Module 1: Composing and Decomposing

TOPIC 4: DECIMALS

In this topic, students review addition and subtraction of decimal numbers and continue operating with decimals, with the eventual goal of fluency. Students also review whole-number and decimal multiplication and learn how to long divide with whole numbers and decimals.

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 these numbers.

Using a Standard Algorithm to Divide Decimals

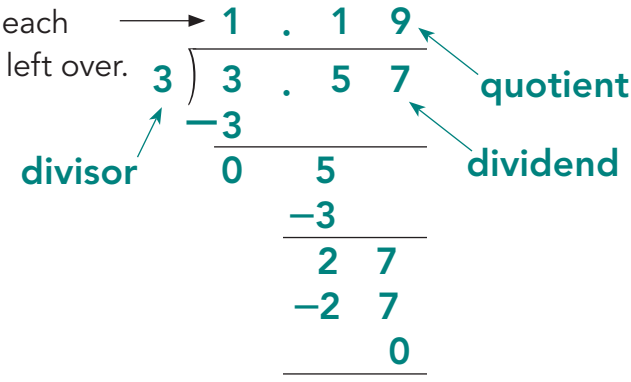
The long division algorithm uses organized estimation and place value to determine a quotient, or the number of times the divisor is contained in the dividend.

Let's use the standard algorithm to solve 3.57 ÷ 3. The dividend is 3.57 and the divisor is 3.

5 tenths divided into 3 equal groups is 1 tenth in each group with 2 tenths left over.

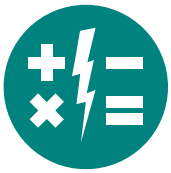
2 tenths and 7 hundredths is 27 hundredths. 27 hundredths divided into 3 equal groups is 9 hundredths in each group with 0 hundredths left over.

3 ones divided into 3 equal groups is 1 one in each group with 0 ones left over.



The quotient is 1.19; therefore 3.57 ÷ 3 = 1.19.

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 right and the left. 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 said to be 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. The 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

Discuss With Your Student

Your student is learning to understand and be fluent with decimals and decimal operations. You can further support your student's learning by asking questions about the work they do in class or at home.

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? How do you know?
- Is there anything you don't understand? How can you use today's lesson to help?

Key Terms

repeating decimal

A repeating decimal, like 0.333… or 2.848484…, has digits (other than 0) after the decimal point that repeat in a pattern forever. A bar can be written over the repeating digits: $0.\overline{84}$.

terminating decimal

A terminating decimal, like 0.5 or 1.632589, has a limited number of digits after the decimal point. Or, the digits are all zeros: 0.500000….