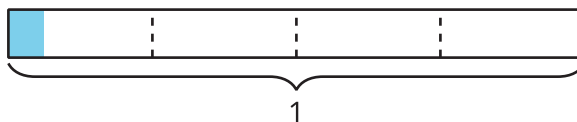# Lesson 12: Represent Division of Unit Fractions by Whole Numbers

- Let's make sense of diagrams that represent division of a unit fraction by a whole number.

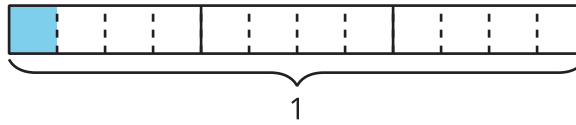## Warm-up: Estimation Exploration: How Much is Shaded?

How much is shaded?

Record an estimate that is:

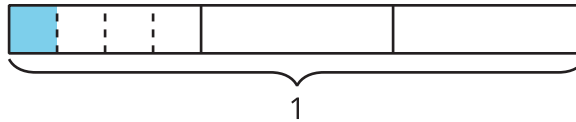| too low	about right	too high

12.1: Diagrams, Equations, Situations

Priya and Mai used the diagrams below to find the value of $\frac{1}{3} \div 4$.
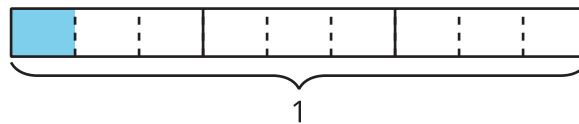
Priya's diagram:

Mai's diagram:

1. What is the same about the diagrams?

2. What is different?

3. Find the value that makes the equation true.

$\frac{1}{3} \div 4 =$ _____

4. Han drew this diagram to represent $\frac{1}{3} \div 3$. Explain how the diagram shows $\frac{1}{3} \div 3$.

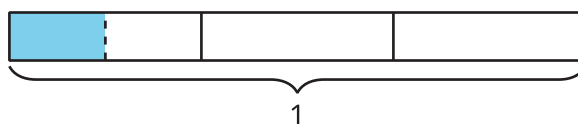5. Find the value that makes the equation true. Explain or show your reasoning.

$\frac{1}{3} \div 3 =$ _____

12.2: Priya's Work

1. Find the value of $\frac{1}{3} \div 2$. Explain or show your reasoning.

2. This is Priya's work for finding the value of $\frac{1}{3} \div 2$:

$\frac{1}{3} \div 2 = \frac{1}{2}$ because I divided $\frac{1}{3}$ into 2 equal parts and $\frac{1}{2}$ of $\frac{1}{3}$ is shaded in.

   a. What questions do you have for Priya?

   _____

   _____

   b. Priya's equation is incorrect. How can Priya revise her explanation?

   _____

   _____

12.3: Look for Patterns

1. Find the value that makes each equation true. Use a diagram if it is helpful.

   a. $\frac{1}{4} \div 2 = $ _____

   b. $\frac{1}{4} \div 3 = $ _____

   c. $\frac{1}{4} \div 4 = $ _____

2. What patterns do you notice?

3. How would you find the value of $\frac{1}{4}$ divided by any whole number? Explain or show your reasoning.