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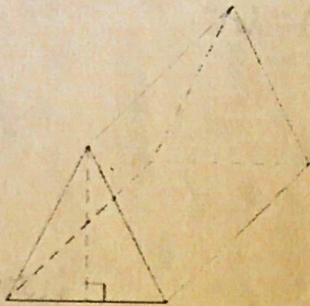
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### 7. Volume Practice Test

#### Multiple Choice

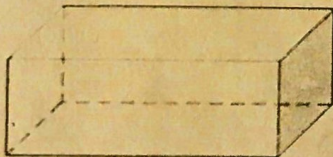
Identify the choice that best completes the statement or answers the question.

1. Identify the following 3-D object.



- a. cylinder  
b. rectangular pyramid  
c.  right triangular prism  
d. right rectangular prism

2. Identify the following 3-D object.



- a. cylinder  
b.  right rectangular prism  
c. right triangular prism  
d. triangular pyramid

3. A rectangular garage has a volume of  $480 \text{ m}^3$ , a length of 12 m and a width of 8 m. What is the height of the garage?

- a. 4 m  
b.  5 m  
c. 6 m  
d. 7 m

$$\frac{480}{96} = \frac{12(P)(8)}{96}$$

4. Which set of dimensions belongs to a right rectangular prism with a volume of  $440 \text{ cm}^3$ ?

- a. 6 cm 12 cm 5 cm  
b. 7 cm 9 cm 6 cm  
c.  8 cm 5 cm 11 cm  
d. 12 cm 2 cm 5 cm

$$8(5)(11) = 440$$

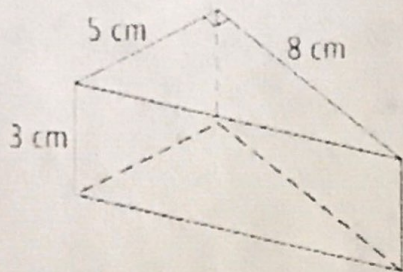
5. All right prisms have side views that are
- a. different shapes  
b. rectangular

- c. square  
d. triangular

omit #5



6. Find the volume of this right triangular prism.



$$V = Bh$$

$$B = \text{triangle}$$

$$B = \frac{1}{2}(5)(8) = 20$$

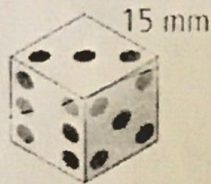
$$h = 3$$

$$V = 20(3) = 60$$

- a. 60 cm<sup>3</sup>      b. 90 cm<sup>3</sup>      c. 120 cm<sup>3</sup>      d. 150 cm<sup>3</sup>
7. A triangular prism has a base area of 7.3 cm<sup>2</sup> and a volume of 71.54 cm<sup>3</sup>. The height of the prism must be  
 a. 3.65 cm      b. 7.3 cm      c. 9.8 cm      d. 19.6 cm
8. A juice container shaped like a cylinder has a base area of 100 cm<sup>2</sup> and can hold 1500 cm<sup>3</sup> of juice. The height of the juice container is  
 a. 1.5 cm      b. 10 cm      c. 15 cm      d. 150 cm
9. A standard die is a cube with sides measuring 15 mm. What is the volume of the die?

$$\frac{71.54}{7.3} = \frac{7.3(h)}{7.3}$$

$$\frac{1500}{100} = \frac{100(h)}{100}$$



$$V = l \cdot w \cdot h$$

$$V = 15 \cdot 15 \cdot 15$$

$$V = 3375$$

- a. 30 mm<sup>3</sup>      b. 45 mm<sup>3</sup>      c. 225 mm<sup>3</sup>      d. 3375 mm<sup>3</sup>
10. A soup can has a radius of 4.3 cm and a height of 11.6 cm. What is the volume of the soup can to the nearest tenth of a cubic centimetre?  
 a. 49.9 cm<sup>3</sup>      b. 168.4 cm<sup>3</sup>      c. 673.5 cm<sup>3</sup>      d. 1816.8 cm<sup>3</sup>
11. A storage box for skis measures 0.45 m high, 0.45 m wide, and 1.7 m long. What is the volume of the case to the nearest hundredth of a cubic metre?  
 a. 0.34 m<sup>3</sup>      b. 0.69 m<sup>3</sup>      c. 3.44 m<sup>3</sup>      d. 6.88 m<sup>3</sup>
12. A backyard sandbox shaped like a right rectangular prism is 0.45 m high, 2 m wide, and 2.6 m long. If the sand in the box is 0.25 m deep, what volume of sand is in the box?  
 a. 1.3 m<sup>3</sup>      b. 2.34 m<sup>3</sup>      c. 11.3 m<sup>3</sup>      d. 23.41 m<sup>3</sup>
13. A recycling box holds 151 875 cm<sup>3</sup> of material and has a square base with sides measuring 45 cm. What is the height of the recycling box?  
 a. 33.8 cm      b. 75 cm      c. 1687.5 cm      d. 3375 cm
14. A recycling bin is shaped like a right rectangular prism and holds 300 000 cm<sup>3</sup> of returnable containers. If the base of the bin is 40 cm wide and 60 cm long, what is the height of the recycling bin in metres?  
 a. 0.90 m      b. 1.25 m      c. 1.50 m      d. 3.00 m

$$V = \pi r^2 h$$

$$V = \pi (4.3^2)(11.6) =$$

$$.45 \cdot .45 \cdot 1.7 = .34$$

$$V = l \cdot w \cdot h$$

$$V = 2.6(2)(.25) = 1.3$$

$$\frac{151875}{2025} = \frac{45(45)(h)}{2025}$$

$$\frac{300000}{2400} = \frac{40(60)(h)}{2400}$$

$$125 \text{ cm} \rightarrow 1.25 \text{ m}$$



15. A mug of hot chocolate measures 8.6 cm in diameter and has a height of 11.2 cm. The top 0.4 cm of the mug is filled with froth; the rest is hot chocolate. Rounding to the nearest cubic centimetre, how much hot chocolate is in the mug?

a. 146 cm<sup>3</sup>      b. 292 cm<sup>3</sup>      c. 627 cm<sup>3</sup>      d. 2508 cm<sup>3</sup>

$$V = Bh$$

$$V = \pi r^2 h \quad h = 11.2$$

$$V = \pi (4.3)^2 (10.8) = 627.35$$

### Completion

Complete each statement.

Write your answer in the space provided.

16. The formula for determining the volume of a right rectangular prism is  $V = l \cdot w \cdot h$ .

17. Cubic units are used when calculating the Volume of right prisms and cylinders.

18. A right rectangular prism is made of 1-cm cubes and measures 5 cubes by 4 cubes by 4 cubes. The volume of the rectangular prism must be  $V = 5(4)(4) = 80 \text{ cm}^3$ .

19. Mark has a rectangular cooler that is 32 cm long and 21 cm wide. The cooler has a volume of 9072 cm<sup>3</sup>. The depth of this cooler must be  $14.47 \text{ cm}$ .  $9072 = 32(21)(h)$   $\frac{9072}{627} = \frac{32(21)(h)}{627}$

20. The height of a right prism or right cylinder must be perpendicular to its base.

### Short Answer

21. Mary pours 1000 cm<sup>3</sup> of juice into a pitcher shaped like a right triangular prism. If the depth of the juice is 20 cm, what is the area of the triangular base of the pitcher?  $V = Bh$   $\frac{1000}{20} = \frac{B(20)}{20}$   $B = 50 \text{ cm}^2$

22. A right rectangular prism has a volume of 117.81 cm<sup>3</sup>, a height of 16.5 cm, and a width of 2 cm. Find the length of the prism.  $V = l \cdot w \cdot h$   $\frac{117.81}{33} = \frac{16.5(2)(l)}{33}$   $l = 3.57$

23. A right rectangular prism measures 6.2 cm  $\times$  4.7 cm  $\times$  2.3 cm. Find the volume of the prism, and express your answer to two decimal places.  $V = 6.2(4.7)(2.3) = 67.02 \text{ cm}^3$

24. A right triangular prism has a volume of 594.5 cm<sup>3</sup>. Its base measures 12.5 cm long by 8.2 cm high. Determine the length of the prism.  $V = Bh$   $B = \frac{1}{2}(12.5)(8.2)$   $\frac{594.5}{51.25} = \frac{51.25(l)}{51.25}$

25. The volume of a cylinder is 867.5 cm<sup>3</sup> and the area of the circular base is 69.4 cm<sup>2</sup>. What is the diameter of the cylinder, to the closest millimetre?  $\frac{\pi r^2}{\pi} = \frac{69.4}{\pi}$   $r^2 = 22.10$   $r = 4.7$   $d = 9.4 \text{ mm}$

26. A cylinder has a diameter of 5.8 cm and is 8.4 cm high. Calculate the volume of the cylinder and express your answer to one decimal place.

$$V = Bh$$

$$V = \pi r^2 h$$

$$V = \pi (2.9)^2 (8.4)$$

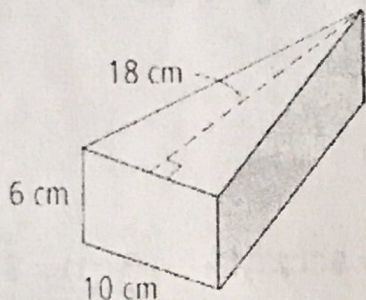
$$V = 221.93 \text{ cm}^3$$



**Problem**

Write your answer in the space provided.

27. A telescope has a diameter of 17 cm and has 72 cm between the two lenses. What is the volume of the space between the lenses? Express your answer to the nearest cubic centimetre.
28. Anita cuts a piece of birthday cake as shown below. What is the volume of the piece of cake?



$$V = Bh$$

$$B = \text{triangle}$$

$$B = \frac{1}{2}(10)(18) = 90$$

$$h = 6$$

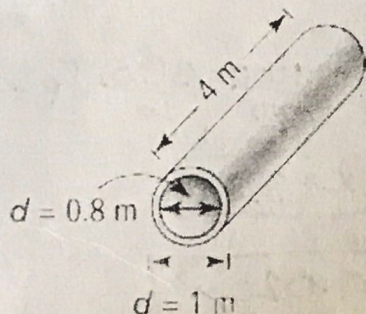
$$V = 90(6) = \boxed{540\text{cm}^3}$$

$$V = Bh$$

$$V = \pi r^2(h)$$

$$V = \pi(8.5^2)(72) = \boxed{16342.56\text{cm}^3}$$

29. What is the volume of concrete required to make the large culvert shown below? Round your answer to the nearest hundredth of a cubic metre.



$$V = Bh$$

$$V = \pi r^2 h$$

$$V = \pi(.4^2)(4)$$

$$V = 2.01$$

$$3.14 - 2.01 = \boxed{1.13\text{m}^3}$$

$$V = Bh$$

$$V = \pi r^2 h$$

$$V = \pi(.5^2)(4)$$

$$V = 3.14$$

30. A hockey puck has a diameter of 7.6 cm and a height of 3.4 cm. What is the volume of a cylindrical package containing six pucks? Express your answer to the nearest cubic centimetre.

$$V = Bh$$

$$V = \pi r^2 h$$

$$V = \pi(3.8^2)(3.4)$$

$$V = 154.24 \times 6 = \boxed{925.44\text{cm}^3}$$