**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 inch.

* If we divide 1 pound of butter into 4 equal parts, each part is 1 divided by 4 or 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 . Remember one of the meanings of 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---------------------------------------|

|  |  |
| --- | --- |
|  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| ? |  |  |  |

|--2 divided by 4--|

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.

**|--------------------------------------------|**

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.

**|-----------------------------------------------------------|**

**Guided Practice**

1. What is 1 divided by 3?

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

|  |
| --- |
|  |

|  |  |  |
| --- | --- | --- |
| ? |  |  |

1. What is 2 divided by 5?

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

|  |  |
| --- | --- |
|  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ? |  |  |  |  |

1. What is 5 divided by 2?

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |

|  |  |
| --- | --- |
| ? |  |

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

|---------------------------------------------------------------------------|

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