Students use their knowledge of multiplication to create multiplicative comparisons.

**COMMON CORE STANDARD(S)**

4.OA.A.1 Interpret a multiplication equation as a comparison, e.g., interpret \(35 = 5 \times 7\) as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.

4.OA.A.2 Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.

**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

**MATERIALS**

1 set of red and blue rectangles, all the same size

**ENGAGE AND EXPLORE**

Engage students by posing the following problem:

- Zac and David are brothers.
- David is 4 times as old as Zac.
- Zac just turned 5.
- How old is David?
Allow students the chance to propose answers, and discuss how they found their answer. Ask students to label their paper with two columns, Zac and David. Distribute the red and blue rectangles to students. Discuss what information we already know: Zac is 5; David is 4 times as old as Zac.

Have the students choose one color to represent Zac’s age, and the other to represent David’s. Allow students time to use the rectangles to create a model to show David’s age. Inform students that they can make a rectangle represent more than 1 if they would like. Discuss student theories and answers. If no students present this process, walk students through using the rectangles.

We know that Zac is 5. So we can write 5 on one of the blue squares.

Zac

Ask students “How can we show David’s age?” We know that he is four times as old as Zac, so we can use red rectangles with fives to show his age; but how many?

Discuss the information that David is FOUR TIMES as old as Zac, so we put 4 red rectangles, each rectangle labeled 5, for David.

David

Zac

How old is David, if Zac just turned 5? (5, 10, 15, 20) David is 20. Ask students to think about another way they could calculate David’s age without skip-counting.

WATCH THE GENERATION GENIUS MULTIPLICATION COMPARISONS VIDEO AS A GROUP
Facilitate a conversation using the Discussion Questions.

ELABORATE

Direct students to use their new understanding to complete the practice problem worksheets. Page 1 contains bare mathematical problems to solidify understanding of the process. Page 2 contains application problems for students to apply the process to solve real-world problems.
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.