

Core Focus

- Using a mental strategy (make-ten) for addition facts
- Thinking about one-half and one-fourth in a variety of ways



Addition

- Mental strategies like **count-on** and **double** have provided students with more adaptive, efficient, and flexible approaches to solving addition and subtraction problems, rather than simply memorizing facts. In this module, students learn the **make-ten** strategy.
- **Make-ten** is an essential skill for mastering mental strategies in the base-10 number system. It is relatively easy for students because these facts have been practiced using finger pictures since Kindergarten.
- The **make-ten** strategy uses the **associative property of addition** to make mental calculation easier by “finding a ten” in an addition sentence where one addend is close to 10. For example, see $9 + 6$, think $9 + 1 + 5 = 15$, or see $8 + 5$, think $8 + 2 + 3 = 13$.

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Step In Introducing the Make-Ten Strategy for Addition

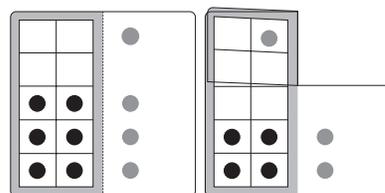
Look at this picture of counters.
How can you figure out the total?

I moved one counter to make a group of 10. This made it easier to add.

$9 + 3$
is the same as $10 + 2$.
 $10 + 2$ is 12.

In this lesson, students work with an addition sentence with one addend close to ten. Because ten is “nearby”, they use it to help find the total.

- A ten-frame is the perfect model to show how the **make-ten** strategy works. When there are two quantities less than 10, the frame is filled with the first quantity (8) and then part of the second (2) to make 10. In the example below, the 10 plus the “leftover” (3) creates an easier equation to solve mentally: $10 + 3 = 13$.



$$8 + 5 = \underline{\quad} \quad 10 + 3 = \underline{\quad}$$

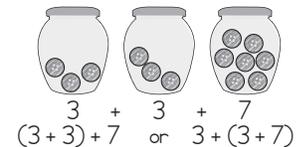
- The **make-ten** strategy is the last of the main strategies students use to build their fluency with facts to 10 in Grade 1. Students choose their preferred method (**count-on**, **use doubles**, or **make-ten**) to learn facts and to solve problems.

Ideas for Home

- Ensure your child already knows pairs of numbers that total to 10 (e.g. $1 + 9$, $2 + 8$, $3 + 7$, $4 + 6$, etc.), plus their associated turnaround facts ($9 + 1$, $8 + 2$ etc.)
- Make 10 in everyday situations by asking, “How many more to make 10?” Talk with your child about how they think about numbers in everyday addition situations.
- Encourage the use of 10 to figure out totals greater than 10. E.g. “There are 4 eggs. How many more are needed to fill a carton that holds 12 eggs?” These could be $4 + 6 = 10$, $10 + 2 = 12$, or $4 + 6 + 2 = 12$.

Glossary

- ▶ The **associative property of addition** allows multiple addends to be added in any order.



- ▶ The **commutative property of addition** allows the order of the addends to be changed without changing the sum: $5 + 2 = 7$ and $2 + 5 = 7$. These are called **turnaround facts**.

Fractions: One-Half and One-Fourth (Length Model)

- Students explore **one-half** informally. Dividing a whole into two groups/pieces of equal size introduces the concept of **half** and the language of **one-half** as the name for each group/piece.
- There are two important ideas about **one-half**: one-half involves dividing something into two groups, and the two groups must be the same size.
- The language of one-half is natural for a young child and is used only informally in this module. This language is foundational and will help children read half-past-the-hour times in the next module.

7.10

Step In → **Identifying Examples and Non-Examples of One-Half (Length Model)**

This strip of paper was folded and then opened out again.



How was the strip of paper folded?
How could you prove that the strip of paper has been folded to show one-half?

Which of these strips was not folded in half? How do you know?



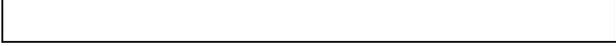
In this lesson, students draw a line to show one-half of a length of paper. They are also asked to identify which lengths show two equal parts.

- The idea of splitting into equal groups is closely linked with fractions. Students will discover that even numbers can be shared between two and the number in one share is half of the total.
- Two things are important to understand about one-fourth (or one-quarter): one-fourth involves dividing something into four lengths, groups or pieces, and the four lengths, groups or pieces must be the same size.

7.12

Step In → **Consolidating One-Half and One-Fourth (Length Model)**

Color this strip of paper to show one-half.



How could you prove that the strip shows one-half?

Color this strip of paper to show one-fourth.



How could you prove that the strip shows one-fourth?



I could cut out and then fold the strip to show that one-fourth is half the length of one-half.

In this lesson, students write the fraction one-half or one-fourth that is shaded for each strip of paper.

Ideas for Home

- Highlight any equal shares when splitting portions of food into halves. Say “whole” or “total” and “half” when divvying out anything equally into two groups/parts. If one “half” of the candy bar is bigger and “not fair,” this is an opportunity to talk about how halves are equal and “fair.”
- Explore “one-fourth” by cutting out paper shapes and folding them in half, and folding them in half again. Then unfold the paper to see the creases create fourths. Remind your child that just dividing the shape into four parts does not necessarily make fourths. To make fourths, the four parts of the shape must also be the same size (in terms of area).

Glossary

- ▶ The **length (linear) model** is used to show that any unit of length can be made into equal sized parts of the total length. Examples of this model include string, ribbon, tape, strips of paper, and fraction walls.

