Lesson 9-7

Monday, February 3, 2020 2:20 PM

MB 563

Name _____

Lesson 9-7
Solve Problems Using Division

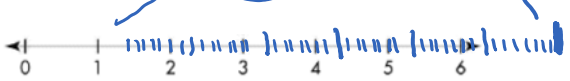
Solve & Share

Organizers of an architectural tour need to set up information tables every $\frac{1}{8}$ mile along the 6-mile tour, beginning $\frac{1}{8}$ mile from the start of the tour. Each table needs 2 signs. How many signs do the organizers need? ***Solve this problem any way you choose.***

I can ...
solve division problems involving unit fractions.

Content Standard 5.NF.B.7c
Mathematical Practices MP.1, MP.2, MP.4, MP.6

48 tables



$(6 \div \frac{1}{8}) \times 2 = S$

$(6 \times \frac{8}{1}) \times 2$

$\frac{48}{1} \times 2$

$48 \times 2 = 96$ signs

Make Sense and Persevere What steps do you need to do to solve this problem? *Show your work!*

$\begin{array}{r} 48 \\ \times\ 2 \\ \hline 96 \end{array}$

Look Back! MP.2. Reasoning How does the number line help you solve this problem?

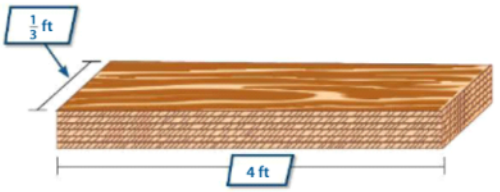
It helps to visualize all of the tables across the 6 miles. Then you just multiply 48 tables by 2 signs.

Learn Glossary

Essential Question: How Can You Solve Division Problems with Unit Fractions?

A

John plans to buy sheets of plywood like the ones shown to make boxes with lids. Each box is a cube that has $\frac{1}{3}$-foot edges. How many sheets of plywood does John need in order to make 5 boxes with lids?



B **What do you know?**

Six pieces of plywood are needed for each of the 5 boxes.

Boxes are $\frac{1}{3}$-foot cubes.

Each sheet of plywood is $\frac{1}{3}$ foot wide and 4 feet long.

What are you asked to find?

The number of sheets of plywood John needs to buy

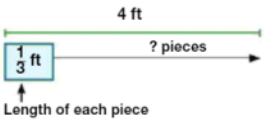
C **Write an equation to help answer each question.**

1. How many pieces of plywood are needed for 5 boxes with lids?

5 boxes × 6 pieces for each box = 30 pieces in all

2. How many pieces can be cut from 1 sheet of plywood?

$4 \div \frac{1}{3} = 12$



3. How many sheets of plywood does John need for 5 boxes with lids?

$30 \div 12 = 2$ R6

John needs 3 sheets of plywood.

Convince Me! MP.2 Reasoning Write a real-world problem that can be solved by first adding 24 and 36 and then dividing by $\frac{1}{4}$. Find the solution to your problem and explain your answer.

Name _____

Guided Practice

Do You Understand?

1. In the example on page 564, why were additional questions answered to help solve the problem?

2. MP.4 Model with Math What equations were used to solve the example on page 564?

Do You Know How?

3. Tamara needs tiles to make a border for her bathroom wall. The border will be 9 feet long and $\frac{1}{3}$ foot wide. Each tile measures $\frac{1}{3}$ foot by $\frac{1}{3}$ foot. Each box of tiles contains 6 tiles. How many boxes of tiles does Tamara need? Write two equations that can be used to solve the problem.

$9 \div \frac{1}{3} = 9 \times \frac{3}{1} = \frac{27}{1} = 27$

$27 \div 6 = 4 r 3 \rightarrow 5$ boxes

Complete 4, 5, & 10

Independent Practice

Write the equations needed to solve each problem. Then solve.

4. Robert wants to use all the ingredients listed in the table at the right to make trail mix. How many $\frac{1}{2}$-pound packages can he make?

Ingredient	Weight (in pounds)
Dried Apples	$2\frac{1}{2}$
Pecans	4
Raisins	$1\frac{1}{2}$

Equations: $2\frac{1}{2} + 4 + 1\frac{1}{2} = 8$ $8 \div \frac{1}{2} = 16$

Answer: 16 packages of trail mix

$2\frac{1}{2} + 4 + 1\frac{1}{2} = 7\frac{2}{2} = 8$ $8 \div \frac{1}{2} = 8 \times \frac{2}{1} = \frac{16}{1} = 16$

5. Rachel used $\frac{2}{3}$ of a package of cornbread mix. She will use equal parts of the leftover mix to make 2 batches of cornbread. What fraction of the original package will she use for each batch?

Equations: $1 - \frac{2}{3} = \frac{1}{3}$ $\frac{1}{3} \div 2 = \frac{1}{6}$

Answer: $\frac{1}{6}$ of the package

$\frac{1}{3} \div 2 = \frac{1}{3} \times \frac{1}{2} = \frac{1}{6}$

*For another example, see Set D on page 578.

Math Practices and Problem Solving

6. **MP.1 Make Sense and Persevere** Sandra is making vegetable soup. If she makes 12 cups of soup, how many cups of onions does she need? Use the data table on the right. Write the equations needed to solve the problem. Then solve.

DATA

Vegetable	Amount Needed for 3 Cups of Soup
Carrots	$\frac{1}{3}$ cup
Onions	$\frac{1}{8}$ cup
Peas	$\frac{1}{4}$ cup

7. Emily needs to buy fabric to make curtain panels for her windows. Each panel will be 4 feet long and $\frac{1}{2}$ foot wide. Each piece of fabric that she can buy is 4 feet long and 2 feet wide. How many panels can she make from 1 piece of fabric?

8. **Algebra** Barry buys a package of pasta for $2.39 and a jar of tomato sauce for $3.09. He uses a $0.75 coupon and a $0.50 coupon. What is the total cost of Barry's purchase? Write an expression to show your work.

9. **Higher Order Thinking** Mr. Moss had 4 gallons of paint. He painted 8 doors. How many benches can he paint with the paint that is left? Show your work.

Amount of Paint Needed	
Door	$\frac{1}{2}$ gallon per 2 doors
Bench	$\frac{1}{3}$ gallon per bench

Common Core Assessment

10. Sophia uses $\frac{1}{2}$ pound of white flour to make one loaf of bread and $\frac{1}{4}$ pound of cake flour to make one cake. Which shows how many cakes and loaves of bread Sophia can make with the amount of flour that she has?

Ⓐ 12 cakes, 4 loaves of bread
Ⓑ 6 cakes, 8 loaves of bread
Ⓒ 8 cakes, 6 loaves of bread
Ⓓ 4 cakes, 12 loaves of bread

DATA

Flour in Pantry	
Kind of Flour	Amount
Cake	3 pounds
White	2 pounds
Whole Wheat	4 pounds

$2 \div \frac{1}{2} = 2 \times \frac{2}{1} = 4$ loaves

$3 \div \frac{1}{4} = 3 \times \frac{4}{1} = 12$ cakes

A