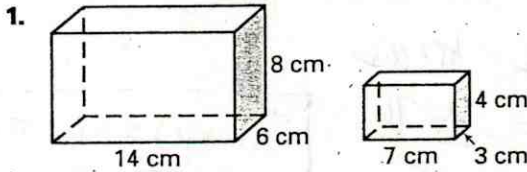
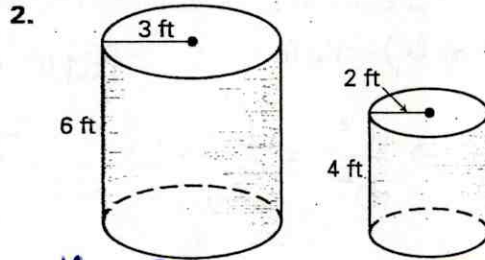


LESSON 12.7 Practice
For use with pages 846-854

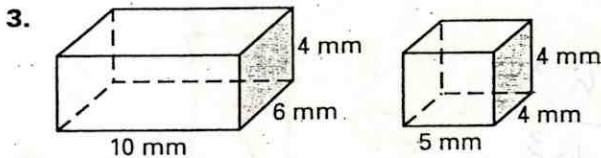
Tell whether the pair of right solids is similar. If so, determine the scale factor.



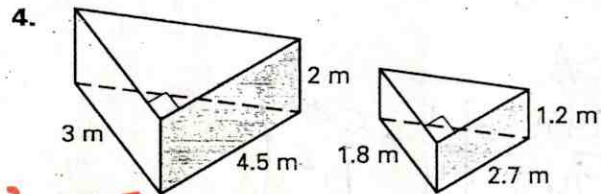
$\frac{14}{7} = \frac{8}{4} = \frac{6}{3}$
 $\frac{2}{1} = \frac{2}{1} = \frac{2}{1}$
yes, 2:1



$\frac{6}{4} = \frac{3}{2}$
yes, 3:2



$\frac{10}{5} = \frac{6}{4} = \frac{4}{4}$
 $\frac{2}{1} = \frac{3}{2} = \frac{1}{1}$
NO

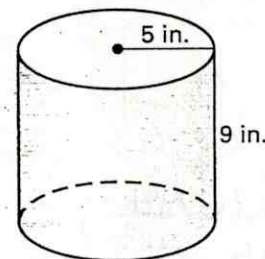


$\frac{3}{1.8} = \frac{4.5}{2.7} = \frac{2}{1.2}$
NO

5. **Multiple Choice** Which set of dimensions corresponds to a right cylinder that is similar to the cylinder shown?

- A. $r = 2, h = 5$
- B. $r = 3, h = 7$
- C. $r = 10, h = 19$
- D. $r = 15, h = 27$**

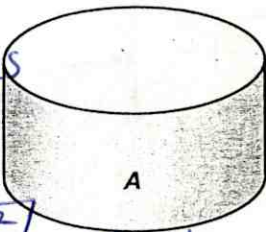
$\frac{5}{9} \times 3 = \frac{15}{27}$



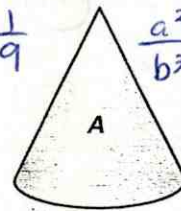
Solid A (shown) is similar to Solid B (not shown) with the given scale factor of A to B. Find the surface area and volume of Solid B.

6. Scale factor of 1:2 $\frac{a}{b} = \frac{1}{2}$ 7. Scale factor of 1:3 $\frac{a}{b} = \frac{1}{3}$ 8. Scale factor of 2:3 $\frac{a}{b} = \frac{2}{3}$

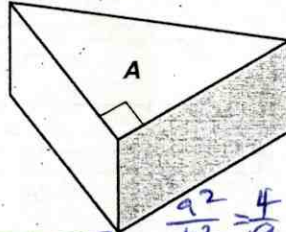
$\frac{a^2}{b^2} = \frac{1}{4}$
Ratio Areas = Areas
 $\frac{1}{4} = \frac{42\pi}{x}$
 $S = 168\pi \text{ ft}^2$
 $\frac{a^3}{b^3} = \frac{1}{8}$
Ratio Volume = Volume
 $\frac{1}{8} = \frac{36\pi}{x}$
 $V = 288\pi \text{ ft}^3$



$S = 96\pi \text{ m}^2, V = 96\pi \text{ m}^3$
 $\frac{a^2}{b^2} = \frac{1}{9}$
 $\frac{a^3}{b^3} = \frac{1}{27}$
 $\frac{1}{9} = \frac{96\pi}{x}$
 $S = 864\pi \text{ m}^2$
 $\frac{1}{27} = \frac{96\pi}{x}$
 $V = 2592\pi \text{ m}^3$



$S = 75.6 \text{ cm}^2, V = 36 \text{ cm}^3$
 $\frac{a^3}{b^3} = \frac{8}{27}$
 $\frac{a^2}{b^2} = \frac{4}{9}$
 $\frac{4}{9} = \frac{75.6}{x}$
 $S = 170.1 \text{ m}^2$
 $\frac{8}{27} = \frac{36}{x}$
 $V = 121.5 \text{ cm}^3$



LESSON 12.7

Practice continued
For use with pages 846-854

$$\frac{a}{b} = \frac{1}{3}$$

9. **Finding Surface Area** Two spheres have a scale factor of 1:3. The smaller sphere has a surface area of 16π square feet. Find the surface area of the larger sphere.

$$S(\text{small}) = 16\pi$$

$$\text{Ratio Areas} = \text{Areas}$$

$$\frac{a}{b} \rightarrow \frac{a^2}{b^2} = \frac{1}{9}$$

$$\frac{1}{9} = \frac{16\pi}{x}$$

$$S(\text{large}) = 144\pi \text{ ft}^2$$

10. **Multiple Choice** Two right cylinders are similar. The surface areas are 24π and 96π . What is the ratio of the volumes of the cylinders?

A. $\frac{1}{4}$

B. $\frac{1}{8}$

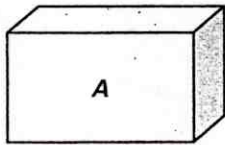
C. $\frac{1}{2}$

D. $\frac{2}{3}$

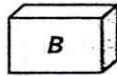
$$\frac{SA}{24\pi} = \frac{96\pi}{24\pi} = \frac{4}{1} = \frac{a^2}{b^2} \xrightarrow{\sqrt{x}} \frac{a}{b} = \frac{2}{1} \quad \frac{a^3}{b^3} = \frac{2^3}{1^3} = \frac{8}{1}$$

Solid A is similar to Solid B. Find the scale factor of Solid A to Solid B.

11.



$$S = 208 \text{ m}^2$$

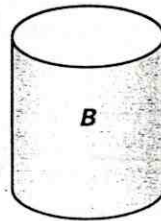


$$S = 52 \text{ m}^2$$

$$\frac{\text{Area}}{208} = \frac{52}{208} = \frac{1}{4} = \frac{a^2}{b^2} \xrightarrow{\sqrt{x}} \frac{a}{b} = \frac{2}{1}$$

simplify

12.



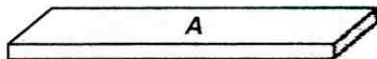
$$S = 63\pi \text{ cm}^2$$



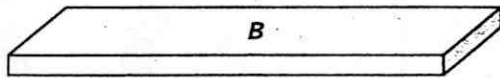
$$S = 28\pi \text{ cm}^2$$

$$\frac{63\pi}{28\pi} = \frac{9}{4} = \frac{a^2}{b^2} \xrightarrow{\sqrt{x}} \frac{a}{b} = \frac{3}{2}$$

13.



$$V = 27 \text{ ft}^3$$

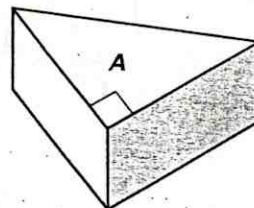


$$V = 64 \text{ ft}^3$$

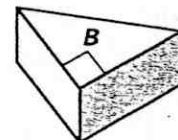
$$\frac{\text{Volumes}}{27} = \frac{64}{27} = \frac{a^3}{b^3} \xrightarrow{\sqrt[3]{x}} \frac{a}{b} = \frac{4}{3}$$

* can't be simplified

14.



$$V = 54 \text{ in}^3$$



$$V = 16 \text{ in}^3$$

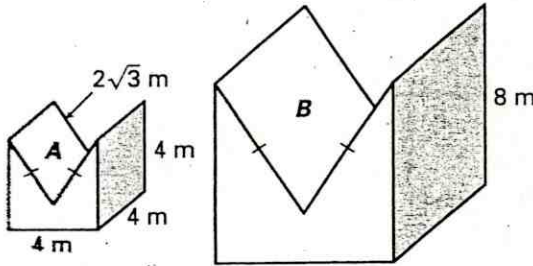
$$\frac{54}{16} = \frac{27}{8} = \frac{a^3}{b^3} \xrightarrow{\sqrt[3]{x}} \frac{a}{b} = \frac{3}{2}$$

LESSON
12.7

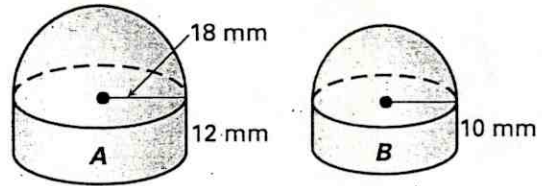
Practice *continued*
For use with pages 846-854

Solid A is similar to Solid B. Find the surface area and volume of Solid B.

15.



16.



17. **Finding a Ratio** Two cubes have volumes of 64 cubic feet and 216 cubic feet. What is the ratio of the surface area of the smaller cube to the surface area of the larger cube?

$$V_1 = 64$$

$$V_2 = 216$$

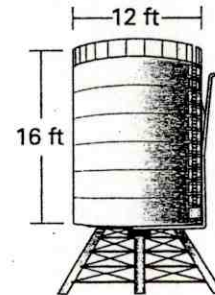
$$\frac{64}{216} = \frac{8}{27} = \frac{a^3}{b^3}$$

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

$$\frac{a^2}{b^2} = \frac{4}{9}$$

In Exercises 18-22, use the following information.

Water Tower As part of a class project, you obtain the responsibility of making a scale model of the water tower in your town. The water tower's diameter is 12 feet and the height is 16 feet. You decide that 0.5 inch in your model will correspond to 12 inches of the actual water tower.



18. What is the scale factor?
19. What is the radius and height of the model?
20. What is the surface area of the model?
21. What is the volume of the actual water tower?
22. Use your result from Exercise 21 to find the volume of the model.

$$\frac{9}{4} = \frac{27}{12} = \frac{16}{9}$$