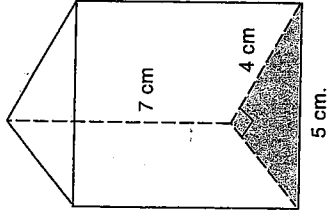


Check Your Understanding of Section 10.1

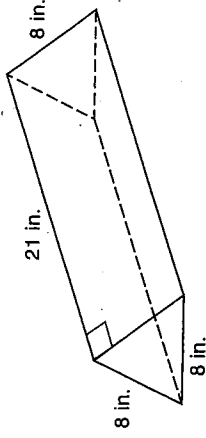
A. Multiple Choice

- What is the number of inches in the radius of a cylinder 2 inches in height if its volume is 288π in³?
 (1) 3 (2) 6 (3) 12 (4) 24
- In the accompanying figure of a right prism, the bases are right triangles. Which statement about its volume (V) and lateral area (L.A.) is true?
 (1) $V = 288$ in³ and L.A. = 288 in²
 (2) $V = 288$ in³ and L.A. = 216 in²
 (3) $V = 720$ in³ and L.A. = 288 in²
 (4) $V = 720$ in³ and L.A. = 216 in²
- If in a right square prism, the length of each side of the two bases is doubled and the height is tripled, then the volume of the prism is
 (1) multiplied by 12 (3) multiplied by 6
 (2) multiplied by 8 (4) multiplied by 4
- The amount of light produced by a cylindrical-shaped fluorescent light bulb depends on its lateral area. A certain cylindrical-shaped fluorescent light bulb is 36 inches in length, has a 1 inch diameter, and is manufactured to produce 0.283 watts of light per square inch. What is the best estimate for the total amount of light that it is able to produce?
 (1) 32 watts (3) 48 watts
 (2) 34 watts (4) 64 watts
- The bases of a right prism are right triangles whose legs measure 5 inches and 12 inches. If the lateral edge of the prism measures 15 inches, what is the number of square inches in the lateral area of the prism?
 (1) 120 (2) 255 (3) 360 (4) 450
- The lateral area of a right cylinder whose height is two times the length of the radius is 100π in². What is the number of inches in the height of the cylinder?
 (1) 5 (2) 10 (3) 15 (4) 20

B. Show or explain how you arrived at your answer.

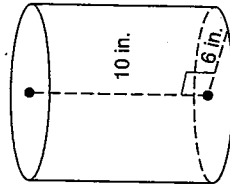


Exercise 7

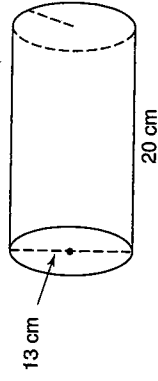


Exercise 8

- 7-8. For each right prism above, find the:
- Lateral area.
 - Volume.



Exercise 9

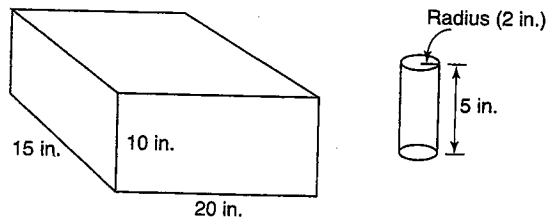


Exercise 10

- 9-10. For each right cylinder above, find
- The lateral area in terms of π .
 - The volume correct to the nearest tenth of a cubic unit.
11. The length of a side of the base of a right square prism is 12 cm. If the length of a lateral edge is 9 cm, find the surface area of the prism.
12. A prism has isosceles triangle bases whose legs measure 10 inches and base measures 16 inches. If the height of the prism is equal to the height of the triangular base, what is the volume of the prism?
13. A right circular cylinder has a lateral area of 306π ft². If the height of the cylinder is 17 ft, express in terms of π the number of cubic feet in the volume of the cylinder.

Area and Volume of Solids

14. The base of a right prism is a right triangle whose legs measure 18 and 24 inches, respectively. If the length of a lateral edge is 16 inches, what is the surface area of the prism?
15. A piece of ice that has the shape of a right cylinder has a diameter of 6.0 cm and a height of 5.0 cm. If the ice cube melts at a constant rate of 13.0 cm^2 per minute, how many minutes elapse before the ice cube is completely melted? Round your answer to the *nearest hundredth* of a minute.
16. A cylindrical can is manufactured using aluminum for the top and bottom bases and tin for the remainder of the can. If the can is 10 cm in height and 6 cm in diameter, what percentage of the metal used to manufacture the can is tin? Round your answer to the *nearest tenth*.
17. The diameter of a cylindrical water storage tank is 12 feet and its height is 15 feet. A leak develops in the tank and water leaks out of it at a constant rate of $18.0 \text{ in}^3/\text{sec}$. If the tank is initially full, how many *hours* elapse before the tank is empty? Round off your answer to the *nearest hour*.
18. A hot water tank with a capacity of 85.0 gallons of water is being designed to have the shape of a right circular cylinder with a diameter 1.8 feet. Assuming that there are 7.48 gallons in 1 cubic foot, how high will the tank have to be? Round your answer to the *nearest tenth* of a foot.
19. A rectangle 6 inches in width and 8 inches in length is rotated in space about its longer side. Find in terms of π the volume and surface area of the solid generated.



20. In the accompanying diagram, a rectangular container with the dimensions 10 inches by 15 inches by 20 inches is to be filled with water, using a cylindrical cup whose radius is 2 inches and whose height is 5 inches. What is the maximum number of full cups of water that can be placed into the container without the water overflowing the container?

Lesson 10.1

1. (3) 2. (1) 3. (1) 4. (1) 5. (4) 6. (2)
-
7. a. 84 cm^2
b. 42 cm^3
8. a. 504 in^2
b. $336\sqrt{3} \text{ in}^3$
9. a. $120\pi \text{ in}^2$
b. $1,131.0 \text{ in}^3$
10. a. $260\pi \text{ cm}^2$
b. $2,654.6 \text{ cm}^3$
11. 720 cm^2

12. 288 in^3
13. 612π
14. $1,584 \text{ in}^2$
15. 7.25
16. 76.9
17. 45
18. 4.5 ft
19. $V = 288\pi \text{ in}^3$, $SA = 168\pi \text{ in}^2$
20. 47

