labeling it.*

## PRACTICE

Find the surface area of each rectangular prism.



6. length = 12 ft  
width = 3 ft  
height = 8 ft

7. length = 3 cm  
width = 9 cm  
height = 1 cm

8. length = 5 m  
width = 7 m  
height = 8 m

9. **Decorating** Josie is putting wallpaper in her room. If her room is 10 feet wide, 12 feet long and 8 feet high, how much wallpaper will she need? Remember, she will not wallpaper the ceiling or the floor.



10. **Standardized Test Practice** What is the surface area of a 20-cm cube?

- A** 1,200  $\text{cm}^2$       **B** 2,400  $\text{cm}^2$       **C** 400  $\text{cm}^2$       **D** 4,400  $\text{cm}^2$

Answers: 1. 54  $\text{yd}^2$  2. 48.42  $\text{cm}^2$  3. 62  $\text{in}^2$  4. 304  $\text{m}^2$  5. 302  $\text{ft}^2$  6. 312  $\text{ft}^2$  7. 78  $\text{cm}^2$  8. 262  $\text{m}^2$  9. 352  $\text{ft}^2$  10. B