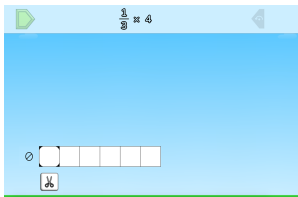
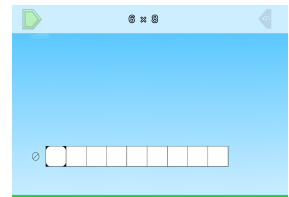


Materials

whiteboards, dry erase markers
fraction tools such as fraction strips, Cuisenaire rods, number lines, etc.

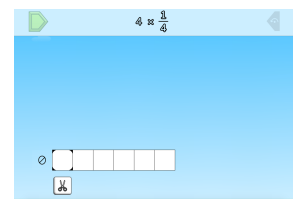
Directions

- Give students whiteboards, dry erase markers and fraction tools, such as fraction strips, Cuisenaire rods, number lines, etc. Display the first puzzle from Level 1. Ask students, “What do you notice? How do you think we solve this puzzle?”
- Try a student’s solution and watch the feedback. Pause the puzzle before JiJi crosses the screen and talk about what students see. Discuss the equation at the top of the puzzle and what it means. Ask students, “How does this model represent $__ \times __$, or $__$ groups of $__$? (e.g., 8×9 or 8 groups of 9) How could we find the answer?”
- Solve 1 – 2 more problems in Level 1 and focus your discussion on how the area model represents the multiplication sentences. Highlight the meaning of multiplication as you watch the feedback.
- Display the first puzzle in Level 2. Ask students, “How is this puzzle different from the ones we just solved? What is the same about the problems? Different?”
- Have students Think, Pair, Share their ideas with a partner. Have a few students share their thinking.



- Say to students, “Why do you think JiJi wants us to cut a whole?” Have students turn and talk to a neighbor to share their thinking.
- Click on the scissors and ask, “Why does JiJi want us to select the whole partitioned into halves, or 2 equal parts?” Click on halves. Have students share what they know about the denominator and how it determines the number of partitions.
- Say to students, “We are trying to represent the fraction $\frac{1}{2}$. Why do we need to shade in one of the equal pieces? What does the fraction $\frac{1}{2}$ represent if we do not shade in one piece?” Click to shade in one equal piece.
- Say to students, “Look at what JiJi wants us to select now. How will this represent what we see in the equation at the top?” Have students Think, Pair, Share their ideas with a partner. Share students’ thinking.
- Solve the puzzle and watch the feedback. Compare the feedback in this puzzle to the puzzles in Level 1. Repeat these steps with a few more puzzles in Level 2.

- Display the first puzzle in Level 3. Compare this puzzle to the puzzles in Level 2. Ask students, “When we multiply whole numbers, does the order matter for the product? (e.g., Is 4×5 the same as 5×4 ?) Does the order matter for the model? (e.g., Does the model for 4×5 look the same as 5×4 ?) How will the area model look different for this puzzle?” Have students Think, Pair, Share their ideas.
- Follow the same steps from Level 2 to solve the puzzle. Ask students, “How do you know if you have to cut a square first? How do you know how many partitions to create? How does a fraction represent division? How does this puzzle model a fraction as division?”
- Share students’ thinking and solve the puzzle. Focus on the feedback and how it represents the equation at the top of the puzzle. Repeat with the remaining puzzles in Level 3.


Sample Questions

- How could we represent this equation?
- What does it mean when we multiply whole numbers?
- How is whole number multiplication similar to multiplying a whole number by a fraction? Different?
- How could we represent this equation with an area model?
- How did you determine if you needed to cut a square first?
- How did you know how many partitions to create?
- How does a fraction represent division?
- How did you find the product?



How does the student:

- represent whole number multiplication?
- relate whole number multiplication to multiplying a whole number by a fraction?
- represent multiplying a whole number by a fraction?
- discuss the role of the numerator and denominator in the visual representation and the multiplication expression?
- explain how a fraction, such as $\frac{3}{4}$ or $\frac{1}{2}$, represent division?
- find the product?