LessonTitle: Modeling Division with Fractions **Pre 2.3**

Utah State Core Standard and Indicators Pre-Algebra Standards 1, 3.1 Process Standards 1-5

Summary

In this activity, students relate division to factoring. Then they investigate division using fractions using their fraction strips. They will develop understanding of division using fractions

Enduring Understanding	Essential Questions
Number-line models allow us to visualize and demonstrate the operations (+, -, x, ÷) with fractions.	How do you operate using fractions?
Skill Focus	**Vocabulary Focus**
• Problem solving with fractions • Adding and subtracting fractions	

Assessment

Materials: Fraction Bars from the adding and subtracting with fractions lesson 2.1.

Launch

Explore

Why do we invert and multiply when we divide using fractions?

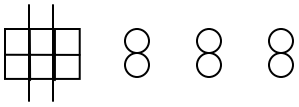
Summarize

Apply

Pre 2.3 Modeling Division with Fractions

1) What is division? To understand division, revisit multiplication. In Pre 2.2 we used this example: When you think of 2 x 3, think of it as 2 sets **of** 3. We can model this using area.

2 x 3 or 2 sets of 3 = 6  or 

We can change this problem into a division problem. 6 ÷ 2 = _____
We might say: " Six divided up into sets of 2" will give us 3 sets. 

Or we could also say, 6 ÷ 3 = _____. Write and draw this problem below.

_____

2) When you model division with fractions, think of it the same way. For example,

If you have 6 pieces of licorice and you divide them into thirds, how many kids can have a 1/3 size piece? Write the equation _____

Draw the licorice below. Then cut the licorice into thirds. How many kids could have a piece? __

3) When dividing by 1/3, why do you multiply by three to get the answer?

_____

_____

4) What if you wanted to divide the 6 pieces of licorice into 2/3 size pieces?
Write the equation _____

Draw the licorice. Cut them into 2/3 size pieces. How many kids can have a piece?

5) When dividing by 2/3, why do you multiply by 3 and divide by 2.

_____

_____

6) These are division problems. Why is your answer larger than either of the two numbers in the division problem?

_____

7) Write your rule for how to divide by a fraction. (10 ÷ 1/4)

_____

8) Eight candy bars divided into fourths. How many fourths are there in 8 candy bars?
Equation_____ How many kids can have a piece? _____
Draw below. Show work to solve the problem using numbers.

9) Eight candy bars divided into three-fourths sized pieces
Equation_____ How many kids can have a piece? _____
Draw below. Show work to solve the problem using numbers.

The following problems involve dividing a fraction by a fraction instead of one whole number divided by a fraction. Use your fraction strips to help you figure them out.

10) Three-fourths of a candy bar divided into fourths.
Equation_____ Draw a picture of the problem below.

How many fourths will there be? _____
How might you solve the problem using numbers?

12) Three fourths of a candy bar divided into thirds.
Equation_____ Draw a picture of the problem below. (Hint: Draw the three-fourths. Then draw the thirds next to that.)

What is the question to answer?_____ Estimate the answer._____
Explain your estimate.

How might you solve the problem using numbers.

13) One fourth of a candy bar divided into thirds.
Equation_____ Draw a picture of the problem below. (Hint: Draw the one fourth. Then draw the third next to that.)

What is the question to answer?_____ Estimate the answer._____
Explain your estimate.

How might you solve the problem using numbers to get the exact answer?

Explain the exact answer.

14) Do the following problems. Use your fraction strips to help you

$\frac{4}{5} \div \frac{1}{3} = \frac{4}{5} \cdot \frac{3}{\ } =$

What is the question being asked?

_____

Answer estimate?_____

$\frac{4}{5} \div \frac{1}{3} = \frac{4}{5} \cdot \frac{3}{\ } =$

$\frac{4}{7} \div \frac{2}{3} = \frac{4}{7} \cdot \frac{3}{\ } =$

What is the question being asked?

_____

Answer Estimate? _____

$\frac{4}{7} \div \frac{2}{3} = \frac{4}{7} \cdot \frac{3}{\ } =$

15) $\frac{5}{6} \div \frac{2}{3} = \frac{5}{6} \cdot \frac{3}{\ } =$

What is the question being asked?

$\frac{5}{8} \div \frac{1}{2} =$

What is the question being asked?

$\frac{7}{8} \div \frac{1}{2} =$

What is the question being asked?

$\frac{3}{4} \div \frac{3}{8} =$

What is the question being asked?

$\frac{4}{9} \div \frac{3}{5} =$

What is the question being asked?

$\frac{5}{9} \div \frac{1}{3} =$

What is the question being asked?

Division with fractions
Assessment Problem

- Solve the following problem.
- Draw the solution to prove your answer.
- Explain your answer.

Wanda loves cake! She thinks one serving of cake should be 3/5 of a cake. If she has 4 cakes, how many servings does she have? How much of a serving does she have left over?