

### Core Focus

- Subtraction: the think-addition strategy and unknown addends (count-on facts and doubles facts)
- Fractions: one-half and one-fourth

### Think-addition strategy

- The most powerful subtraction strategy is **think addition**. When the total and one part are known in a typical subtraction situation, changing the problem to addition may make it easier to solve.

6.4 Subtraction: Introducing the think-addition strategy (count-on facts)

**Step In** There are 10 carrots growing in the ground. Some are taken during the night.

How many carrots have been taken? How do you know?  
What is the total? What are the parts?

Complete this addition fact to figure out the carrots that have been taken.

$$8 + \square = 10$$

### Unknown addend

- Students work with **unknown addend** stories, which are different to **take-away** subtraction. For take-away, we start with the total and one part is removed: “I have \$11. I spend \$8. How much money do I have left?”
- Unknown addend stories suggest beginning with the part we know and figuring out what must be added to reach the total. For example, “I have \$8. I want to buy a game that costs \$11. How much more money do I need?”
- Students practice using think-addition strategies to subtract (for example, see  $12 - 9$ , *think*  $9 + 3 = 12$ , so  $12 - 9 = 3$ ). These **think-addition models** illustrate the related facts in a fact family.

a.  $12 - 6 = \square$

$6 + \square = 12$

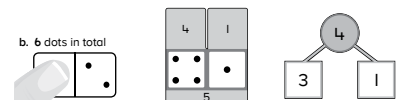
Students use think-addition strategy using doubles facts.

### Ideas for Home

- Talk about everyday subtraction situations using the language of addition.
- In the store, say, “The book costs \$6, you have \$4, how much more do you need to save to buy the book?”
- While traveling, say, “We are traveling ten miles to grandpa’s house, we have traveled two, how many more miles to go?”
- In the kitchen, say, “I am making a pie that needs five apples. I only have two, how many more do I need to buy?”
- Practice make-ten to figure out the unknown part. “If there are 15 parking spots and eight are filled, how many more cars can park in the lot?” (Eight add two more make ten, and then add five more to makes fifteen, so there is room for seven cars.)

### Glossary

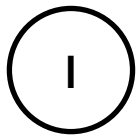
- ▶ **Think-addition models** support understanding of how fact families relate to finding the unknown addend.



### Helpful video

View these short one-minute videos to see these ideas in action.

[www.bit.ly/OI\\_2](http://www.bit.ly/OI_2)




# Module 6

## Fractions: one-half and one-fourth

- Students informally explore the concept of one-half. Dividing a whole into two groups or parts of equal size introduces the concept of *half* and the term *one-half* as the name for each group or part.
- 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.

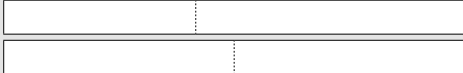
**6.8 Common fractions: Identifying examples of one-half (length model)**

**Step In** This strip of paper was folded and then opened out again. The dotted line shows where it was folded.



How could you prove that the strip of paper was folded in 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.

- Two things are important to understand about one-fourth (or one-quarter): one-fourth involves dividing something into four lengths, groups or parts, and the four lengths, groups or parts must be the same size. These ideas are illustrated using the **length** and **area models** of fractions.

**6.11 Common fractions: Identifying examples of one-fourth (area model)**

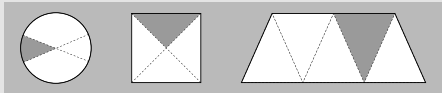
**Step In** Look at this sheet of paper.



Describe the fraction that you see.  
What is another name for one-fourth?  
What other ways could you fold the paper into fourths?

How can you prove that a sheet of paper has been folded into fourths?

Which of these shows one-fourth? How do you know?



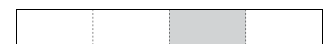
In this lesson, students identify which pictures have been divided and shaded to show one-fourth.

## Ideas for Home

- Highlight any equal shares when splitting portions of food into halves. Say “whole” or “total,” and “half” when dividing anything equally into two groups or 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 how the creases delineate fourths. Remind your child that just dividing the shape into four parts does not necessarily make fourths. Fourths require the four parts of the shape be the same size.

## Glossary

- The **length (linear) fraction 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, and strips of paper.



- The **area (region) fraction model** shows fractions as parts of a two-dimensional area or three-dimensional object.

