

"I Can" Help My Student

- I can use a unit cube to measure volume. (5.MD.3a)
 - I can identify the volume of a solid figure in cubic units. (5.MD.3b)
 - I can measure volume by counting unit cubes. (5.MD.4)
 - I can find the volume of a right rectangular prism using unit cubes. (5.MD.5a)
 - I can show volume of a right rectangular prism by multiplying the edge lengths. (5.MD.5a)
 - I can use $l \times w \times h$ and $b \times h$ to find volume for right rectangular prisms in real-world problems. (5.MD.5b)
 - I can use these conversions to solve multi-step, real-world problems. (5.MD.1)
- I can make a line plot to display a set of measurements in fractions of a unit. (5.MD.2)

Words to Know

- area of the base (B):** the amount of space inside the boundary of the base, a flat (2-dimensional) object.
- base:** a base of a solid figure is usually thought of as a face upon which it can "sit"; most solid figures have more than one base.
- decompose:** to separate into components or basic elements.
- height:** the vertical distance from top to bottom; the measurement from base to top
- length:** how long something is; the distance from one point to another; measured in units such as inches, feet, centimeters, etc.
- non-overlapping parts:** not to extend over and cover a part of.
- repeated addition:** adding the same number multiple times in order to find the answer to a multiplication problem, for example, finding the answer to 3×4 by saying $4 + 4 + 4 = 12$.
- right rectangular prism:** a prism with six rectangular faces where the lateral edge is perpendicular to the plane of the base.
- solid figure:** A geometric figure with length, width, and height.
- 2D figure:** having length and width. Having area, but not volume; also called a plane figure.
- 3D figure:** a geometric figure that has length, width, and height; also called a solid figure.
- unit cube:** a precisely fixed quantity used to measure volume.
- volume:** the number of cubic units it takes to fill a figure.
- measurement system:** a diagram showing frequency of data on a number line.
- convert:** a fraction that has 1 as its numerator.

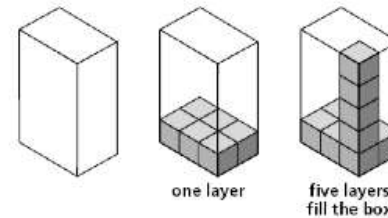
Important Understandings and Concepts

What should my student already know before I begin...

- Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).
- Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.
- Make a line plot to display a data set of measurements in fractions of a unit ($1/2$, $1/4$, $1/8$).

Learning at a Glance

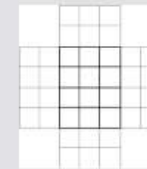
Students' estimate how many cubic yards would be needed to fill the classroom or how many cubic centimeters would be needed to fill a pencil box.



(3×2) represented by first layer
 $(3 \times 2) \times 5$ represented by number of
 3×2 layers
 $(3 \times 2) + (3 \times 2) + (3 \times 2) + (3 \times 2) + (3 \times 2) = 6 + 6 + 6 + 6 + 6 = 30$
 6 representing the size/area of one layer

Students also recognize that volume is additive and they find the total volume of solid figures composed of two right rectangular prisms. For MD.5c, students might design a science station for the ocean floor that is composed of several rooms that are right rectangular prisms and that meet a set criterion specifying the total volume of the station. They draw their station and justify how their design meets the criterion.

Net for five faces of a right rectangular prism



Students are given a net and asked to predict the number of cubes required to fill the container formed by the net. In such tasks, students may initially count single cubes or repeatedly add the number of cubes in a row to determine the number in each layer, and repeatedly add the number in each layer to find the total number of unit cubes. In folding the net to make the shape, students can see how the side rectangles fit together and determine the number of layers.

How Can You Help Your Student?

Interactive Learning Lessons

Your student can watch the videos alone or with you. Have your student take notes while watching. Allow them to watch as many times as needed.

LearnZillion: [Multiply whole number and decimals using exponents](#)

LearnZillion: [Multiplying Decimals to Hundredths](#)

LearnZillion: [Divide whole numbers by powers of ten](#)

LearnZillion: [Divide whole numbers by powers of ten](#)

LearnZillion: [Whole number exponents to denote powers of ten](#)

LearnZillion: [Compare numbers written in exponential notation](#)

Interactive Learning Games

[Multiplying Decimals Choice Board](#)

[Decimal Jeopardy Game with all decimal operations. \(Skill, Knowledge\)](#)

[Decimal Race to Zero](#)

[Decimal Drop](#)

Playing games is a wonderful way to practice skills at home in a fun environment. *Stack-n-Pack* books contain several math games covering math concepts from Kindergarten through High School. *Stack-n-Pack* card games may be checked out from your school (contact your school's Parent Liaison) or purchased online: [Stack-n-Pack Mathematics Card Games for K-HS](#)

Game: **Equivalent Fractions**



Sample Problems and Other Resources

Sample #1

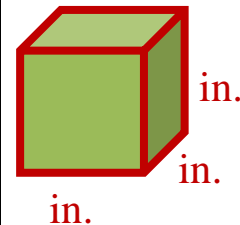
When given 24 cubes, make as many rectangular prisms as possible with a volume of 24 cubic units. Build the prisms and record possible dimensions.

Length	Width	Height
1	2	12
2	2	6
4	2	3
8	3	1

Possible Solution: Answers may vary. See table above and include 1-1-24, 2-3-4, etc. Use different combinations of the numbers above, e.g. 1-2-12, 1-12-2, 12-2-1, 12-1-2, 2-1-12, 2-12-1, etc.

Sample #2

Name this figure in two different ways.



Give one example of a situation where you would need to use square units, and one example of a situation where you would need to use cubic units.

Possible Solution: Answers may vary. Square units would be used if you are finding the length and width (area) of one of the faces (2D, plane, flat). Cubic units would be used if you are finding the length, width, and height (volume) of the entire figure above (3D, solid).