LESSON MAKER PRO

Space Inside Solids

Measure how much room a solid figure takes up.

GRADE 5 · 5.MD.C.3

CCSS.Math.Content.5.MD.C.3 "Recognize volume as an attribute of solid figures and understand concepts of volume measurement."

NAME _____ DATE _____

VOLUME RULES

Volume tells how much space is inside a solid figure. Measure volume in cubic units, such as cubic centimeters or cubic inches. For a rectangular prism, multiply length x width x height.

WORKED EXAMPLE

Find the volume of a rectangular prism that is 13 units long, 14 units wide, and 15 units high.

1. Use V = length x width x height.
2. Multiply the length and width: 13 x 14 = 182.
3. Multiply by the height: 182 x 15 = 2,730.

Answer: 2,730 cubic units

PRACTICE 6 problems

1 A rectangular prism is 2 cm long, 3 cm wide, and 4 cm high. What is its volume?

ANSWER _____

2 A box is 8 inches long, 1 inch wide, and 9 inches high. What is its volume?

ANSWER _____

3 A rectangular prism is 10 units long, 2 units wide, and 3 units high. What is its volume?

ANSWER _____

4 A rectangular prism has a base area of 28 square units and a height of 4 units. What is its volume?

ANSWER _____

5 A rectangular prism has a volume of 72 cubic units. Its length is 9 units and its width is 4 units. What is its height?

ANSWER _____

6 A solid is made of 4 layers of unit cubes. Each layer has 3 rows with 8 cubes in each row. What is the volume of the solid?

ANSWER _____

APPLY IT Show your work

1 At a school makers club, Maya builds a rectangular display case that is 12 cm long, 4 cm wide, and 3 cm high. What is the volume of the case?

WORK SPACE

ANSWER _____

2 A pet store has a rectangular fish tank that is 9 inches long, 8 inches wide, and 2 inches high. What is the volume of the tank?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

An art club needs a storage box with a volume of at least 180 cubic inches. Box A is 9 inches by 4 inches by 5 inches. Box B is 8 inches by 6 inches by 4 inches. Box C is 10 inches by 3 inches by 5 inches. Which boxes will work? Explain your reasoning.

_____

_____

ANSWER KEY

Space Inside Solids

GRADE 5 · 5.MD.C.3

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A rectangular prism is 2 cm long, 3 cm wide, and 4 cm high. What is its volume?	**24 cubic centimeters**
2	A box is 8 inches long, 1 inch wide, and 9 inches high. What is its volume?	**72 cubic inches**
3	A rectangular prism is 10 units long, 2 units wide, and 3 units high. What is its volume?	**60 cubic units**
4	A rectangular prism has a base area of 28 square units and a height of 4 units. What is its volume?	**112 cubic units**
5	A rectangular prism has a volume of 72 cubic units. Its length is 9 units and its width is 4 units. What is its height?	**2 units**
6	A solid is made of 4 layers of unit cubes. Each layer has 3 rows with 8 cubes in each row. What is the volume of the solid?	**96 cubic units**

PART 2 · APPLY IT

1. **144 cubic centimeters** Multiply the three dimensions: 12 x 4 x 3 = 144. The case has a volume of 144 cubic centimeters.
2. **144 cubic inches** Multiply the three dimensions: 9 x 8 x 2 = 144. The tank has a volume of 144 cubic inches.

CHALLENGE

Boxes A and B will work. Box A has a volume of 9 x 4 x 5 = 180 cubic inches, and Box B has a volume of 8 x 6 x 4 = 192 cubic inches. Box C has a volume of 10 x 3 x 5 = 150 cubic inches, so it will not work.

Accept equivalent multiplication order and correct cubic-unit labels. For the challenge, accept any clear explanation showing that Boxes A and B have volumes of at least 180 cubic inches.