Home Link 6-14

NAME DATE TIME

Multiplication of a Fraction by a Whole Number; Measurement

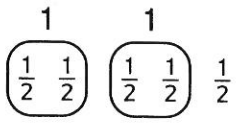
Fractions

Unit 7 begins with students applying and extending their previous understandings of multiplying whole numbers to multiplying a fraction by a whole number. Your child will multiply fractions by whole numbers in different ways: using concrete objects, drawing pictures, and writing equations. Using a variety of strategies helps students build conceptual knowledge and gives them more than one method to choose from when solving problems.

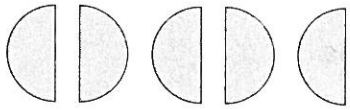
Consider this number story, for example: *Mattie needs $\frac{1}{2}$ cup of granola for each member of her family. She has 5 family members. How much granola does she need for everyone in the family?*

Below are examples of different strategies students might use to solve the problem.

- Use repeated addition: $\frac{1}{2}+\frac{1}{2}+\frac{1}{2}+\frac{1}{2}+\frac{1}{2}=\frac{5}{2}$, or $2\frac{1}{2}$ cups of granola
- Apply relational thinking: Two $\frac{1}{2}$s are 1. Four $\frac{1}{2}$s are two. Another $\frac{1}{2}$ is $2\frac{1}{2}$.
- Draw a picture:



- Use fraction circles:



- Use equations: $5 * \frac{1}{2}=\frac{(5 * 1)}{2}=\frac{5}{2}$

In this unit students create drawings or use models, such as fraction circles or fraction strips, to explain their thinking as they apply their skills in real-life contexts involving time, weight, capacity, and money.

Measurement

In Unit 7 students work with increasingly complex measurement conversion problems. They explore U.S. customary units of capacity, including the cup, pint, quart, and gallon, and solve number stories involving conversions between whole numbers and fractions of units.

Students also convert between pounds and ounces in the course of solving real-world number stories involving U.S. customary units of weight. Lesson 7-12 challenges students with number stories involving decimals in a money context. Here they apply their understanding of fraction/decimal equivalencies and fraction operations to solve the problems. According to the Common Core State Standards, students are not expected to perform operations with decimals until fifth grade. However, the link established through these activities between different representations of numbers, especially fractions and decimals, is a key prerequisite concept for success with decimal computation. Problems like the ones presented in this unit build the foundation for that later work.

Line Plots

Line plots are used to organize and display data. Students analyze data measured to an eighth of a unit, create their own line plots, and use line plots to solve problems involving computations with fractions and mixed numbers.

Division

Students estimate, solve, and assess the reasonableness of answers to multistep division number stories. They plan strategies and write number models with letters for the unknown quantities, explaining how they found each answer and checking to make sure their answer makes sense. Students use division strategies to solve real-world measurement number stories, converting between different units of measurement.

Please keep this Family Letter for reference as your child works through Unit 7.

Vocabulary

Important terms in Unit 7:

line plot A sketch of data in which checkmarks, Xs, stick-on notes, or other marks above a labeled line show the frequency of each value.

mixed number A number that is written using both a *whole number* and a *fraction*. For example, $5\frac{2}{3}$ is a mixed number equal to $5 + \frac{2}{3}$.

multiple of a fraction A product of a fraction and a counting number. For example, $\frac{5}{4}$ is a multiple of $\frac{1}{4}$ because $\frac{5}{4} = 5 * \left(\frac{1}{4}\right)$.

unit fraction A fraction in which the numerator is 1. For example, $\frac{1}{4}$, $\frac{1}{6}$, and $\frac{1}{10}$ are unit fractions. Fractions can be built from unit fractions. For example, $\frac{3}{4}$ can be built from three $\frac{1}{4}$s.

Do-Anytime Activities

To work with your child on concepts taught in this unit, try these activities:

1. Have your child make a list of shoe sizes from the members of the household and create a line plot from the data. Ask questions like these: *What is the largest shoe size? The smallest? What is the difference between the largest and smallest shoe size?*
2. Ask your child to convert weights of common items into fractions of a pound. For example, a 4-ounce tube of toothpaste = $\frac{1}{4}$ pound.

3. Ask questions like these:
   - *How long did it take you to get to school?*
   - *What fraction of an hour is that?*
   - *If it takes you 3 times as long to get to school tomorrow, how long will it take you?*
   - *How much time do you spend all week getting to school?*
4. Look at a store advertisement or sale flyer and pose questions about items sold in bulk. For example: *What is the cost of 1 ____? What is the cost if we buy ____ or ____?*

Building Skills through Games

In this unit your child will play the following new game to increase his or her understanding of fraction operations. For detailed instructions, see the *Student Reference Book*.

Fraction Multiplication Top-It See ***Student Reference Book***, page 264. Students practice multiplying a whole number by a fraction, and they compare their answer with a partner's.

As You Help Your Child with Homework

As your child brings assignments home, it may be helpful to review the instructions together, clarifying them as necessary. The answers listed below will guide you through the Home Links in Unit 7.

Home Link 7-1

1. Answers vary. **3.** Answers vary.

5. 4 pints **7.** 2 pints **9.** 3 quarts

11. 546 **13.** 4,430

Home Link 7-2

1. $\frac{7}{4}$, or $1\frac{3}{4}$ cups

3. a. $\frac{3}{6}$, or $\frac{1}{2}$ cup **b.** $\frac{15}{6}$, or $2\frac{3}{6}$, or $2\frac{1}{2}$ cups

5. 3,250 **7.** 22,104

Home Link 7-3

1. $4 * \frac{1}{5} = \frac{4}{5}$; $\frac{4}{5}$

3. $5 * \frac{1}{2} = \frac{5}{2}$, or $2\frac{1}{2}$; $\frac{5}{2}$, or $2\frac{1}{2}$ avocados

5. $\frac{3}{2}$, or $1\frac{1}{2}$ **7.** $\frac{5}{10}$, or $\frac{1}{2}$

Home Link 7-4

1. $\frac{5}{5}$, or 1 **3.** $\frac{18}{6}$, or 3

5. $5 * \frac{6}{10} = \frac{30}{10}$, or 3 miles

$7 * \frac{6}{10} = \frac{42}{10}$, or $4\frac{2}{10}$, or $4\frac{1}{5}$ miles

7. 2,096 **9.** 14,752

Home Link 7-5

1. $5 * 1\frac{1}{2} = l$; $\frac{15}{2}$, or $7\frac{1}{2}$ pounds; 7 and 8; 120 ounces
3. $14\frac{3}{6}$; 14 and 15
5. $\frac{6}{4}$, or $1\frac{2}{4}$
7. $\frac{3}{6}$

Home Link 7-6

1. $8 * \frac{3}{8} = \frac{24}{8}$, or 3 pounds
3. $4 * \frac{5}{8}$ lb $= \frac{20}{8}$, or $2\frac{4}{8}$ pounds
5. 45 R1
7. 192 R3

Home Link 7-7

1. A; \$2 more per ticket; Sample answer: $276 \div 2 = 138$; $138 \div 6 = 23$; $336 \div 2 = 168$; $168 \div 8 = 21$
3. 4,524
5. 5,817

Home Link 7-8

1. Sample answer: $(5 * 1{,}000) - (8 * 500) = w$; 1,000 milliliters
3. Sample answer: $1{,}400 - (13 * 100) = p$; 100 centimeters
5. $3\frac{4}{6}$
7. $5\frac{2}{12}$

Home Link 7-9

1. The perimeter is 4 times the side length.
3. 125 toothpicks
5. 251
7. 31 R4

Home Link 7-10

1. **a.** Yes; $\frac{5}{2}$, or $2\frac{1}{2}$ miles

   b. $\frac{10}{2}$, or 5 miles; Sample answer: Tony will run $\frac{1}{2}$ mile 5 times a week. $5 * \frac{1}{2} = \frac{5}{2}$ miles. For 2 weeks, add $\frac{5}{2} + \frac{5}{2} = \frac{10}{2}$, or 5 miles. $5 > 4$.
3. 321
5. 147 R4

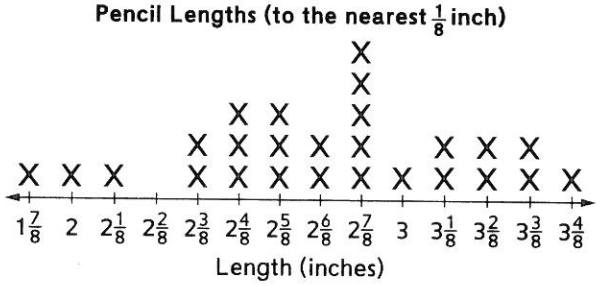
Home Link 7-11

1. $\frac{15}{5}$, or 3
3. 9
5. $1\frac{2}{4}$ pounds; 24 ounces
7. 116 R2
9. 42 R1

Home Link 7-12

1. \$5.53; Sample answer: $7 * \frac{79}{100} = \frac{79}{100} + \frac{79}{100} + \frac{79}{100} + \frac{79}{100} + \frac{79}{100} + \frac{79}{100} + \frac{79}{100} = \frac{553}{100} = 5$ and 53 hundredths $= 5.53$
3. \$1.69; Sample answer: $\frac{1{,}000}{100} - \frac{831}{100} = \frac{169}{100}$
5. $=$
7. $>$

Home Link 7-13



1. 13 students
3. **a.** 3 pencils
   b. 6 inches
5. **a.** $3\frac{4}{8}$ inches
   b. $1\frac{7}{8}$ inches
   c. $4\frac{11}{8}$, or $5\frac{3}{8}$ inches
   d. $1\frac{5}{8}$ inches
7. $12\frac{2}{10}$
9. $3\frac{90}{100}$

Liquid Measures

Home Link 7-1

NAME DATE TIME

Find at least one container that holds each of the amounts listed below. Describe each container and record all the measurements on the label.

SRB 195

(1) About 1 gallon

Container	Liquid Measurements on Label
jug of orange juice	*gallon, 3.78 L*

(2) About 1 quart

Container	Liquid Measurements on Label
container of milk	*1 quart, 32 fl oz*

(3) About 1 pint

Container	Liquid Measurements on Label

(4) About 1 cup

Container	Liquid Measurements on Label

Complete.

(5) 2 quarts = _____ pints

(6) 3 gallons = _____ cups

(7) _____ pints = 4 cups

(8) _____ quarts = 12 cups

(9) 6 pints = _____ quarts

(10) _____ quarts = $2\frac{1}{2}$ gallons

Practice

(11) 273 * 2 = _____

(12) 385 * 4 = _____

(13) _____ = 886 * 5

(14) _____ = 98 * 38

Sugar in Drinks

Home Link 7-2

NAME DATE TIME

Use the information in the table to solve the number stories. In the space below each problem, use pictures or equations to show what you did to find your answers.

SRB 160-161, 196-197

Amount of Sugar in Drinks		
Drink	**Sugar Content (in cups)**	**Serving Size (in ounces)**
Cranberry juice cocktail	$\frac{1}{4}$	12
Fruit punch	$\frac{1}{4}$	12
Orange soda	$\frac{1}{4}$	12
Sweet tea	$\frac{1}{6}$	12

Sources: National Institutes of Health and California Department of Public Health

(1) Carmen drinks one 12-ounce can of orange soda every day. How much sugar is that in 1 week? _____ cup(s)

(2) If you drink one 12-ounce glass of cranberry juice cocktail every morning, how much sugar will that be in 2 weeks? _____ cup(s)

(3) Mike drinks three 12-ounce servings of sweet tea per day.

a. How much sugar is he drinking in his tea in 1 day?

_____ cup(s)

b. In 5 days? _____ cup(s)

Practice

(4) 951 * 4 = _____

(5) 650 * 5 = _____

(6) 425 * 7 = _____

(7) 3,684 * 6 = _____

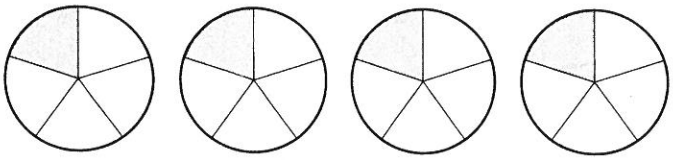
Multiplying Unit Fractions

Home Link 7-3

NAME DATE TIME

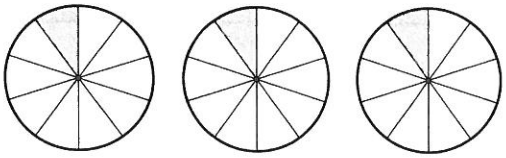
Write a multiplication equation to describe each picture or story.

SRB 171-174

① 

Multiplication equation: _____

What is the fourth multiple of $\frac{1}{5}$? _____

② 

Multiplication equation: _____

What is the third multiple of $\frac{1}{10}$? _____

③ Dmitri fixed a snack for 5 friends. Each friend got $\frac{1}{2}$ of an avocado. How many avocados did Dmitri use?

Multiplication equation: _____

Answer: _____ avocado(s)

④ Juanita made 3 protein shakes. All together, she used 1 cup of protein powder to make them. Each had the same amount.

How many cups of protein powder are in each shake?

Multiplication equation: _____

Answer: _____ cup(s)

Practice

⑤ $\frac{1}{2} + \frac{1}{2} + \frac{1}{2} =$ _____

⑥ $\frac{2}{3} + \frac{2}{3} + \frac{1}{3} =$ _____

⑦ $\frac{9}{10} - \frac{4}{10} =$ _____

⑧ $\frac{8}{12} - \frac{5}{12} =$ _____

Multiplying Fractions by Whole Numbers

Home Link 7-4

NAME DATE TIME

SRB 173-174

Solve the problems below.

① $5 * \frac{1}{5} =$ _____

Draw a picture.

② $3 * \frac{4}{9} =$ _____

Draw a picture.

③ $6 * \frac{3}{6} =$ _____

Draw a picture.

Write a multiplication equation to represent the problem and then solve.

④ Rahsaan needs to make 5 batches of granola bars. A batch calls for $\frac{1}{2}$ cup of honey.

How much honey does he need? Equation: _____

⑤ Joe swims $\frac{6}{10}$ of a mile 5 days per week. How far does he swim every week?

Equation: _____

How far would he swim if he swam every day of the week?

Equation: _____

Practice

⑥ $653 * 3 =$ _____

⑦ $262 * 8 =$ _____

⑧ $357 * 9 =$ _____

⑨ $7{,}376 * 2 =$ _____

Multiplying Mixed Numbers by Whole Numbers

Home Link 7-5

NAME DATE TIME

SRB 175

Solve.

① Michelle's grandmother sent her 5 small gifts for her fifth birthday. Each one weighed $1\frac{1}{2}$ pounds. How much did the gifts weigh all together?

Number model with unknown: _____

Answer: _____ pounds

Between what two whole numbers is this? _____ and _____

How many ounces did the gifts weigh? _____ ounces

② Rochelle bought 4 pieces of ribbon to finish a project. Each piece was $1\frac{5}{12}$ yards long. What is the combined length of the ribbon she bought?

Number model with unknown: _____

Answer: _____ yards

Between what two whole numbers is this? _____ and _____

How many feet is this? _____ feet

③ $3 * 4\frac{5}{6} =$ _____

Between what two whole numbers is this? _____ and _____

④ $6 * 7\frac{3}{8} =$ _____

Between what two whole numbers is this? _____ and _____

Practice

⑤ $\frac{3}{4} + \frac{2}{4} + \frac{1}{4} =$ _____

⑥ $\frac{4}{8} + \frac{3}{8} + \frac{2}{8} =$ _____

⑦ $\frac{5}{6} - \frac{2}{6} =$ _____

⑧ $\frac{88}{100} - \frac{57}{100} =$ _____

Fruit Salad Weight

Home Link 7-6

NAME DATE TIME

Mr. Chou makes fruit salad that he sells in his store. Today he plans to make a fruit salad with 8 pears, 2 cups of grapes, and 4 pints of strawberries. Use the weights below to solve the problems.

SRB 173-174

- A medium pear weighs about $\frac{3}{8}$ lb.
- A cup of grapes weighs about $\frac{2}{8}$ lb.
- A pint of strawberries weighs about $\frac{5}{8}$ lb.

(1) Write a multiplication sentence to show how much the pears weigh. _____

Answer: _____ pound(s)

(2) Write a multiplication sentence to show how much the grapes weigh. _____

Answer: _____ pound(s)

(3) Write a multiplication sentence to show how much the strawberries weigh.

_____

Answer: _____ pound(s)

(4) How much does Mr. Chou's salad weigh in all? Show your work.

Answer: _____ pound(s)

Practice

(5) 361 / 8 = _____

(6) 396 ÷ 7 = _____

(7) 963 / 5 = _____

(8) 633 / 4 = _____

Division Number Stories

Home Link 7-7

NAME DATE TIME

Solve. Show your work.

SRB 111-115

(1) Robert and Jason want to buy a group ticket package for football games. Package A costs $276 and includes 2 tickets for each of 6 games. Package B costs $336 and includes 2 tickets for each of 8 games. Which package charges more per ticket? How much more per ticket?

Package _____ charges $_____ more per ticket.

(2) Rebecca wants to put 544 pennies in a coin-collection book. The blue book fits 9 pennies per page. The red book fits 7 pennies per page. How many more pages would she need if she used the red book rather than the blue one?

The red book will take _____ more pages than the blue book.

What did you do with any remainders you found?

_____

_____

_____

Practice

(3) 754 * 6 = _____

(4) 906 * 2 = _____

(5) _____ = 831 * 7

(6) _____ = 84 * 29

More Division Measurement Number Stories

Home Link 7-8

NAME DATE TIME

Read each number story. Use the information to write a number model with an unknown and then solves.

SRB 111-115, 292

(1) Kelly is in charge of bringing water for her softball game. The 8 members of the team have matching team water bottles that hold 500 mL. Kelly buys 5 liters of water at the store. If she fills all the bottles, how many milliliters of water will Kelly have left?

Number model with unknown: _____

Answer: _____ milliliters

(2) The distance around all the bases in softball is 72 meters. If Kelly hits 2 home runs and runs around the bases twice, how many millimeters will she run?

Number model with unknown: _____

Answer: _____ millimeters

(3) In women's softball the pitcher stands about 13 meters from the batter's box. In men's softball the pitcher stands about 1,400 centimeters from the batter's box. About how many more centimeters is it from the men's pitcher to the batter's box than from the women's pitcher to the batter's box?

Number model with unknown: _____

Answer: About _____ centimeters

(4) The 6 games Kelly's team played took a total of 7 hours.

a. How many minutes total did they play softball?

Number model with unknown: _____

Answer: _____ minutes

b. If each game lasted the same amount of time, how many minutes did each one last?

Number model with unknown: _____

Answer: _____ minutes

Practice

(5) $1\frac{3}{6} + 2\frac{1}{6} =$ _____

(6) $4\frac{3}{5} + 5\frac{4}{5} =$ _____

(7) $7\frac{5}{12} - 2\frac{3}{12} =$ _____

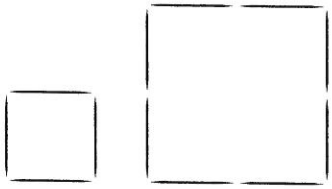
(8) $6\frac{1}{3} - 2\frac{2}{3} =$ _____

Perimeter Patterns

Home Link 7-9

NAME DATE TIME

Alice was making squares out of toothpicks. She noticed a pattern involving the length of one side and the perimeter of the square. Complete the table and then answer the questions that follow.



Side Length	Perimeter
1	4
2	
	12
4	
	20

SRB 200-201, 58-59

(1) What rule describes the relationship between the length of one side and the perimeter of a square?

(2) What would be the perimeter of a square with a side length of 25 toothpicks?

_____ toothpicks

(3) What would be the side length of a square with a perimeter of 500 toothpicks?

_____ toothpicks

(4) Describe at least two other patterns you notice in the table _____

Practice

(5) 753 ÷ 3 = _____

(6) _____ = 386 ÷ 2

(7) 283 ÷ 9 → _____

(8) 505 ÷ 6 → _____

Fitness Challenge

Home Link 7-10

NAME DATE TIME

Use the information in the table below to solve the number stories.

SRB 162-164, 173-174

During Marcy School's 2-week challenge, each student who meets a goal wins a prize.

Marcy's Fitness Challenge Goals			
Activity	**Total Distance**	**Activity**	**Total Distance**
Walking	6 miles	Bike Riding	6 miles
Swimming	1 mile	Running	4 miles

① Tony will run $\frac{1}{2}$ mile after school each day. Will he win a prize? _____

a. Distance run in 1 week: _____ mile(s) **b.** In 2 weeks: _____ mile(s)

Explain how you found your answer.

_____

_____

② Three times a week, Tina walks $\frac{3}{10}$ mile from school to the library, studies for 1 hour, and then walks $\frac{4}{10}$ mile home. How much more will she need to walk to win a prize?

_____ mile(s)

Explain how you found your answer.

_____

_____

_____

Practice

③ 642 ÷ 2 = _____

④ 386 / 9 → _____

⑤ 739 / 5 → _____

⑥ $4\overline{)829}$ → _____

Fractions and Mixed Numbers

Home Link 7-11

NAME DATE TIME

Solve. Draw a picture or show how you solved the problem.

SRB 162-165, 173-176

① $5 * \frac{3}{5} =$ _____

② _____ $= 4\frac{2}{6} - 2\frac{4}{6}$

③ $5\frac{7}{8} + 3\frac{1}{8} =$ _____

④ _____ $= 3 * 4\frac{1}{4}$

⑤ The combined weight of an assortment of fruit is $8\frac{3}{4}$ pounds. When the fruit is on a tray, the tray weighs $10\frac{1}{4}$ pounds. How many pounds does the tray weigh when empty? _____ pound(s)

How many ounces does the tray weigh when empty? _____ ounce(s)

⑥ $\left(3 * 2\frac{2}{3}\right) + \left(2 * 4\frac{1}{3}\right) =$ _____

Practice

⑦ $3\overline{)350}$

⑧ $6\overline{)832}$

⑨ $7\overline{)295}$

⑩ $9\overline{)582}$

Shopping for Bargains

Home Link 7-12

NAME DATE TIME

Solve each number story and show how you solved the problems.

SRB 166-167, 175-176

(1) Phil wants to buy some Creepy Creature erasers that cost $1.05 each. If he buys 5 or more, the price is $0.79 each. If he decides to buy 7 erasers, how much will he spend?

Answer: $_____

(2) Mrs. Katz bought 3 pounds of apples and a muffin for snacks. The apples cost $2.59 per pound if you buy less than 3 pounds and $2.12 per pound if you buy 3 or more pounds. The muffin cost $1.95. How much did she spend?

Answer: $_____

Try This

(3) Mrs. Katz paid with a $10 bill. How much change did she get back?

Answer: $_____

Practice

Fill in the blanks with >, <, or =.

(4) 0.55 ___ 0.65 (5) 0.3 ___ 0.30 (6) 0.72 ___ 0.8 (7) 0.4 ___ 0.31

Pencil Lengths

Home Link 7-13

NAME DATE TIME

At the beginning of the year Mrs. Kerry gave each student in her class a new pencil with "Welcome to 4th Grade" written on it. A month later the class measured their pencils to the nearest $\frac{1}{8}$ inch.

SRB 215

Pencil Lengths to the Nearest $\frac{1}{8}$ inch

$2\frac{1}{8}$	$3\frac{1}{8}$	$2\frac{7}{8}$	$2\frac{4}{8}$	$3\frac{3}{8}$	$2\frac{7}{8}$	3	$2\frac{5}{8}$	$2\frac{5}{8}$	$2\frac{7}{8}$	$3\frac{3}{8}$	$2\frac{6}{8}$	$2\frac{4}{8}$
$2\frac{3}{8}$	$2\frac{7}{8}$	$1\frac{7}{8}$	$3\frac{2}{8}$	$2\frac{7}{8}$	$3\frac{4}{8}$	$2\frac{6}{8}$	$2\frac{3}{8}$	$3\frac{1}{8}$	2	$2\frac{4}{8}$	$2\frac{5}{8}$	$3\frac{2}{8}$

Plot the data set on the line plot.

Title: _____

_____