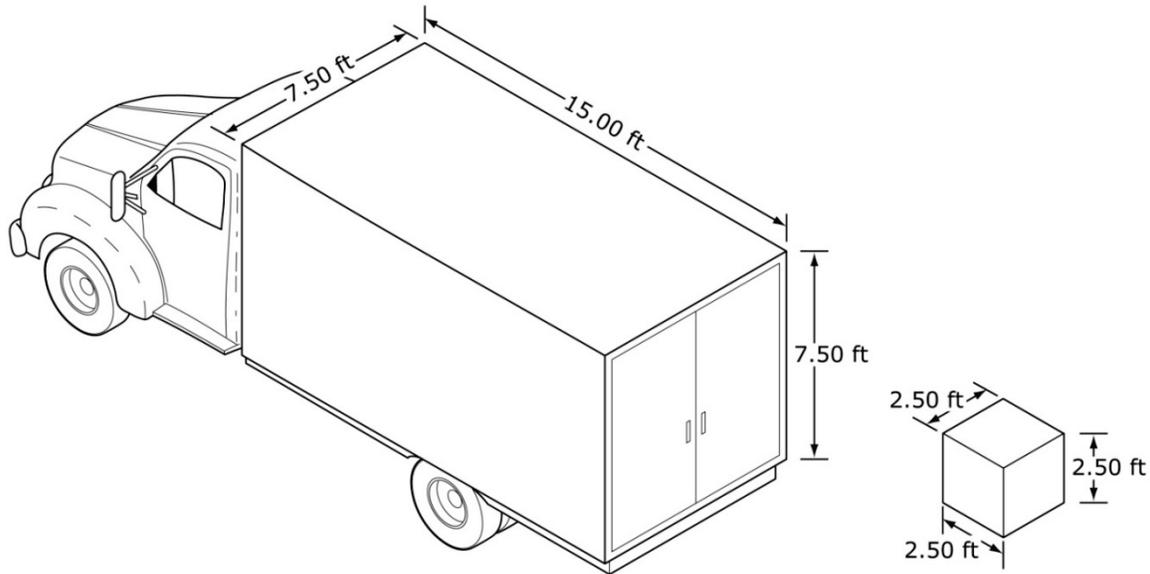


MAT.06.ER.3.0000G.F.175 Claim 3

Sample Item ID:	MAT.06.ER.3.0000G.F.175
Grade:	06
Primary Claim:	Claim 3: Communicating Reasoning Students can clearly and precisely construct viable arguments to support their own reasoning and to critique the reasoning of others.
Secondary Claim(s):	Claim 1: Concepts and Procedures Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.
Primary Content Domain:	Geometry
Secondary Content Domain(s):	
Assessment Target(s):	3 F: Base arguments on concrete referents such as objects, drawings, diagrams, and actions. 1 H: Solve real-world and mathematical problems involving area, surface area, and volume. 1 C: Compute fluently with multi-digit numbers and find common factors and multiples.
Standard(s):	6.G.2, 6.NS.3
Mathematical Practice(s):	1, 2, 4
DOK:	2
Item Type:	ER
Score Points:	3
Difficulty:	M
Key:	See Sample Top-Score Response.
Stimulus/Source:	
Target-Specific Attributes (e.g., accessibility issues):	
Notes:	Part of PT set

Cube-shaped boxes will be loaded into the cargo hold of a truck. The cargo hold of the truck is in the shape of a rectangular prism. The edges of each box measure 2.50 feet and the dimensions of the cargo hold are 7.50 feet by 15.00 feet by 7.50 feet, as shown below.



What is the volume, in cubic feet, of each box?

Determine the number of boxes that will completely fill the cargo hold of the truck. Use words and/or numbers to show how you determined your answer.

Sample Top-Score Response:

The volume of each box is 15.625 cubic feet.

54 boxes completely fill the cargo hold of the truck. The length of the cargo hold is 15 feet, so 15 divided by 2.50 equals 6. The width and height of the cargo hold are each 7.5 feet, so 7.5 divided by 2.5 equals 3. So the 6 boxes times 3 boxes times 3 boxes equals 54 total boxes that fit in the cargo hold.

Scoring Rubric:

Responses to this item will receive 0-3 points, based on the following:

3 points: The student shows thorough understanding of how to determine the volume of a cube and the volume of a rectangular prism built from unit cubes, and shows thorough understanding of how to support reasoning. The student correctly computes the volume of the box and the number of boxes needed to fill the cargo hold, and correctly explains how the number of cubes needed to fill the cargo hold was determined.

2 points: The student shows good understanding of how to determine the volume of a cube, a rectangular prism built from unit cubes, with supportive reasoning. The student correctly determines the number of boxes needed to fill the cargo hold based on the dimensions given for the box and offers a valid explanation of the process used to determine the number of cubes needed to fill the cargo hold, but may have incorrectly determined the volume of the cube. **OR** The student correctly determines the volume of a cube, however makes an error in determining the number of boxes needed to fill the cargo hold, but offers a valid explanation of the process used to determine the number of cubes needed to fill the cargo hold. **OR** The student determines the correct volume of a cube, and determines the number needed to fill the cargo hold, but offers incomplete or no supporting work.

1 point: The student shows partial understanding of how to determine the volume of a cube, a rectangular prism built from unit cubes, with supportive reasoning. The student correctly determines the volume of the cube, but is unable to determine a process or correct answer for the number of cubes needed to fill the cargo hold. **OR** The student incorrectly determines the volume of a cube, but uses that incorrect answer and correctly applies it to determining the number of cubes needed to fill the cargo hold (without supporting work).

0 points: The student shows little or no understanding of how to determine the volume of a cube, shows little or no understanding of how to determine the volume of a rectangular prism built from unit cubes, and shows little or no understanding of how to support reasoning. The student incorrectly determines the volume of the cube, incorrectly determines the number of boxes needed to fill the cargo hold based on the dimensions given for the box, and does not offer a valid explanation of the process used to determine the number of cubes needed to fill the cargo hold.