

Fifth Grade Cluster 2 Assessment 2 Teacher Guide



This assessment assesses students' ability to:

- Measure the volume of a rectangular prism by counting the cubic units, cubic cm, cubic ft and cubic in without gaps or overlaps.
- Use multiplication to find volume by first writing an equation to represent the volume of a given figure.
- Put two figures together and combine their volumes using addition to find the total volume.

NCSCOS 2017 Standards:

This assessment addresses each of the following NCSCOS 2017 Standards:

Standard	Questions
NC.5.MD.4	5, 10, 11, 13
NC.5.MD.5	1, 2, 3, 4, 6, 7, 8, 9, 12, 14

5th Grade Cluster 2 Assessment 2– Scoring Guide

Question	Standard	Answer
1	NC.5.MD.5	C
2	NC.5.MD.5	A
3	NC.5.MD.5	B
4	NC.5.MD.5	C
5	NC.5.MD.4	D
6	NC.5.MD.5	B
7	NC.5.MD.5	D
8	NC.5.MD.5	A
9	NC.5.MD.5	D
10	NC.5.MD.4	D
11	NC.5.MD.4	10
12	NC.5.MD.5	240
13	NC.5.MD.4	Rubric
14	NC.5.MD.5	Rubric

Rubric Scoring Guide:

Question 13 (4 points):

Student receives 1 point for including each of the following bullets in their response:

- Volume is an attribute of a 3-D shape (or *rectangular prism*) that measures how much space is inside (or *how many cubes it takes to fill it*)
- Volume is measured in cubic units (*cubes*).
- Volume is measured by filling a rectangular prism with cubes (*counting cubes*).
- Volume of a rectangular prism can be found by multiplying length x width x height (*base x height* OR *area x height*)

Question 14 (3 points):

Student receives 1 point for each of the following bullets:

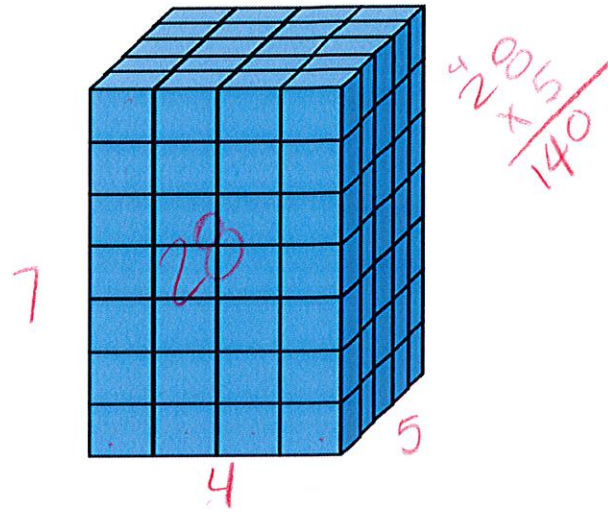
- Student states that Logan's cereal box has a greater volume.
- Student states that Logan's cereal box is 14 cubic inches greater.
- Student explains that Julien's cereal box has a volume of 126 cubic inches, and Logan's cereal box has a volume of 140 cubic centimeters. It would take 14 inches³ more to make Julien's the same as Logan's, since $126 \text{ in}^3 + \underline{14 \text{ in}^3} = 140 \text{ in}^3$ (Note that students might also say $140 \text{ in}^3 - 126 \text{ in}^3$ is 14 in³, so Logan's is 14 in³ more than Julien's.)

Student Name: _____ Date: _____

5th Grade Cluster 2 Assessment 2

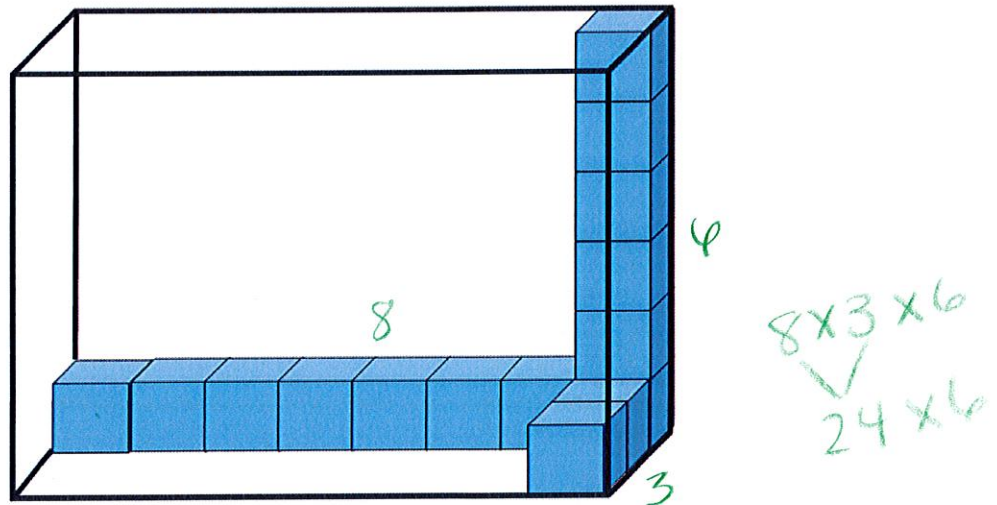
1. What is the volume of this figure?

- A 16 cubic units
- B 83 cubic units
- C 140 cubic units**
- D 150 cubic units



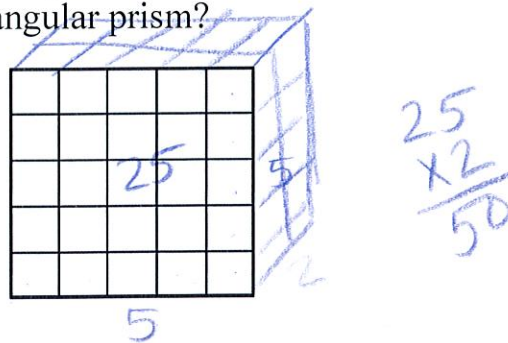
2. Which expression could be used to find the volume of this rectangular prism?

- A 24×6**
- B 11×6
- C $8 + 3 + 6$
- D $8 \times 3 + 6$



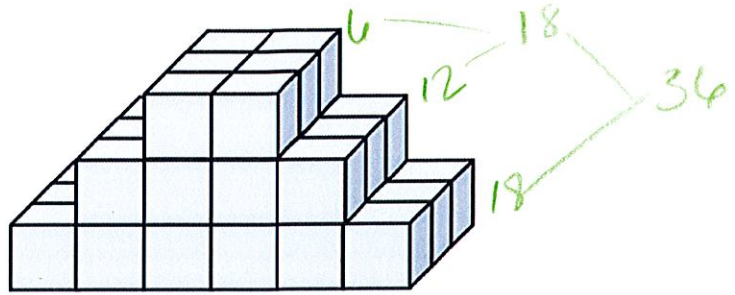
3. Jennifer stacked 2 cubes on each square on this mat to form a rectangular prism. What is the volume of Jennifer's rectangular prism?

- A 125
- B 50**
- C 25
- D 20



4. Cassandra built a tower with cubes. What is the volume of Cassandra's tower?

- A 24 cubic units
- B 30 cubic units
- C 36 cubic units
- D 39 cubic units



5. A box has a volume of 4 cubic inches. Which of the following is true?

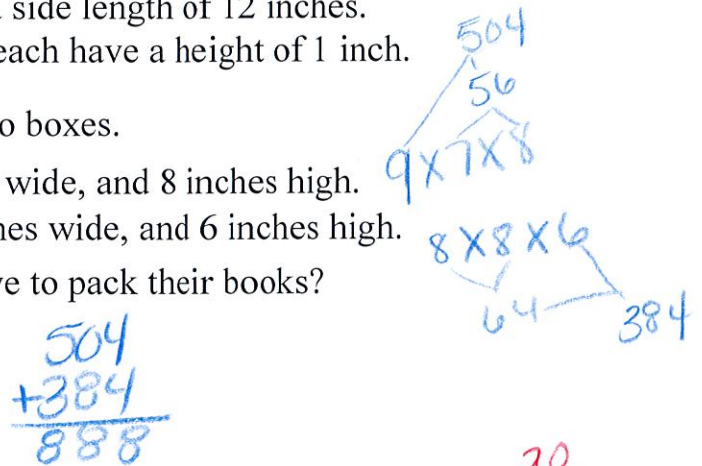
- ~~A~~ The box can be filled with 1 cube with a width of 4 inches.
- ~~B~~ The box can be filled with 4 cubes that each have a length of 4 inches.
- ~~C~~ The box can be filled with 1 cube with a side length of 12 inches.
- D The box can be filled with 4 cubes that each have a height of 1 inch.

6. Adam and Kaylee are packing books into two boxes.

- The first box is 9 inches long, 7 inches wide, and 8 inches high.
- The second box is 8 inches long, 8 inches wide, and 6 inches high.

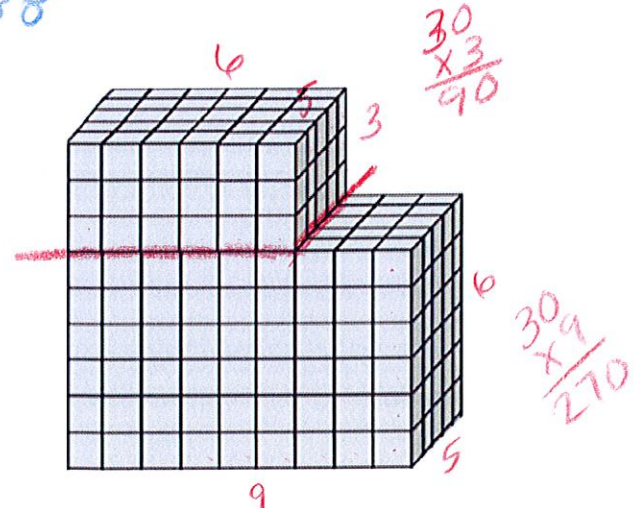
How much space do Adam and Kaylee have to pack their books?

- A 193,536 cubic inches
- B 888 cubic inches
- C 504 cubic inches
- D 384 cubic inches



7. Abram made the building below using unit cubes. What is the total volume of Abram's building?

- A 810
- B 405
- C 396
- D 360



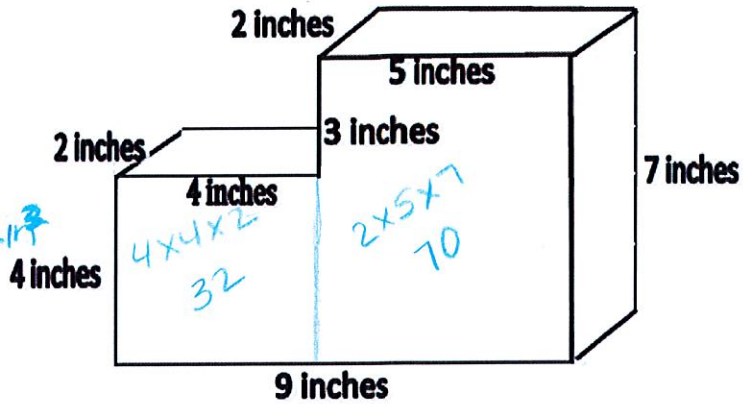
8. The volume of a rectangular prism is 48 cubic centimeters. Which of the following could be the dimensions of the rectangular prism?

- A Length = 4 cm, Width = 3 cm, Height = 4 cm 48
- B Length = 8 cm, Width = 6 cm, Height = 2 cm 96
- C Length = 12 cm, Width = 3 cm, Height = 12 cm 432
- D Length = 20 cm, Width = 2 cm, Height = 8 cm 320

9. What is the volume of this figure?

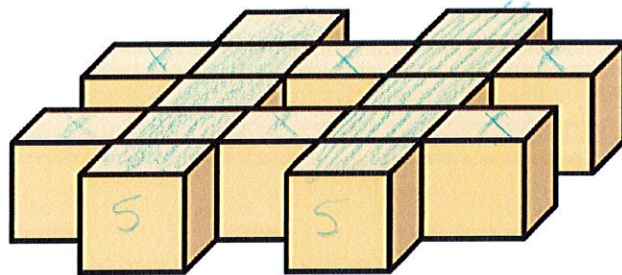
- A 142 cubic inches
- B 137 cubic inches
- C 118 cubic inches
- D 102 cubic inches

$32 + 70 = 102$



10. Amari built a design of the number symbol with blocks. What is the volume of Amari's design?

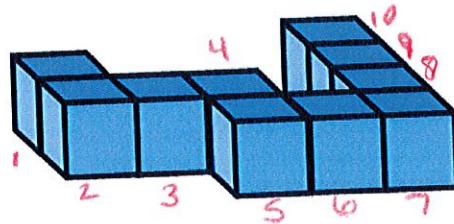
- A 31 cubic units
- B 20 cubic units
- C 18 cubic units
- D 16 cubic units



11. What is the volume of this figure?

Answer:

10



12. Juanita's pencil box is a rectangular prism. The box is 10 inches long, 6 inches wide, and 4 inches deep. What is the volume of Juanita's pencil box?

Answer:

240 in³

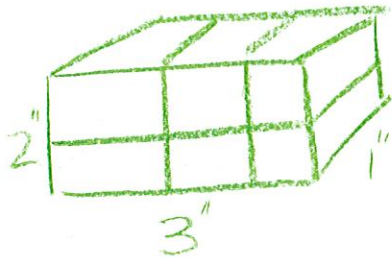


$10 \times 6 \times 4$
 10×24
 240

Open Response:

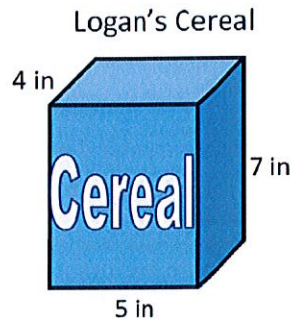
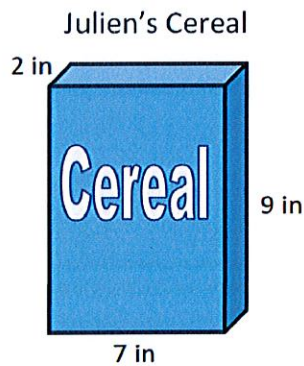
13. What is volume? Describe two ways the volume of a rectangular prism can be measured. Be sure to include a description of the unit used to measure volume of a rectangular prism.

How much space in a 3D figure



*Counting blocks
or multiplying
(in cubic units)*

14. Julien and Logan both ate cereal for breakfast. They both measured the volume of their cereal box. The diagram below shows both boxes. Which cereal box had a greater volume? How much greater is the volume? Explain how you know.



*Logan has
14 in³
more*

$$\begin{array}{l} 2 \times 9 \times 7 \\ \swarrow \searrow \\ 18 \times 7 \\ 126 \end{array}$$

$$\begin{array}{l} 4 \times 5 \times 7 \\ \swarrow \searrow \\ 20 \times 7 \\ 140 \end{array}$$

$$\begin{array}{r} 140 \\ - 126 \\ \hline 14 \end{array}$$