27 Volume

M.3.A M.4.A M.6.E M.6.G

Example

A swimming pool has the shape of a rectangular prism. It has a length of 15 meters, a width of 12 meters, and a depth of 3 meters. What is the volume of the swimming pool?

A. 225 m^3 **B.** 261 m^3
C. 522 m^3 **D.** 540 m^3

Thinking It Through

Solve To find the volume of a rectangular prism, use the formula $V = lwh$.

$V = 15 \text{ m} \times 12 \text{ m} \times 3 \text{ m}$
$V = 540 \text{ m}^3$

The volume of the swimming pool is *540 m^3, choice D.*

Example

What is the volume of a cube that has edges of 8 inches?

A. 24 $in.^3$
B. 64 $in.^3$
C. 192 $in.^3$
D. 512 $in.^3$

Thinking It Through

Solve To find the volume of a cube, use the formula $V = e^3$.

$V = 8 \text{ in.} \times 8 \text{ in.} \times 8 \text{ in.}$
$V = 512 \text{ in.}^3$

The volume of the cube is *512 $in.^3$, choice D.*

Review

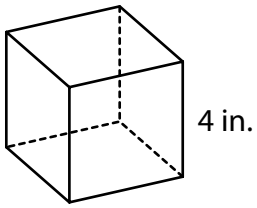
- **Volume** measures the region *inside* a **solid figure**. It is different than **surface area**, which measures the area of the figure's **faces**. In terms of a gift box, volume would be the amount of room inside for the present; surface area would be how much wrapping paper you need.
- Volume is measured in **cubic units**. A cubic unit is the volume of a cube that measures 1 unit × 1 unit × 1 unit. Cubic units include cubic inches ($in.^3$), cubic feet (ft^3), cubic meters (m^3), etc.
- To find the volume of a **rectangular prism**, multiply the length times the width times the height, which is expressed by the formula $V = lwh$.
- To find the volume of a **cube**, use the length of an **edge** (so it would be *edge* × *edge* × *edge*), which is expressed by the formula $V = e^3$.

Volume

27

Directions: Carefully read each question. Circle the letter of the correct answer.

1. What is the volume of this cube?



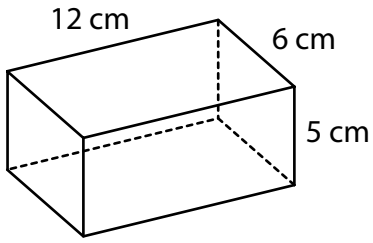
A. 12 $in.^3$

B. 16 $in.^3$

C. 24 $in.^3$

D. 64 $in.^3$

2. What is the volume of this rectangular prism?



A. 162 cm^3

B. 300 cm^3

C. 324 cm^3

D. 360 cm^3

Use the associative property of multiplication to help you compute volume.

3. A fish tank has a length of 4 feet, a width of 2 feet, and a height of 3 feet. What is the volume of the fish tank?

A. 12 ft^3

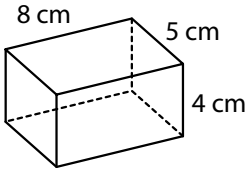
B. 18 ft^3

C. 24 ft^3

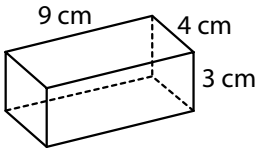
D. 36 ft^3

4. Which solid figure has the greatest volume?

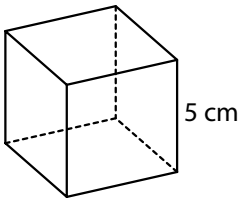
A.



B.



C.



D.