Unit 8 · Volume and Three-Dimensional Figures Cheat Sheet

Unit 8 focus: unit cubes and counting cubes to find volume

1 Big Idea

Volume tells how many unit cubes fill a solid with no gaps or overlaps. Count one layer, then multiply by the number of layers.

2 Important Vocabulary

volume-three-dimensional-figures	The amount of space inside a solid figure.	a box holds 24 cubic units
unit cube	A cube with edges 1 unit long; it has a volume of 1 cubic unit.	a 1 cm cube
cubic unit	A unit for measuring volume.	cubic centimeters, cubic inches
rectangular prism	A solid figure with 6 rectangular faces.	a cereal box

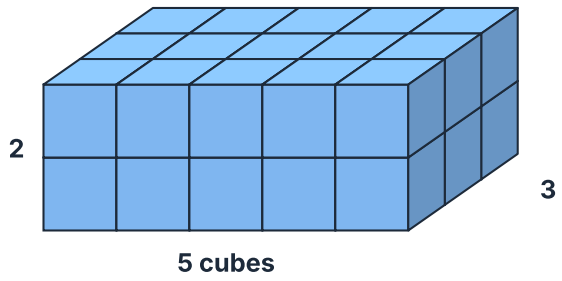
3 How It Works

Find the volume of a box 5 cubes long, 3 wide, 2 tall.

Example: Layers of cubes
One layer: 5 × 3 = 15 cubes
2 layers: 15 × 2

Answer: 30 cubic units

4 Visual Model



5 × 3 = 15 cubes in each layer; 2 layers make 30 cubes.

5 ★ Remember This · Watch Out!

★ Remember this

- Volume units are cubic: cubic centimeters, cubic inches, cubic feet.
- The order of multiplying does not matter: (5 × 3) × 2 = 5 × (3 × 2).

⚠ Watch out!

- **Counting only the cubes you see:** include the hidden cubes
- **Using square units:** volume uses CUBIC units

6 Try It!

1. A box is 4 by 4 by 3 cubes. Volume?
   Answer: 48 cubic units
2. 12 cubes in a layer, 5 layers. Volume?
   Answer: 60 cubic units

Answers are printed upside down. Turn the page to check!

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More practice: volume formulas, composite figures and word problems

1 Big Idea

Use V = l × w × h or V = B × h. Volume is additive: split a composite solid into prisms and add their volumes.

2 Important Vocabulary

base	A face of a prism; B is its area in V = B × h.	B = 4 × 3 = 12 square units
height	The distance from the base to the top.	h = 5 inches
edge	The line segment where two faces meet.	a cube has 12 edges
composite figure	A solid made of two or more prisms.	an L-shaped block

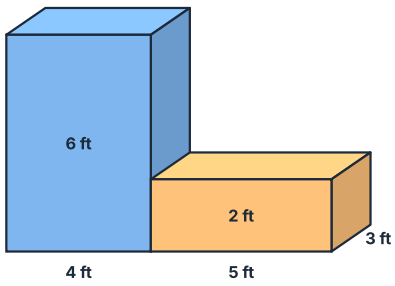
3 How It Works

Find the volume of the L-shaped solid.

Example: Two prisms: 4 × 3 × 6 and 5 × 3 × 2
Prism 1: 4 × 3 × 6 = 72
Prism 2: 5 × 3 × 2 = 30
Add: 72 + 30

Answer: 102 cubic feet

4 Visual Model



Split the solid into two prisms that do not overlap.

5 ★ Remember This · Watch Out!

★ Remember this

- Missing height? h = V ÷ (l × w).
- Doubling one edge doubles the volume.

⚠ Watch out!

- **Treating it as one big box:** add the two prisms instead
- **Adding the edges:** multiply length × width × height

6 Try It!

1. B = 20 square inches, h = 6 inches. Volume?
   Answer: 120 cubic inches
2. V = 96, l = 6, w = 4. Height?
   Answer: 4

Answers are printed upside down. Turn the page to check!