Home Link 7-14

NAME DATE TIME

Fraction Operations; Applications

Think back to how you learned to ride a bike as a child. What if you were allowed to practice only on a stationary bike rather than a real one? When you finally ventured out onto the neighborhood streets expecting to ride like a pro, you would probably be disappointed! Without an opportunity to apply what you learned to a real-world situation, you would never have to apply the brakes going down a hill or maneuver around a sharp curve. Likewise, if students aren't given a chance to apply what they learn in mathematics to real-world situations, it may seem to them like useless knowledge. To help make mathematics more meaningful to students, Unit 8 asks them to apply what they have learned throughout the year to real-world problems.

Fraction Operations

This year students have explored adding, subtracting, and multiplying fractions. In Unit 8 they will apply fraction and mixed-number operations to help them solve real-world problems involving the perimeter and area of rectangles and units of measure. For example, students will use the relationship between perimeter and area to find the missing side length of a fence or determine the fractional amounts of juice needed to make fruit punch.

Angle Applications

Angles play important roles in many real-life situations, including carpentry, measuring the angles of the sun, and many sports. Lesson 8-2 uses hockey to demonstrate real-world applications of students' knowledge of angles. For instance, when a hockey player wants to pass the puck and an opponent is blocking the path, the passer hits the puck off the boards at an angle, causing the puck to travel around the opponent. This is called "banking the puck." In Lesson 8-2 students also use what they have learned about angles to explore the role angles play in our field of vision, which is the angle that includes the area that can be seen without moving the head or eyes.

More Applications

In Lesson 8-4 students apply their knowledge of symmetry to quilting patterns and then create their own quilt based on specified numbers of lines of symmetry. In Lesson 8-5 students use real-world data about envelope sizes from the U.S. Postal Service to create line plots. They then answer questions about the data by adding and subtracting fractions. In Lesson 8-12 students use their knowledge of place value, addition, and subtraction to solve challenging puzzles called cryptarithms. In Lesson 8-13 students find equivalent names for numbers.

Please keep this Family Letter for reference as your child works through Unit 8.

Vocabulary

Important terms in Unit 8:

equivalent names Different ways of naming the same number. For example, $2 + 6$, $4 + 4$, $12 - 4$, $18 - 10$, $100 - 92$, $5 + 1 + 2$, eight, VIII, and 𝍸 /// are all equivalent names for 8.

fluid ounce (fl oz) A U.S. customary unit of volume or capacity equal to $\frac{1}{16}$ of a pint, or about 29.6 milliliters.

Do-Anytime Activities

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

1. Have your child complete number puzzles found in newspapers, magazines, or online. Discuss with your child how he or she found the solutions.
2. Ask your child to measure a rectangular object such as an envelope, notebook, or room in your home. Have him or her find both the perimeter and the area of the object and then compose a word problem about the measurements.
3. Ask your child to point out items that he or she believes are symmetrical. How many lines of symmetry are there in those items?
4. Have your child point out angles in your home and estimate their measures. Ask your child to add angles together or find missing angles based on these estimates.
5. Show your child a food or beverage container and have him or her locate the liquid volume and convert it to a smaller unit. For instance, a juice box might hold 1 cup of juice, which means it holds 8 fluid ounces of juice.

Building Skills through Games

In Unit 8 students play the following game to increase their understanding of numbers and the properties of numbers. For detailed instructions, see the *Student Reference Book*.

Name That Number See *Student Reference Book*, page 268. This game provides practice representing numbers in different ways, using any or all of the four operations: addition, subtraction, multiplication, and division.

As You Help Your Child with Homework

As your child brings assignments home, you may want to go over instructions together, clarifying them as necessary. The answers listed below will guide you through the Home Links in Unit 8.

Home Link 8-1

1. Team B's car; 27 cm **3.** 180 cm

5. 2,833 R1 **7.** 715 R3

Home Link 8-2

1. 165°; $82° + 83° = f$ **3.** 87°; $3° + w = 90°$

5. 137°; $180° - 43° = s$ **7.** $\frac{5}{3}$, or $1\frac{2}{3}$

9. $\frac{11}{5}$, or $2\frac{1}{5}$

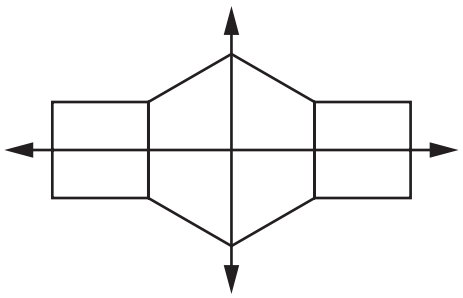
Home Link 8-3

1. 60°; Sample answers: $30° + 30° = 60°$; The measure of each small white rhombus angle is 30°, so two of them make 60°.

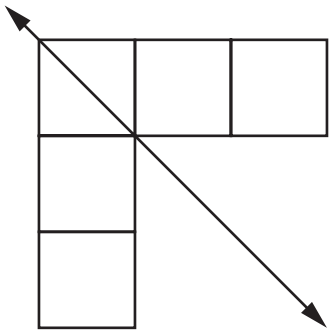
3. 16,764 **5.** 4,888

Home Link 8-4

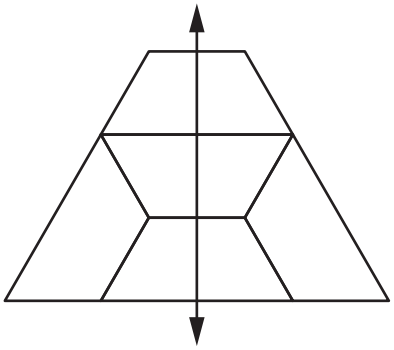
1.



3.

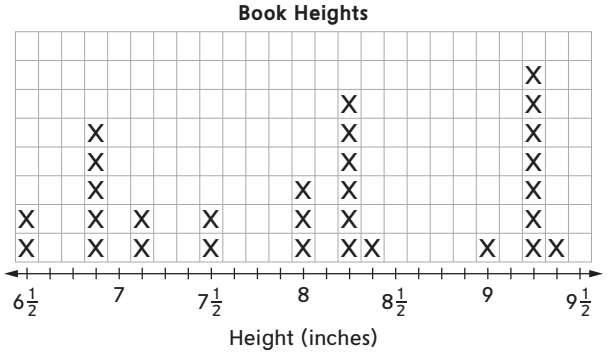


5. 1 line of symmetry;



7. $\frac{30}{6}$, or 5 **9.** $\frac{28}{10}$, or $2\frac{8}{10}$

Home Link 8-5



1. $2\frac{7}{8}$ in. **3.** 1,172 R3

Home Link 8-6

1. $7\frac{2}{6}$ yd **3.** Width = $\frac{12}{100}$ km

5. Width = $2\frac{3}{10}$ cm **7.** $\frac{4}{3}$, or $1\frac{1}{3}$

9. $\frac{36}{5}$, or $7\frac{1}{5}$

Home Link 8-7

1. 3.26 kilograms; Sample answer: I thought about what number added to 4 would give me $7\frac{26}{100}$. First I added 3 to get 7. Then I added $\frac{26}{100}$ to get $7\frac{26}{100}$. Finally, $3 + \frac{26}{100} = 3\frac{26}{100} = 3.26$

3. 7.8 cm; Sample answer: $11.4 = 11\frac{4}{10}$ and $3.6 = 3\frac{6}{10}$; $11\frac{4}{10} = 10 + \frac{10}{10} + \frac{4}{10} = 10\frac{14}{10}$; $10\frac{14}{10} - 3\frac{6}{10} = 7\frac{8}{10} = 7.8$

5. 14,316 **7.** 2,016

Home Link 8-8

1. **a.** $4\frac{1}{12}$ square feet **b.** $12\frac{8}{12}$ feet

2. **a.** $5\frac{6}{12}$ square feet **b.** $6\frac{4}{12}$ feet

3. $8\frac{4}{10}$ square inches

5. $\frac{4}{6}$ **7.** $\frac{4}{10}$

Home Link 8-9

1. $5\frac{1}{4}$ feet; Sample answer: $3 * 1\frac{3}{4} = (3 * 1) + (3 * \frac{3}{4}) = 3 + \frac{9}{4} = 3\frac{9}{4}$, or $5\frac{1}{4}$

2. Yes. Sample answer: $(5 * 1\frac{1}{2}) + (4 * 1\frac{3}{4}) = 5\frac{5}{2} + 4\frac{12}{4} = 7\frac{1}{2} + 7 = 14\frac{1}{2}$

3. $\frac{6}{6}$, or 1 **5.** $\frac{54}{100}$

Home Link 8-10

1. Rule: * 8

in (gallons)	out (pints)
2	16
$3\frac{1}{2}$	28
6	48
$7\frac{1}{4}$	58
10	80

3. **a.** Yes. Sample answer: The total amount of all the ingredients combined is 18 fluid ounces, so the smoothie will fit in the 24-fluid ounce glass.

b. $\frac{3}{4}$ cup

c. $2\frac{1}{4}$ cups orange juice; 12 fluid ounces cold water; 3 cups vanilla ice cream

d. 54 fluid ounces

5. 1,859 **7.** 519

Home Link 8-11

1. **a.** $3\frac{1}{8}$ pounds; Sample answer: $(1\frac{1}{2} + \frac{1}{2}) + (\frac{3}{4} + \frac{1}{4}) + \frac{1}{8} = 2 + 1 + \frac{1}{8} = 3\frac{1}{8}$

b. 50 ounces; Sample answer: One pound equals 16 ounces; $\frac{1}{8}$ of a pound = 2 ounces; so $(3 * 16) + 2 = 48 + 2 = 50$

c. 2 packages; Sample answer: 1 of each size uses 50 ounces, so 2 of each size would use $2 * 50 = 100$ ounces. $100 > 80$, so 1 package isn't enough.

2. $1\frac{2}{8}$, or $1\frac{1}{4}$ pounds; Sample answer: $(\frac{1}{8} + \frac{1}{8}) + (\frac{1}{4} + \frac{3}{4}) = \frac{2}{8} + 1 = 1\frac{2}{8}$, or $1\frac{1}{4}$

3. 15,321 **5.** 2,146

Home Link 8-12

1. Sample answer: 973 + 51 = 1,024

3. 80 * 64 = 5,120

5. **a.** 27; 9 * 3 = 27 **b.** $\frac{1}{3}$; 3 / 9 = $\frac{1}{3}$

7. $4\frac{10}{8}$, or $5\frac{2}{8}$ **9.** $10\frac{181}{100}$, or $11\frac{81}{100}$

Home Link 8-13

1. Sample answers:

9,990
2,016 + 7,974
(1,427 * 7) + 1
1,665 * 6
9,000 + 900 + 90
13,558 − 3,568

3. Answers vary.

5. $3\frac{2}{4}$ **7.** $2\frac{8}{12}$