



## Differentiation in Investigation 3

### Mathematics in This Investigation

The mathematics focuses on understanding arrays as a model for multiplication and on using the arrays to learn the multiplication combinations with products up to 50.

**Additional Resources:** *Learning Multiplication Combinations*, pages 160–162 (See Curriculum Unit 5); *Count and Compare: A Visual Representation for Multiplication*, pages 97–99 (See *Implementing Investigations in Grade 3*)

### Understanding the Mathematics

Students work systematically to find all the ways to represent a number with arrays, using strategies that rely on knowledge about equal groups (e.g., 2 will work for all even numbers), known multiplication combinations, relationships between combinations (e.g., if  $2 \times 8$  works, then  $8 \times 2$  does, too), and previously determined arrays. To find the total number of squares in an array, students may “just know” the product. If not, they count by groups or use a combination they do know. They are fluent with all or most of the multiplication combinations, and they use the ones they know to write clues for the ones they don’t yet know.

**Option:** Assign the **Extension** activity.

### Partially Understanding the Mathematics

Students find many of the ways to represent a number with arrays, but they may not find all of the possible factor pairs. To find the total number of squares in an array, they count by groups, use multiplication combinations they know, or reflect on other arrays that they know. They are gaining fluency with the multiplication combinations, and they are getting better at using known combinations to figure out ones they don’t know.

**Option:** Assign the **Practice** activity.

### Not Understanding the Mathematics

Students find some of the ways to represent a number with arrays, but they work in a more random fashion. When faced with a multiplication combination, or finding the total number of squares in an array, they count by 1s or may be beginning to count by groups.

**Option:** Assign the **Intervention** activity.

### Investigation 3 Quiz

In addition to your observations and students’ work in Investigation 3, the Quiz (R43) can be used to gather more information.

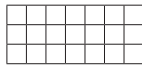
Name \_\_\_\_\_ Date \_\_\_\_\_

**Equal Groups**


**Quiz**

Choose the correct answer.

1.  $6 \times 5 =$   
**A.** 11      **B.** 24      **C.** 25      **D.** 30

2. Which multiplication combination does this array show?  
  
**A.**  $3 \times 3$       **B.**  $3 \times 7$       **C.**  $4 \times 7$       **D.**  $7 \times 7$

3.  $4 \times 4 =$   
**A.** 18      **B.** 16      **C.** 12      **D.** 8

4. How many squares are in this array?  
  
**A.** 9      **B.** 10      **C.** 18      **D.** 20

5. Draw 4 arrays for 24. Are there any more possible arrays for 24? Explain how you know.  
**Answers will vary. Review students’ work.**

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Use after Session 3.6. Unit 5 **R43**