

Cube Count Quest

Find volume by counting equal layers of cubes.

GRADE 5 • 5.MD.C.4

CCSS.Math.Content.5.MD.C.4 "Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units."

NAME _____

DATE _____

COUNT THE CUBES

A unit cube fills 1 cubic unit of space. Count the cubes in one equal layer, then multiply by the number of layers. Write the volume with the correct cubic unit.

WORKED EXAMPLE

A storage bin has 7 equal layers of unit cubes. Each layer has 8 unit cubes. What is the volume?

1. One layer contains 8 unit cubes.
2. There are 7 equal layers.
3. $8 \times 7 = 56$.

Answer: 56 cubic units

PRACTICE 6 problems

- 1** A prism has 3 equal layers. Each layer contains 5 unit cubes. What is the volume?

ANSWER _____

- 2** A small box has 2 equal layers of cubes. Each layer contains 6 cubes that are each 1 cubic cm. What is the volume?

ANSWER _____

- 3** A rectangular prism has 2 layers. Each layer has 3 rows of 4 cubes that are each 1 cubic in. What is the volume?

ANSWER _____

- 4** A crate has 5 equal layers. Each layer contains 6 cubes that are each 1 cubic ft. What is the volume?

ANSWER _____

- 5** A shape is built from snap cubes. It has 4 layers. Each layer has 3 rows of 2 snap cubes. What is the volume in snap cubes?

ANSWER _____

- 6** A box is 5 unit cubes long, 4 unit cubes wide, and 3 unit cubes high. What is the volume?

ANSWER _____

APPLY IT Show your work

- 1** A game designer makes a display from cubes that are each 1 cubic cm. The display has 6 layers. Each layer has 5 rows with 3 cubes in each row. What is the volume of the display?

WORK SPACE

ANSWER _____

- 2** For a school play, Maya stacks boxes that are each 1 cubic ft to make a mini stage. The stage has 4 levels. Each level has 6 rows of 5 boxes. What is the volume of the stage?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Jalen says a box with 2 layers of 5 rows of 6 unit cubes has more volume than a box with 3 layers of 4 rows of 5 unit cubes. Is Jalen correct? Explain your reasoning.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A prism has 3 equal layers. Each layer contains 5 unit cubes. What is the volume?	15 cubic units
2	A small box has 2 equal layers of cubes. Each layer contains 6 cubes that are each 1 cubic cm. What is the volume?	12 cubic cm
3	A rectangular prism has 2 layers. Each layer has 3 rows of 4 cubes that are each 1 cubic in. What is the volume?	24 cubic in
4	A crate has 5 equal layers. Each layer contains 6 cubes that are each 1 cubic ft. What is the volume?	30 cubic ft
5	A shape is built from snap cubes. It has 4 layers. Each layer has 3 rows of 2 snap cubes. What is the volume in snap cubes?	24 snap cubes
6	A box is 5 unit cubes long, 4 unit cubes wide, and 3 unit cubes high. What is the volume?	60 cubic units

PART 2 • APPLY IT

1. **90 cubic cm** Each layer has $5 \times 3 = 15$ cubes. Multiply 15×6 to get 90 cubic cm.
2. **120 cubic ft** Each level has $6 \times 5 = 30$ boxes. Multiply 30×4 to get 120 cubic ft.

CHALLENGE

No. The first box has $2 \times 5 \times 6 = 60$ cubic units. The second box has $3 \times 4 \times 5 = 60$ cubic units, so the boxes have equal volume.

Accept correct products with equivalent unit wording, such as cubic centimeters for cubic cm. For the challenge, accept any clear explanation showing that both boxes contain 60 unit cubes.