

Cube Space Quest

Count space with unit cubes.

GRADE 5 • 5.MD.C.3a

CCSS.Math.Content.5.MD.C.3a "A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume."

NAME _____

DATE _____

BUILD VOLUME WITH CUBES

A unit cube is a cube with edges that are 1 unit long. One unit cube fills 1 cubic unit of space. To find how many unit cubes fill a rectangular prism, multiply the number of cubes along its length, width, and height.

WORKED EXAMPLE

A rectangular prism is 2 unit cubes long, 3 unit cubes wide, and 4 unit cubes high. How many unit cubes fill it?

1. One layer has $2 \times 3 = 6$ unit cubes.
2. There are 4 layers, so $4 \times 6 = 24$ unit cubes.
3. 24 unit cubes make 24 cubic units of volume.

Answer: 24 cubic units

PRACTICE 6 problems

- 1** A rectangular prism is 1 unit long, 5 units wide, and 6 units high. How many unit cubes fill it?

ANSWER _____

- 2** A rectangular prism is 7 units long, 1 unit wide, and 8 units high. How many unit cubes fill it?

ANSWER _____

- 3** A cube has side lengths of 5 units. How many unit cubes fill it?

ANSWER _____

- 4** A crate is 6 units long, 6 units wide, and 6 units high. How many unit cubes fill it?

ANSWER _____

- 5** A rectangular prism has 8 unit cubes in each layer. It has 7 equal layers. How many unit cubes fill it?

ANSWER _____

- 6** A container is 9 units long, 5 units wide, and 1 unit high. How many unit cubes fill it?

ANSWER _____

APPLY IT Show your work

- 1** At a school game club, Maya packs 1-cubic-unit prize cubes into a clear rectangular case. The case is 7 units long, 8 units wide, and 5 units high. How many prize cubes can fit in the case?

WORK SPACE

ANSWER _____

- 2** A student builds a pixel-art display with 1-cubic-unit blocks. The display tray is 9 units long, 6 units wide, and 5 units high. How many blocks fill the tray?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A maker builds a rectangular block from 360 unit cubes. The block is 9 cubes high and 5 cubes wide. How many cubes long is the block? Explain how you know.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A rectangular prism is 1 unit long, 5 units wide, and 6 units high. How many unit cubes fill it?	30 cubic units
2	A rectangular prism is 7 units long, 1 unit wide, and 8 units high. How many unit cubes fill it?	56 cubic units
3	A cube has side lengths of 5 units. How many unit cubes fill it?	125 cubic units
4	A crate is 6 units long, 6 units wide, and 6 units high. How many unit cubes fill it?	216 cubic units
5	A rectangular prism has 8 unit cubes in each layer. It has 7 equal layers. How many unit cubes fill it?	56 cubic units
6	A container is 9 units long, 5 units wide, and 1 unit high. How many unit cubes fill it?	45 cubic units

PART 2 • APPLY IT

1. **280 prize cubes** Multiply 7×8 to find 56 cubes in one layer. Then multiply $56 \times 5 = 280$ cubes.
2. **270 blocks** Multiply 9×6 to find 54 blocks in one layer. Then multiply $54 \times 5 = 270$ blocks.

CHALLENGE

8 cubes long. Each 1-unit-long slice has $9 \times 5 = 45$ cubes, and 360 divided by $45 = 8$.

Accept answers stated in cubic units, unit cubes, blocks, or prize cubes when the quantity is correct. For the challenge, accept explanations using 360 divided by (9×5) equals 8.