North Penn School District

Elementary Math Parent Letter

Grade 5

Unit 3 – Chapter 8: Divide Fractions
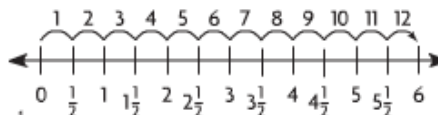
Examples for each lesson:

Lesson 8.1

Divide Fractions and Whole Numbers

You can use a number line to help you divide a whole number by a fraction.

Divide. $6 \div \frac{1}{2}$

Step 1 Draw a number line from 0 to 6. Divide the number line into halves. Label each half on your number line, starting with $\frac{1}{2}$.

Step 2 Skip count by halves from 0 to 6 to find $6 \div \frac{1}{2}$.

Step 3 Count the number of skips. It takes 12 skips to go from 0 to 6. So the quotient is 12.

$$6 \div \frac{1}{2} = \underline{12} \text{ because } \underline{12} \times \frac{1}{2} = 6.$$

You can use fraction strips to divide a fraction by a whole number.

Divide. $\frac{1}{2} \div 5$

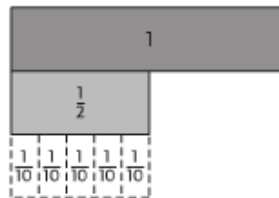**Step 1** Place a $\frac{1}{2}$ strip under a 1-whole strip.

Step 2 Find 5 fraction strips, all with the same denominator, that fit exactly under the $\frac{1}{2}$ strip.

Each part is $\frac{1}{10}$ of the whole.

Step 3 Record and check the quotient.

$$\frac{1}{2} \div 5 = \underline{\frac{1}{10}} \text{ because } \underline{\frac{1}{10}} \times 5 = \frac{1}{2}.$$

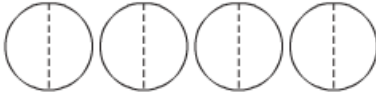So, $\frac{1}{2} \div 5 = \underline{\frac{1}{10}}$.

More information on this strategy is available on Animated Math Model #29.

Lesson 8.2

Problem Solving • Use Multiplication

Nathan makes 4 batches of soup and divides each batch into halves. How many $\frac{1}{2}$-batches of soup does he have?

Read the Problem	Solve the Problem
What do I need to find? I need to find the number of $\frac{1}{2}$-batches of soup Nathan has	Since Nathan makes 4 batches of soup, my diagram needs to show 4 circles to represent the 4 batches. I can divide each of the 4 circles in half.
What information do I need to use? I need to use the size of each batch of soup and the total number of batches of soup Nathan makes.	
How will I use the information? I can make a diagram to organize the information from the problem. Then I can use the diagram to find the number of $\frac{1}{2}$-batches of soup Nathan has after he divides the 4 batches of soup	To find the total number of halves in the 4 batches, I can multiply 4 by the number of halves in each circle. $4 \div \frac{1}{2} = 4 \times 2 = 8$ So, Nathan has 8 one-half-batches of soup.

More information on this strategy is available on Animated Math Model #29.

Lesson 8.3

## Connect Fractions to Division

You can write a fraction as a division expression.

$$\frac{4}{5} = 4 \div 5 \qquad \frac{15}{3} = 15 \div 3$$

There are 8 students in a wood-working class and 5 sheets of plywood for them to share equally. What fraction of a sheet of plywood will each student get?

Divide. 5 ÷ 8   Use a drawing.

Step 1 Draw __5__ rectangles to represent 5 sheets of plywood. Since there are 8 students, draw lines to divide each piece of plywood into _eighths_.
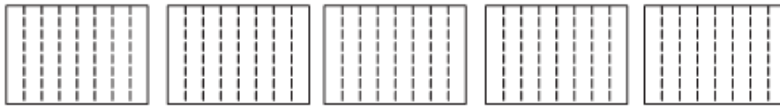
Each student's share of 1 sheet of plywood is $\frac{1}{8}$.

Step 2 Count the total number of eighths each student gets.

Since there are 5 sheets of plywood, each student will get 5 of the _eighths_, or $\frac{5}{8}$.

Step 3 Complete the number sentence.

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

Step 4 Check your answer.

Since $\frac{5}{8} \times \frac{8}{5} = 5$, the quotient is correct.

So, each student will get $\frac{5}{8}$ of a sheet of plywood.

Lesson 8.4

Fraction and Whole-Number Division

You can divide fractions by solving a related multiplication sentence.

Divide. $4 \div \frac{1}{3}$

Step 1 Draw 4 circles to represent the dividend, 4.

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Step 2 Since the divisor is $\frac{1}{3}$, divide each circle into thirds.

Step 3 Count the total number of thirds.

When you divide the __4__ circles into thirds, you are finding

the number of thirds in 4 circles, or finding 4 groups of __3__.

There are __12__ thirds.

Step 4 Complete the number sentence.

$4 \div \frac{1}{3} = 4 \times$ __3__ = __12__

More information on this strategy is available on Animated Math Model #29.

Lesson 8.5

Interpret Division with Fractions

You can draw a diagram or write an equation to represent division with fractions.

Beatriz has 3 cups of applesauce. She divides the applesauce into $\frac{1}{4}$-cup servings. How many servings of applesauce does she have?

One Way Draw a diagram to solve the problem.

Draw 3 circles to represent the 3 cups of applesauce. Since Beatriz divides the applesauce into $\frac{1}{4}$-cup servings, draw lines to divide each "cup" into fourths.
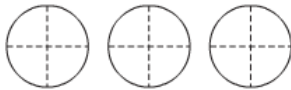
To find $3 \div \frac{1}{4}$, count the total number of fourths in the 3 circles.

So, Beatriz has __12__ one-fourth-cup servings of applesauce.

Another Way Write an equation to solve.

Write an equation. $3 \div$ $\frac{1}{4}$ $= n$

Write a related multiplication equation. $3 \times$ __4__ $= n$

Then solve.   __12__ $= n$

So, Beatriz has __12__ one-fourth-cup servings of applesauce.

More information on this strategy is available on Animated Math Model #29.

Vocabulary

Dividend – the number that is to be divided in a division problem

Equation – an algebraic or numerical sentence that shows that two quantities are equal

Fraction – a number that names a part of a whole or a part of a group

Quotient – the number, not including the remainder, that results from dividing

Whole number – a number that belongs to the set 0, 1, 2, 3, …