Module 1: Composing and Decomposing

TOPIC 4: DECIMALS AND VOLUME

This topic builds on students' prior knowledge of volume, area, and decimal operations. Students are introduced to the language of prisms and pyramids so that distinctions can be made as they solve volume and surface area problems. Through problem-solving activities with volume, students review addition and subtraction of decimal numbers and continue operating with decimals, with the eventual goal of fluency. Students decompose three-dimensional solids into two-dimensional nets and compose solids from nets. Students review whole-number and decimal multiplication and division as they solve area and volume problems.

Where have we been?

Students began learning about decimals in grade 4 and 5. They have experience using concrete models and place-value strategies to operate with decimals to the hundredths place. In grade 5, students learned how to calculate the volume of a right rectangular prism by filling it with cubes and eventually by using the formulas $V = lwh$ and $V = Bh$.

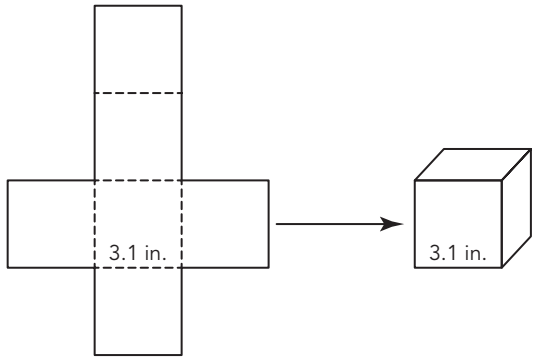
Where are we going?

Students will use decimal operations to solve real-world and mathematical problems throughout the remaining modules of this course. Fractions and decimals are encountered more frequently than whole numbers in daily life, so students should be comfortable and confident solving problems that require operating with such numbers.

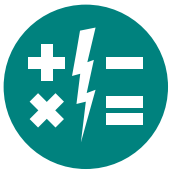
Using Nets to Construct Models of Solid Figures

A net is a two-dimensional model that can be folded into a three-dimensional solid.

The net shown is the net of a cube, which is a rectangular prism that has 6 square faces that are the same size. The net helps to show the entire surface area of the cube.



Myth: Some students are "right-brain" learners while other students are "left-brain" learners.



As you probably know, the brain is divided into two hemispheres: the left and the right. Some categorize people by their preferred or dominant mode of thinking. "Right-brain" thinkers are considered to be more intuitive, creative, and imaginative. "Left-brain" thinkers are more logical, verbal, and mathematical.

The brain can also be broken down into *lobes*. The *occipital lobe* can be found in back of the brain, and it is responsible for processing visual information. The *temporal lobes*, which sit above your ears, process language and sensory information. A band across the top of your head is the *parietal lobe*, and it controls movement. Finally, the *frontal lobe* is where planning and learning occurs. Another way to think about the brain is from the back to the front, where information goes from highly concrete to abstract.

Why don't we claim that some people are "back of the brain" thinkers who are highly concrete; whereas, others are "frontal thinkers" who are more abstract? The reason is that the brain is a highly interconnected organ. Each lobe hands off information to be processed by other lobes, and they are constantly talking to each other. All of us are *whole-brain thinkers!*

#mathmythbusted

Talking Points

You can further support your student's learning by asking questions about the work they do in class or at home. Your student is becoming fluent with decimal operations and gaining experience with two- and three-dimensional measures such as square and cubic units.

Questions to Ask

- How does this problem look like something you did in class?
- Can you show me the strategy you used to solve this problem? Do you know another way to solve it?
- Does your answer make sense? Why?
- Is there anything you don't understand? How can you use today's lesson to help?

Key Terms

polygon
A polygon is a closed figure that is formed by joining three or more line segments at their endpoints.

polyhedron
A polyhedron is a three-dimensional figure that has polygons as faces.

volume
Volume is the amount of space occupied by an object.

surface area
The surface area of a polyhedron is the total area of all its two-dimensional faces.