Students learn that the process of counting in groups and using repeated addition is called multiplication. Students use arrays to represent multiplication expressions.

**COMMON CORE STANDARD(S)**

**3.OA.A.1** Interpret products of whole numbers, e.g., interpret $5 \times 7$ as the total number of objects in 5 groups of 7 objects each.

**3.OA.A.2** Interpret whole-number quotients of whole numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each.

**3.OA.A.3** Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

**3.OA.A.4** Determine the unknown whole number in a multiplication or division equation relating three whole numbers.

**3.OA.C.7** Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

**3.NBT.A.3** Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., $9 \times 80$, $5 \times 60$) using strategies based on place value and properties of operations.

**DURATION**

Two 45-minute classroom periods

Engage and Explore, Explain, Elaborate page 1—one 45-minute classroom period
Elaborate page 2, Evaluate—second 45-minute classroom period
Display an array with 3 rows of 4 squares, either on the board or with blocks. Ask students to describe what they see. Look for a response that includes 3 rows and 4 squares in each row, and review the definition of an array. Ask the class how many squares are in the whole array and have students share their predictions and methods. How could we write an addition expression to represent how many squares are in the whole array? \[4 + 4 + 4\] Write the expression and answer on the board: \[4 + 4 + 4 = 12\]. Remind students that this is called repeated addition and that we could also use skip-counting to find the answer.

Draw another array that is the same as the previous array but turned 90 degrees so it is 4 rows with 3 squares in each row. Discuss: How is this array like the other array? [It looks the same but it is turned. Now it has 4 rows with 3 squares in each row.] Discuss: Do you think the number of squares in this array is the same as the number of squares in the other array? [Have students share their predictions.] How could we use repeated addition to find out? [Find \[3 + 3 + 3 + 3\].] Ask: How many squares are in this array? \[12\] Write \[3 + 3 + 3 + 3\] on the board. Discuss: Is the number of squares in this array the same as the other one? [Yes. Both arrays have 12 squares.]

Have students work in partners: Give each pair of students a set of number cards and either a set of counters or paper for drawing. Explain that they will draw two cards. Card 1 will tell them how many counters or drawn circles each row will contain and card 2 will tell them how many rows there are. Write a repeated addition statement to represent how many counters there are or circles. Ask students to repeat this 5 times.

Conclude this session by giving the students the following problem:
A worker at a grocery store makes a display of oranges with 3 rows and 5 oranges in each row. How many oranges are in the display? \[15\]

Tell students that in today’s lesson, they will learn a faster way to find the number of objects in an array. Facilitate a discussion using the Before Discussion Questions.
Have students gather in groups of 2 or 4 to compare and discuss their answers to the problems. Allow students enough time to communicate with their peers about their process and their thinking. Encourage students to use correct mathematical language when discussing their process. Have each group choose two questions they want more information about, or they want to discuss as a class.

When groups are ready, take questions from students. Encourage groups to answer questions brought up by other groups.

Students can play the online Kahoot! quiz game located below the video. It provides downloadable scores at the end of the quiz game. Alternatively, you can use the paper quiz, or the exit ticket questions. All these resources are located below the video in the assessment section.