Measuring Volume by Counting Unit Cubes

Grade 5 Math • Section 9.2

Name: _____	Date: _____	Score: _____ / 12

Quick Review and Helpful Hints

Counting cubes: Count all unit cubes that fill the solid figure, including any hidden cubes behind or beneath the visible ones.

A systematic approach: count the cubes in one layer, then multiply by the number of layers.

Don't forget cubes you can't see in a 3D drawing! Count layer by layer.

Example: A rectangular prism is 4 cubes long, 3 cubes wide, and 2 cubes tall. Find the volume.

One layer: $4 \times 3 = 12$ cubes. Two layers: $12 \times 2 = 24$ cubes. Volume $= 24$ cubic units.

Answer: 24 cubic units

Practice Problems

Find the volume of each rectangular prism.

1. 5 cubes long, 3 cubes wide, 2 cubes tall. $V =$ _____
2. 4 cubes long, 4 cubes wide, 4 cubes tall. $V =$ _____
3. 6 cubes long, 2 cubes wide, 3 cubes tall. $V =$ _____
4. 7 cubes long, 1 cube wide, 5 cubes tall. $V =$ _____
5. 3 cubes long, 3 cubes wide, 3 cubes tall. $V =$ _____
6. 8 cubes long, 2 cubes wide, 4 cubes tall. $V =$ _____
7. 10 cubes long, 5 cubes wide, 1 cube tall. $V =$ _____
8. 6 cubes long, 4 cubes wide, 3 cubes tall. $V =$ _____
9. 2 cubes long, 2 cubes wide, 9 cubes tall. $V =$ _____
10. 5 cubes long, 5 cubes wide, 2 cubes tall. $V =$ _____

Word Problems

11. A storage container is 8 cubes long, 5 cubes wide, and 3 cubes tall. Each unit cube is 1 cm^3. What is the volume in cubic centimeters?

_____

12. A block tower has a base layer with 6 cubes by 4 cubes. There are 7 identical layers. What is the volume in cubic units?

_____

Answer Keys

1. $\boxed{30}$
2. $\boxed{64}$
3. $\boxed{36}$
4. $\boxed{35}$
5. $\boxed{27}$
6. $\boxed{64}$
7. $\boxed{50}$
8. $\boxed{72}$
9. $\boxed{36}$
10. $\boxed{50}$
11. $\boxed{120\ \text{cm}^3}$
12. $\boxed{168}$

Step-by-Step Explanations

1. Start with the main idea. For measuring volume by counting unit cubes, $5 \times 3 \times 2 = 30$ cubic units. Volume counts cubic units, so the unit on the answer should be cubic units.

2. Keep the work tidy. For measuring volume by counting unit cubes, $4 \times 4 \times 4 = 64$ cubic units. For rectangular prisms, multiply length, width, and height.

3. Look at what the numbers mean. For measuring volume by counting unit cubes, $6 \times 2 \times 3 = 36$ cubic units. For composite figures, find each prism's volume first and then add.

4. Use the setup first. For measuring volume by counting unit cubes, $7 \times 1 \times 5 = 35$ cubic units. Volume counts cubic units, so the unit on the answer should be cubic units.

5. Check the size of the answer. For measuring volume by counting unit cubes, $3 \times 3 \times 3 = 27$ cubic units. For rectangular prisms, multiply length, width, and height.

6. Match the operation to the words. For measuring volume by counting unit cubes, $8 \times 2 \times 4 = 64$ cubic units. For composite figures, find each prism's volume first and then add.

7. Write the important values first. For measuring volume by counting unit cubes, $10 \times 5 \times 1 = 50$ cubic units. Volume counts cubic units, so the unit on the answer should be cubic units.

8. Follow the pattern carefully. For measuring volume by counting unit cubes, $6 \times 4 \times 3 = 72$ cubic units. For rectangular prisms, multiply length, width, and height.

9. Start with the main idea. For measuring volume by counting unit cubes, $2 \times 2 \times 9 = 36$ cubic units. For composite figures, find each prism's volume first and then add.

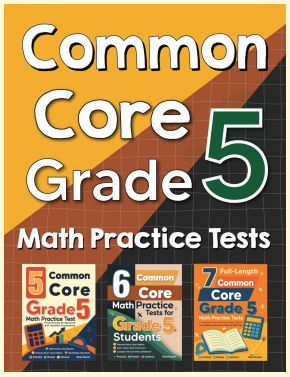
10. Keep the work tidy. For measuring volume by counting unit cubes, $5 \times 5 \times 2 = 50$ cubic units. Volume counts cubic units, so the unit on the answer should be cubic units.

11. Look at what the numbers mean. For measuring volume by counting unit cubes, $8 \times 5 \times 3 = 120$ cubic centimeters. For rectangular prisms, multiply length, width, and height.

12. Use the setup first. For measuring volume by counting unit cubes, the base has $6 \times 4 = 24$ cubes; $24 \times 7 = 168$ cubic units. For composite figures, find each prism's volume first and then add.

Want Even More Practice?

Check Out Our Other New Hampshire NH SAS Test Books!



New Hampshire NH SAS Grade 5 Math Preparation Bundle

18 full-length practice tests across three books (5 + 6 + 7)

No repeated questions—maximum practice value!

18 Tests!
3 Books
One Bundle

Important: All our test books contain **unique, completely different tests** from each other! Each book offers fresh practice questions—no repeats!

5 Practice Tests

- ✓ 5 complete practice tests with detailed explanations
- ✓ Perfect foundation for NH SAS test preparation
- ✓ Builds confidence and test-taking skills
- ✓ High-quality questions aligned with state standards

Start your practice journey!

6 Practice Tests

- ✓ 6 complete practice tests with detailed explanations
- ✓ **Unique tests**—different from the 5 tests book
- ✓ Perfect for more practice after mastering 5 tests
- ✓ Builds even more confidence and test-taking skills
- ✓ Same high-quality questions aligned with standards

Take your practice to the next level!

7 Practice Tests

- ✓ 7 complete practice tests for maximum preparation
- ✓ **Unique tests**—different from 5 and 6 tests books
- ✓ The most comprehensive practice for Grade 5
- ✓ Ideal for students aiming for top scores
- ✓ Extensive practice builds mastery and confidence

Go all the way with comprehensive practice!