Cube Space Sort

How many unit cubes fit inside?

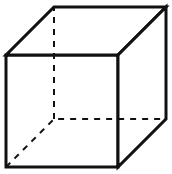
MT.5.MD.3 "Recognize volume as an attribute of solid figures and understand concepts of volume measurement by: Understanding that a cube with side length 1 unit..."

NAME _____ DATE _____

ONE CUBIC UNIT

A cube with every edge 1 unit long is a unit cube. Its volume is 1 cubic unit.

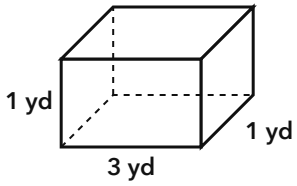
A cube with every edge 1 inch long has a volume of 1 cubic inch.



MORE THAN ONE CUBIC UNIT

If a solid fits more than one unit cube without gaps or overlaps, its volume is more than 1 cubic unit. Count the cubes to find its volume.

This solid fits three 1-yard cubes, so its volume is 3 cubic yards.



1 SORT

8 items

Circle ONE or MANY for each figure; then choose one figure from each group and explain how you knew.

1.

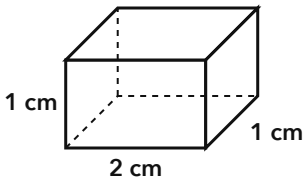


Figure 1

ONE MANY

2.

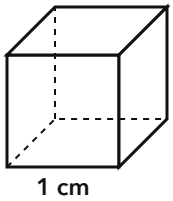


Figure 2

ONE MANY

3.

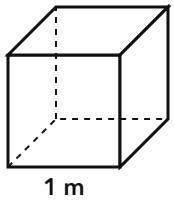


Figure 3

ONE **MANY**

4.

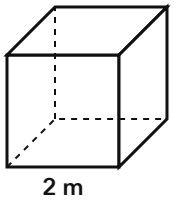


Figure 4

ONE **MANY**

5.

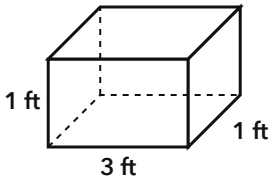


Figure 5

ONE **MANY**

6.

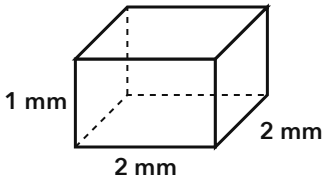


Figure 6

ONE **MANY**

7.

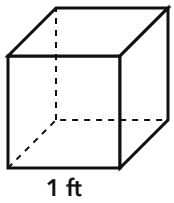


Figure 7

ONE **MANY**

8.

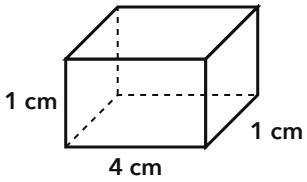


Figure 8

ONE **MANY**

2 PROVE IT

Explain your thinking

Pick two items from Part 1. For each one, tell how you knew where it belonged.

ITEM # _____ **HOW I KNEW** _____

ITEM # _____ **HOW I KNEW** _____

3 MAKE YOUR OWN

One of each

Draw and label one new solid for ONE and one new solid for MANY.

ONE

MANY

CHALLENGE

Choose a MANY figure from the sort and tell how many unit cubes fill it without gaps or overlaps. Explain how you counted.

ANSWER KEY

Cube Space Sort

GRADE 5 · MT.5.MD.3

PART 1 · SORT

#	ITEM	CATEGORY	WHY
1	Figure 1 (prism)	**MANY**	Two 1-centimeter cubes fit without gaps or overlaps, giving a volume of 2 cubic centimeters.
2	Figure 2 (cube)	**ONE**	Every edge is 1 centimeter, so the volume is 1 cubic centimeter.
3	Figure 3 (cube)	**ONE**	Every edge is 1 meter, so the volume is 1 cubic meter.
4	Figure 4 (cube)	**MANY**	Eight 1-meter cubes fit without gaps or overlaps, giving a volume of 8 cubic meters.
5	Figure 5 (prism)	**MANY**	Three 1-foot cubes fit without gaps or overlaps, giving a volume of 3 cubic feet.
6	Figure 6 (prism)	**MANY**	Four 1-millimeter cubes fit without gaps or overlaps, giving a volume of 4 cubic millimeters.
7	Figure 7 (cube)	**ONE**	Every edge is 1 foot, so the volume is 1 cubic foot.
8	Figure 8 (prism)	**MANY**	Four 1-centimeter cubes fit without gaps or overlaps, giving a volume of 4 cubic centimeters.

PART 2 · PROVE IT

Accept any explanation that names the deciding feature from the rule box for the chosen item.

PART 3 · MAKE YOUR OWN (SAMPLE ANSWERS)

- **ONE**: A cube with every edge labeled 1 yard.
- **MANY**: A rectangular prism labeled 2 in long, 1 in wide, and 1 in high.

Challenge: Figure 1 fits two 1-centimeter cubes side by side. Its volume is 2 cubic centimeters.

For PROVE IT, accept explanations that use the edge lengths to show whether exactly one or more than one unit cube fits. Sample: Figure 2 is ONE because each edge is 1 centimeter; Figure 4 is MANY because eight 1-meter cubes fit inside it.