

# Cubes

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Score: \_\_\_\_\_ / 18

**Quick Review and Helpful Hints**

A cube has all edges the same length  $s$ . Its *volume* is  $V = s^3$  (edge cubed), and its *surface area* is  $SA = 6s^2$  (six identical square faces). Use cubic units for volume and square units for surface area.

► **Example:** Find the volume of a cube with edge 4 cm.

**Work:** Volume is the edge cubed:  $V = s^3 = 4^3 = 4 \times 4 \times 4$ .

★ **Answer:**  $64 \text{ cm}^3$



$V = s^3, SA = 6s^2.$

◆ **Practice Problems**

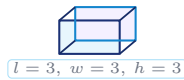
Use each cube diagram to find the volume or surface area, as directed.

1. Find the volume.



\_\_\_\_\_

2. Find the volume.



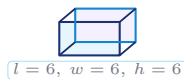
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3. Find the volume.



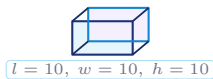
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4. Find the volume.



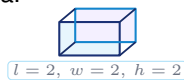
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5. Find the volume.



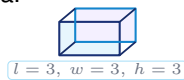
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6. Find the surface area.



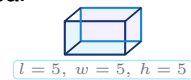
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7. Find the surface area.



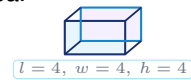
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8. Find the surface area.



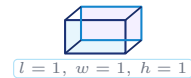
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9. Find the surface area.



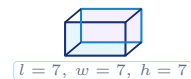
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10. Find the volume.



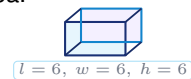
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11. Find the volume.



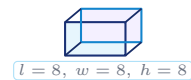
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12. Find the surface area.



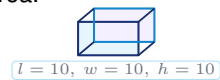
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13. Find the volume.



\_\_\_\_\_

14. Find the surface area.



\_\_\_\_\_

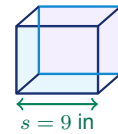


## ◆ Word Problems

15. A classroom storage bin is a cube with inside edges of 9 inches. How many cubic inches of supplies can it hold?

Formula to use:  $V = s^3$

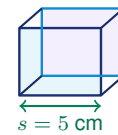
Work: \_\_\_\_\_



16. A gift shop wraps a cube-shaped box with 5-cm edges. Ignoring overlap, how many square centimeters of paper are needed?

Formula to use:  $SA = 6s^2$

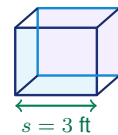
Work: \_\_\_\_\_



17. A small cube aquarium has inside edges of 3 feet. How many cubic feet of water fit when it is filled to the top?

Formula to use:  $V = s^3$

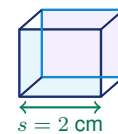
Work: \_\_\_\_\_



18. A game designer paints every face of a cube die with edge length 2 cm. How many square centimeters are painted?

Formula to use:  $SA = 6s^2$

Work: \_\_\_\_\_



## Answer Keys

- |                                      |                                      |   |
|--------------------------------------|--------------------------------------|---|
| 1. <input type="text" value="8"/>    | 7. <input type="text" value="54"/>   | 13. <input type="text" value="512"/>                            |
| 2. <input type="text" value="27"/>   | 8. <input type="text" value="150"/>  | 14. <input type="text" value="600"/>                            |
| 3. <input type="text" value="125"/>  | 9. <input type="text" value="96"/>   | 15. <input type="text" value="729 in&lt;sup&gt;3&lt;/sup&gt;"/> |
| 4. <input type="text" value="216"/>  | 10. <input type="text" value="1"/>   | 16. <input type="text" value="150 cm&lt;sup&gt;2&lt;/sup&gt;"/> |
| 5. <input type="text" value="1000"/> | 11. <input type="text" value="343"/> | 17. <input type="text" value="27 ft&lt;sup&gt;3&lt;/sup&gt;"/>  |
| 6. <input type="text" value="24"/>   | 12. <input type="text" value="216"/> | 18. <input type="text" value="24 cm&lt;sup&gt;2&lt;/sup&gt;"/>  |

### Step-by-Step Explanations

**1.** Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is The volume of a cube is the edge cubed:  $2^3 = 8$ . So the final answer is 8.

**2.** A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $3^3 = 27$ . So the final answer is 27.

**3.** Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $5^3 = 125$ . So the final answer is 125.

**4.** Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $6^3 = 216$ . So the final answer is 216.

**5.** Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $10^3 = 1000$ . So the final answer is 1000.

**6.** A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Surface area is 6 times one square face:  $6(2^2) = 6(4) = 24$ . So the final answer is 24.

**7.** Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $6(3^2) = 6(9) = 54$ . So the final answer is 54.

**8.** Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $6(5^2) = 6(25) = 150$ . So the final answer is 150.

**9.** Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $6(4^2) = 6(16) = 96$ . So the final answer is 96.

**10.** A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $1^3 = 1$  – a single unit cube. So the final answer is 1.

**11.** Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $7^3 = 343$ . So the final answer is 343.

**12.** Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $6(6^2) = 6(36) = 216$ . So the final answer is 216.

**13.** Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $8^3 = 512$ . So the final answer is 512.

**14.** A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is  $6(10^2) = 6(100) = 600$ . So the final answer is 600.

**15.** Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Volume =  $9^3 = 729$  cubic inches. So the final answer is 729 in<sup>3</sup>.

**16.** Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Wrapping paper covers the surface:  $6(5^2) = 150$  square cm. So the final answer is 150 cm<sup>2</sup>.

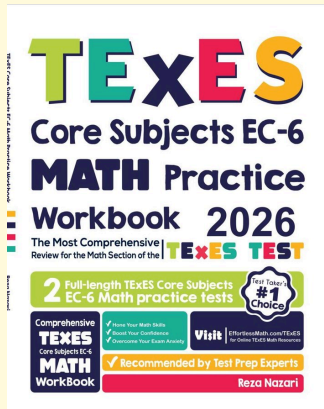
**17.** Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Volume =  $3^3 = 27$  cubic feet. So the final answer is 27 ft<sup>3</sup>.

**18.** A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Surface area =  $6(2^2) = 24$  square cm. So the final answer is 24 cm<sup>2</sup>.



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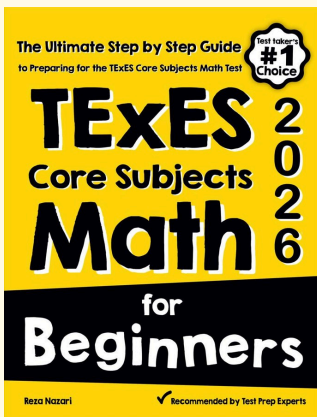
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