

HOLDERS and BLOCKS

Grade 2

Activity #219

Relevant Chapters in the *Digi-Block Comprehensive Teacher's Guides*:

Book II, 4-2: Joining Equal Groups of Ones, pages 95 - 97

Book III, 3-1: Developing Meaning for Multiplication, pages 75 - 79

Overview

Students roll a die twice to determine how many groups to make and how many blocks to put in each group. They record their model, write the related multiplication number sentence, and determine the product.

Objectives

Thinking Skills: Students draw equal groups and record the multiplication number sentence. They share strategies used to determine the product and compare products to name the winner of each game round.

Mastery Skills: Students learn to express equal groups as a multiplication number sentence. They identify the meaning of each factor in the number sentence and accurately name the product.

Materials

Each pair of students needs:

- 6 small holders

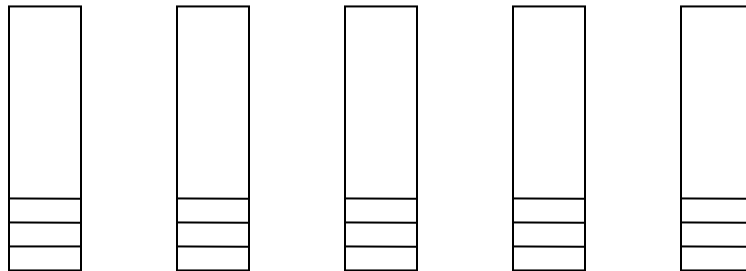
- Up to 36 single blocks
- Die (1 - 6)
- 1 Activity Sheet #1 per student (for student activity)
- 1 "Thinking About...Holders and Blocks" Activity Sheet #2 (for Assessment)

Class Introduction

(10 - 15 minutes)

Have two students demonstrate a few rounds of "Holders and Blocks" to clarify directions and give students an opportunity to observe what they will do. Have small holders, blocks, and the Activity Sheet #1 available.

- Have each student roll the die two times.
 - The first roll shows how many holders to place before the player.
 - The second roll shows how many blocks to place inside each holder.
- Record each step on the activity sheet, drawing rectangles to represent holders and then drawing the same number of blocks inside each shape.
 - For example, if a student rolls a 5 first, 5 holders are placed before him/her. Next, if a 3 is rolled, 3 blocks are put inside each holder.
 - The student may record this as:



$$5 \times 3 = \underline{\quad}$$

- Discuss the meaning of each number and symbol in the multiplication sentence. For example "5 groups of 3 is how many?" or "5 holders with 3 blocks in each holder is how many total blocks"

[NOTE: There is much discussion among math educators about the order of the factors and their meaning in such order. Some cultures may express the

picture above as $3 \times 5 = \underline{\quad}$, as they translate the number sentence as "three, five times." This can lead to an interesting discussion among students and the class can agree on a convention that works best for everyone. One way to connect this written equation of $3 \times 5 = \underline{\quad}$ to the blocks is to read it as "3 blocks put in each of the 5 holders is how many?"]

- **Ask, How can I figure out how many blocks are in holders?** Share students' strategies for naming the product. Some may:
 - Count the blocks by ones.
 - Count by threes.
 - Pack the blocks to show 1 block-of-10 and 5 singles.
- Repeat the procedure with the second student's role. Compare models, pictures, and products.
 - Depending on teacher/student preference, the larger (or smaller) product wins the round.
- Explain to students that they will play 5 rounds of the game with a partner.

Student Activity

(20 - 25 minutes)

Provide materials to pairs of students and have them begin the game. Each pair should indicate whether the highest or lowest product will "win" before play begins.

- Be sure students understand what each roll of the die determines, reminding them to select their holders with the first roll and to fill them with blocks on the second roll (hence, the game title).
- Have students explain how their multiplication number sentence relates to their model or picture.

Closure

(10 minutes)

After students have played at least one game of "Holders and Blocks," have them study their activity sheet and think about their game. Ask questions, such as:

- **What was your largest/smallest product? What is the largest/smallest *possible* product? How do you know?**
- **Were there any round "ties" where both players got the same product?**

- **Who got a product of 12? What numbers did you roll to get a product of 12? What did your model look like?** Students should name different ways to model a product of 12, such as 3 holders of 4 blocks, 4 holders of 3, 2 holders of 6, and 6 holders of 2.
- **What if we played with a die or spinner that had the numbers from 1 to 10? Would we get larger or smaller products? How do you know? Give an example.**

Share any other observations that are of interest to students.

Assessment

As students play "Holders and Blocks," observe and note:

Do they -

- Accurately represent the set model for multiplication?
- Translate the model to a number sentence?
- Describe the meaning of each number and symbol in a multiplication number sentence?
- Determine the Round and Game Winner by accurately comparing products?

Have students independently complete the "Thinking About... Holders and Blocks" Activity Sheet to further assess their understanding.

Extension

- Play "Holders and Blocks" using a 0 - 9 die or spinner.

Name _____

Holders and Blocks

Round 1:

Number Sentence: _____

Round 2:

Number Sentence: _____

Round 3:

Number Sentence: _____

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Round 4:

Number Sentence: _____

Round 5:

Number Sentence: _____

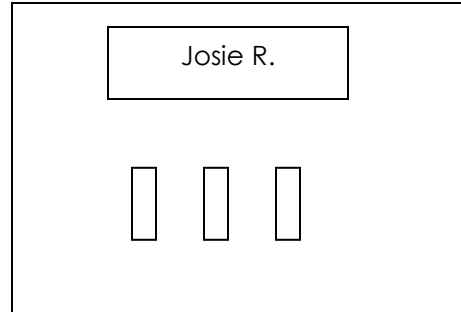
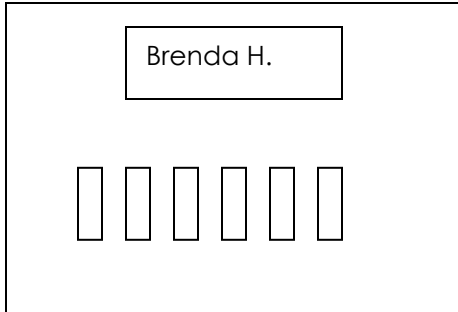
Who is the game winner? _____

Show how you figured out your score:

Thinking About . . .

Holders and Blocks

Brenda and Josie were playing “Holders and Blocks.”
Brenda rolled a 6 and put 6 holders on her desk.
Josie rolled a 3 and put 3 holders on her desk.



Brenda said, “I am sure I’m going to win because I have more holders than you do, Josie.”

Do you agree with Brenda? _____

Why or why not? Explain your thinking. Use pictures, words, and numbers.