

# Algebra

## Key Idea

Fact families show how addition and subtraction are related.

## Vocabulary

- fact family
- difference



### Think It Through

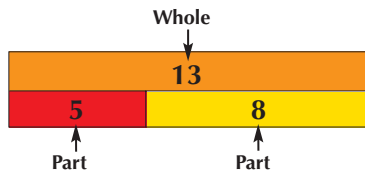
I can **draw** a **parts-whole picture** to show addition and subtraction.

# Relating Addition and Subtraction

## LEARN

### How are addition and subtraction related?

You can think about parts and the whole to show how addition and subtraction are related.



You can write a **fact family** when you know the parts and the whole.

Fact family:

$$5 + 8 = 13 \qquad 13 - 8 = 5$$

$$8 + 5 = 13 \qquad 13 - 5 = 8$$

↑  
**difference**

### Example

Find  $12 - 7$ .

What You **Think**

$$7 + ? = 12$$

$$7 + 5 = 12$$

What You **Write**

$$12 - 7 = 5$$

### Talk About It

1. What are the other three number sentences in the fact family with  $6 + 3 = 9$ ?  
 $3 + 6 = 9$ ;  $9 - 3 = 6$ ;  $9 - 6 = 3$
2. What addition fact can help you find  $11 - 3$ ?  
 $3 + 8 = 11$

### WARM UP

1.  $2 + 5$
2.  $7 - 2$
3.  $3 + 9$
4.  $12 - 3$
5.  $4 + 7$
6.  $11 - 4$
7. There are 9 red cars and 8 blue cars. How many cars in all? **17 cars**

Copy and complete each fact family.

$$1. \begin{array}{l} 4 + 6 = \square \\ \quad \quad \quad 10 \\ \square + 4 = 10 \\ \quad \quad \quad 6 \end{array} \quad \begin{array}{l} 10 - \square = 6 \\ \quad \quad \quad 4 \\ \square - 6 = 4 \\ \quad \quad \quad 10 \end{array}$$

$$2. \begin{array}{l} 6 + 7 = \square \\ \quad \quad \quad 13 \\ 7 + \square = 13 \\ \quad \quad \quad 6 \end{array} \quad \begin{array}{l} \square - 6 = 7 \\ \quad \quad \quad 13 \\ 13 - 7 = \square \\ \quad \quad \quad 6 \end{array}$$

Find each missing number.

$$3. \begin{array}{l} 6 + \square = 12 \\ \quad \quad \quad 6 \end{array} \quad 4. \begin{array}{l} 3 + \square = 11 \\ \quad \quad \quad 8 \end{array} \quad 5. \begin{array}{l} 9 + \square = 17 \\ \quad \quad \quad 8 \end{array} \quad 6. \begin{array}{l} 5 + \square = 9 \\ \quad \quad \quad 4 \end{array}$$

7. **Number Sense** Haley says, "To find  $8 - 6$ , I can think of the addition fact  $8 + 6 = 14$ ." Do you agree? Explain. **No. She should think of the addition fact  $6 + 2 = 8$ .**

## PRACTICE

For more practice, see Set 2-2 on p. 120.

### A Skills and Understanding

Copy and complete each fact family.

$$8. \begin{array}{l} 7 + 4 = \square \\ \quad \quad \quad 11 \\ \square + 7 = 11 \\ \quad \quad \quad 4 \end{array} \quad \begin{array}{l} 11 - \square = 4 \\ \quad \quad \quad 7 \\ \square - 4 = 7 \\ \quad \quad \quad 11 \end{array}$$

$$9. \begin{array}{l} \square + 9 = 12 \\ \quad \quad \quad 3 \\ 9 + \square = 12 \\ \quad \quad \quad 3 \end{array} \quad \begin{array}{l} \square - 9 = 3 \\ \quad \quad \quad 12 \\ 12 - \square = 9 \\ \quad \quad \quad 3 \end{array}$$

Find each missing number.

$$10. \begin{array}{l} 5 + \square = 7 \\ \quad \quad \quad 2 \end{array} \quad 11. \begin{array}{l} 8 + \square = 16 \\ \quad \quad \quad 8 \end{array} \quad 12. \begin{array}{l} 6 + \square = 10 \\ \quad \quad \quad 4 \end{array} \quad 13. \begin{array}{l} 7 + \square = 16 \\ \quad \quad \quad 9 \end{array}$$

14. **Number Sense** Write the fact family for 3, 5, and 8.  
 $3 + 5 = 8, 5 + 3 = 8, 8 - 3 = 5, 8 - 5 = 3$

### B Reasoning and Problem Solving

15. Write a subtraction fact for the story at the right. Then write an addition fact you could use to check it.  
**Sample answer:  $12 - 4 = 8$ ;  $8 + 4 = 12$**
16. **Writing in Math** The fact family  $4 + 4 = 8$  and  $8 - 4 = 4$  has two number sentences. Write another fact family that has only two number sentences. Explain.  
**See above.**

Twelve bees are in the garden. Four of the bees are flying around. Eight of the bees are pollinating flowers.

### Mixed Review and Test Prep



Write each missing number.

$$17. \begin{array}{l} 6 + \square = 8 + 6 \\ \quad \quad \quad 8 \end{array} \quad 18. \begin{array}{l} \square + 0 = 9 \\ \quad \quad \quad 9 \end{array} \quad 19. 18 = \square + (7 + 3) \\ \quad \quad \quad 8$$

20. Which shows the numbers in order from least to greatest?

- A.** 1,346, 1,436, 1,634      **C.** 1,436, 1,346, 1,634  
**B.** 1,634, 1,436, 1,346      **D.** 1,346, 1,634, 1,436