The Meaning of the Equal Sign

Grade 1

Lesson 116

Relevant Chapters in the *Digi-Block Comprehensive Teacher's Guides:*
   Book I: Unit 3-3, Exploring Addition with the Larger Blocks, pp. 72-76
   Book II: Unit 3-3, Exploring Addition with the Larger Blocks, pp. 64-70

Lesson Overview

Students use blocks to solve equations with missing addends.

Objectives

Thinking Skills:	Students begin to think of the equal sign as a symbol indicating that the quantities on both sides of the equation must balance. This understanding serves as a foundation for early algebraic thinking.
Mastery Skills:	Students learn to find missing addends.

Materials

Set up in a Center:
* 50 single blocks and 10 small holders
* 1 equal sign card
* 2 number lines
* 1 activity sheet per student

(Note: Students will need to revisit this activity frequently throughout the year to reinforce the meaning of the equal sign.)

Present the class with the following equation:

8 + 5 = ☐ + 4

Have students suggest what to put in the blank. Most students will say "13." See if there are any other suggestions. Put students' suggestions in the blank and test out their hypothesis.

For example, put 13 in the blank and ask:

8 + 5 = 13 + 4

Does 8 plus 5 equal 13 plus 4? Let's see with the blocks…

Set up two number lines one for each side of the equation. Put an equals sign card between the two number lines.

- Have a student put 8 blocks on one number line. Add 5 blocks to the number line.
- Have another student put 13 blocks on the second number line. Add 4 blocks to this number line.
- Help students compare 13 and 17 to assure themselves that these two numbers are not equal.
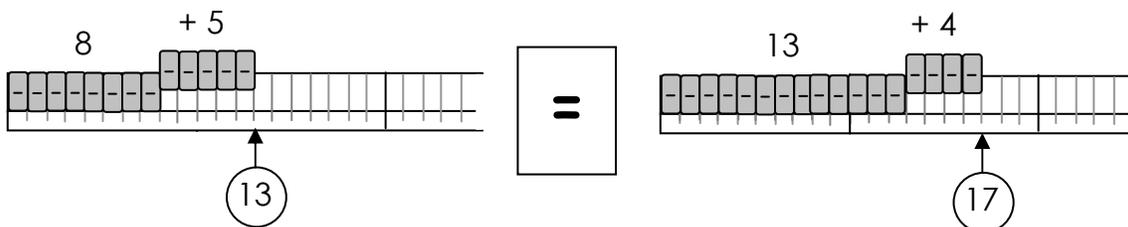
Ask students to look at both sides of the equals sign. Ask, **Do you think there are the same number of blocks on each side? Why or why not?**

Have students test out their ideas until they find the answer: 9. Fill in the equation with the correct missing addend:

8 + 5 = ☐9☐ + 4

Repeat with multiple examples. Each time, have students predict the answers and then test out their predictions with the blocks on the number lines. Some examples to try:

4 + 3 = ☐ + 8

5 + 7 = ☐ + 6

4 + 6 = ☐ + 1

9 + ☐ = 7 + 8

10 + 8 = ☐ + 9

☐ + 4 = 8 + 3

Set up the materials in a math center. Have students find a partner and take 10-minute turns at the center. Students will:
- Use the materials to find missing addends.
- Explain in words, drawings, and numbers how they know their answer is correct.

Have students model the three problems for the class using the materals. Then ask:

What does the equal sign mean?

Have students respond in their math journals using words, drawings, and numbers. Ask student volunteers to explain their understanding of the equal sign to the class.

Assessment

As students work, observe and note the following. Do they:
- Appear to give an answer before having time to think and reason?
- Immediately know the correct answer?
- Use the materials to accurately model the equations?
- Correct any incorrect assumptions?
- Fill in the blanks with the correct answers?
- Explain their understanding of the equal sign?

Extensions

❑ Repeat this activity throughout the year. Put the missing addend in different positions as appropriate for your class. Increase the size of the numbers in the problems to challenge your students' computation skills. Or, decrease the size of the numbers to help students focus on the meaning of the equation.

❑ Repeat this activity by mixing up the operations: i.e., 8 + 5 = __ - 7.

♡ 8 + 4 = ☐ + 6

How do you know?

☺ 6 + 5 = ☐ + 2

How do you know?

☀ 9 + ☐ = 10 + 7

How do you know?