Algebra Concepts – Lesson 3-3 (Division Model of Fractions)

The Big Idea

There are many ways to think about fractions. In this class, we have studied the part-whole model. The part-whole model works nicely with fractions in many situations. We can also think about fractions as a division. Here are some examples:

- If we divide 1-inch into 2 equal parts, each part is 1 divided by 2 or ½ inch.
- If we divide 1 pound of butter into 4 equal parts, each part is 1 divided by 4 or ¼ pound.
- What if we divide 2 cups of chocolate milk among 3 friends? How much chocolate milk does each friend get? It turns out that the division model for fractions gives us the answer: 2 divided by 3 is equal to $\frac{2}{3}$. Remember one of the meanings of $\frac{2}{3}$ is 2 divided by 3.

Picture This

1 divided by 2 = ?

|----------1 whole----------|

?	

2 divided by 6 = ?

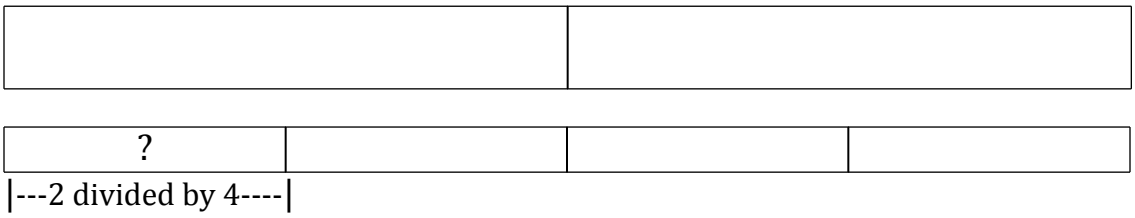
|----------2 wholes----------|

?					

To show that the division of two numbers can be a fraction, it helps to use two rectangles. In the examples below, the top rectangle shows the number of wholes we have in a given situation. The bottom rectangle shows the number of parts we are dividing by.

Example 1

|----------2 wholes----------|



What is 2 divided by 4? Note: there is more than one possible way to answer this question.

When we deal with physical measurements, our division model of fractions works nicely. What happens when we divide a certain length into smaller lengths?

Example 2

The length of the segment below is three inches. Divide the segment into 4 equal parts and find the length of each part. Use a ruler.

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Example 3:

Zach chops up a 4-inch piece of celery into 8 equal parts. How long is each part? Use a ruler to check your answer.

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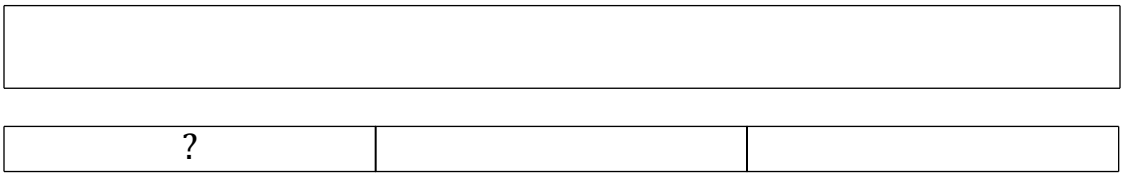
Guided Practice

1. What is 1 divided by 3?

|----------1 whole----------|



2. What is 2 divided by 5?

|----------2 wholes ----------|

3. What is 5 divided by 2?

|----------5 wholes----------|

?	

4. Divide the 5-inch segment below into 8 equal pieces and use a ruler to find the length of each piece.

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5. Karissa has 3 pizzas that she wants to divide equally among 8 people at her birthday party. How much pizza does each person get?