Module 1: Composing and Decomposing

TOPIC 1: FACTORS AND MULTIPLES

In this topic, students explore factors and multiples. They use area models to determine the factors of a given number and the common factors of two or more numbers. Students use factor trees to determine the prime factors of a number. Then, they use tables to determine common factors, the greatest common factor (GCF), and the least common multiple (LCM) of two or more numbers. Students solve real-world problems using factors and multiples. Throughout this topic, students use the Distributive Property and the Commutative Property to compose and decompose numbers and expressions.

Where have we been?

Students have used tiling to relate area to multiplication and addition, and they have used informal statements of the properties of operations. Students have also used area models to represent multiplication.

Where are we going?

This topic focuses on composing and decomposing numbers and expressions. Students will apply the same properties and terminology to algebraic expressions in a later topic. They will use properties of operations to write equivalent algebraic expressions. Students will continue to apply this knowledge throughout middle and high school as they generate equivalent algebraic expressions and solve multi-step equations and inequalities.

Using a Table to Determine the GCF and LCM

You can organize the prime factors of two or more numbers into a table. Only list shared factors in the same column.

Number	Prime Factors				
56	2	2	2		7
42	2			3	7

In the table shown, the common factors of 56 and 42 are 2, 7, and 14. The greatest common factor (GCF) is the product of the shared factors. $2 \times 7 = 14$, so the GCF is 14. The least common multiple (LCM) is the product of the shared and non-shared prime factors. $2 \times 2 \times 2 \times 3 \times 7 = 168$, so the LCM is 168.

Myth: "I don't have the math gene."

Let's be clear about something. There isn't *a* gene that controls the development of mathematical thinking. Instead, there are probably *hundreds* of genes that contribute to it.
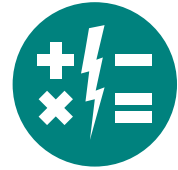
A recent study suggests that mathematical thinking arises from the ability to learn a language. Given the right input from the environment, children learn to speak without formal instruction. They can learn number sense and pattern recognition the same way.

To further nurture your child's mathematical growth, attend to the learning environment. You can think of it as providing a nutritious mathematical diet that includes: discussing math in the real world, offering encouragement, being available to answer questions, allowing your student to struggle with difficult concepts, and providing space for plenty of practice.

#mathmythbusted

Talking Points

Discuss With Your Student

Your student is learning to compose and decompose numbers using different techniques. 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

Distributive Property
The Distributive Property states that for any numbers a, b, and c, $a(b + c) = ab + ac$.

Commutative Property
The Commutative Property states that for any numbers a and b, the product $a \times b$ is equal to the product $b \times a$.

greatest common factor (GCF)
The GCF is the largest factor two or more numbers have in common.

least common multiple (LCM)
The LCM is the smallest multiple (other than zero) that two or more numbers have in common.