Name Date Time

Family Letter

Study Link 11.8

Unit 12: Rates

For the next two or three weeks, your child will be studying rates. Rates are among the most common applications of mathematics in daily life.

A rate is a comparison involving two different units. Familiar examples come from working (dollars per hour), driving (miles per hour), eating (calories per serving), reading (pages per day), and so on.

Our exploration of rates will begin with students collecting data on the rate at which their classmates blink their eyes. The class will try to answer the question, "Does a person's eye-blinking rate depend on what the person is doing?"

During this unit, students will collect many examples of rates to display in a Rates Museum. Then they will use these examples to make up rate problems, such as the following:

1. If cereal costs $2.98 per box, what will 4 boxes cost?
2. If a car's gas mileage is about 20 miles per gallon, how far can the car travel on a full tank of gas (16 gallons)?
3. If I make $6.25 per hour, how long must I work to earn enough to buy shoes that cost $35?

Then the class will work together to develop strategies for solving rate problems.

The unit emphasizes the importance of mathematics to smart consumers. Your child will learn about unit-pricing labels on supermarket shelves and how to use these labels to decide which of two items is the better buy. Your child will see that comparing prices is only *part* of being a smart consumer. Other factors to consider include quality, the need for the product, and, perhaps, the product's effect on the environment.

This unit provides a great opportunity for your child to help with the family shopping. Have your child help you decide whether the largest size is necessarily the best buy. Is an item on sale necessarily a better buy than a similar product that is not on sale?

Finally, students will look back on their experiences in the yearlong World Tour and share them with one another.

Nutrition Facts
Serving Size 1 link (45 g)
Servings per Container 10

Amount per Serving
Calories 150 Calories from Fat 120

	% Daily Value
Total Fat 13 g	**20**%
Total Carbohydrate 1 g	<**1**%
Protein 7 g	

Please keep this Family Letter for reference as your child works through Unit 12.

Vocabulary

Important terms in Unit 12:

comparison shopping Comparing prices and collecting other information needed to make good decisions about which of several competing products or services to buy.

consumer A person who acquires products or uses services.

per *In each* or *for each,* as in ten chairs per row or six tickets per family.

rate A comparison by division of two quantities with unlike units. For example, a speed such as 55 miles per hour is a rate that compares distance with time.

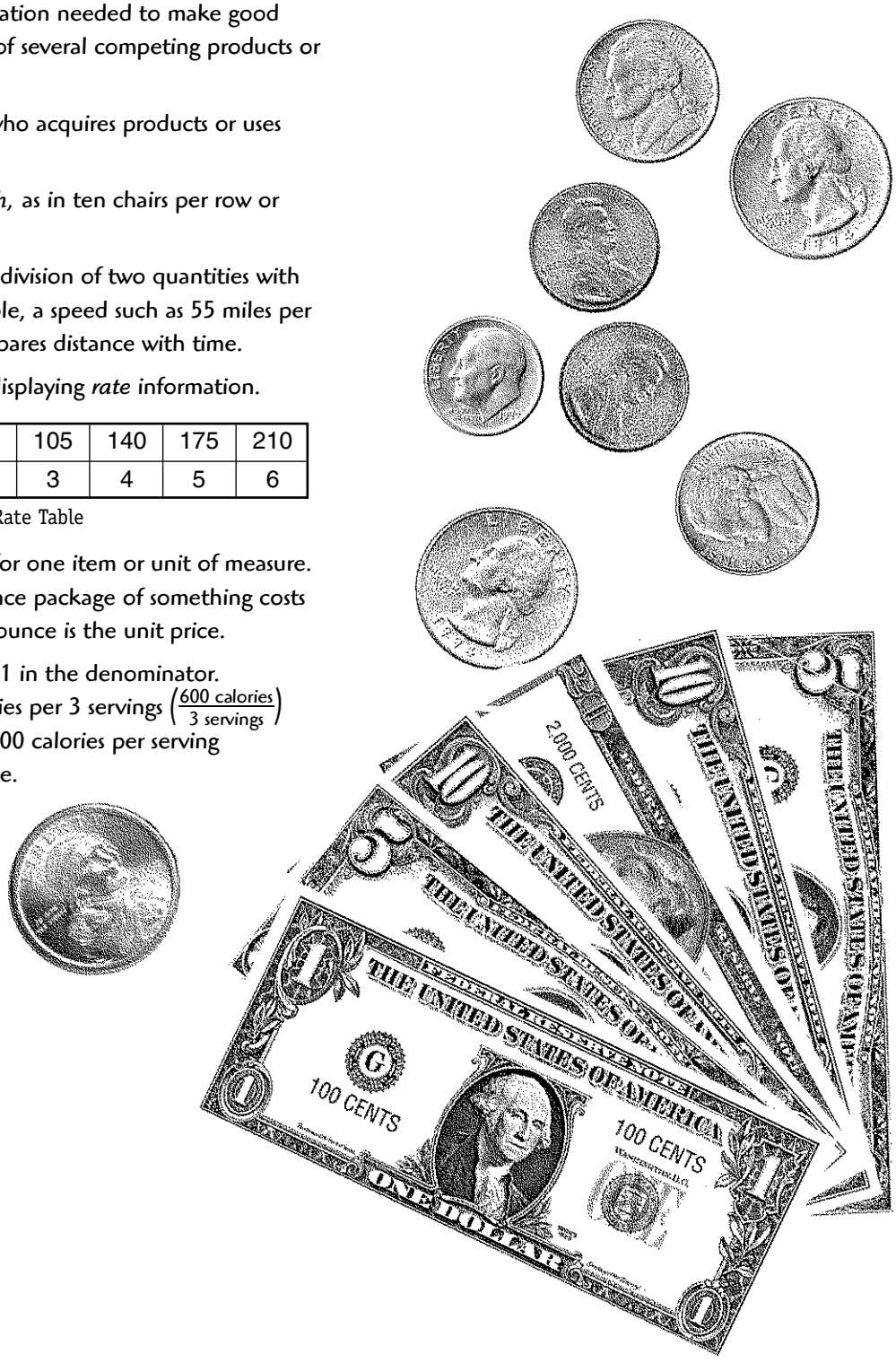
rate table A way of displaying *rate* information.

Miles	35	70	105	140	175	210
Gallons	1	2	3	4	5	6

Rate Table

unit price The price for one item or unit of measure. For example, if a 5-ounce package of something costs $2.50, then $0.50 per ounce is the unit price.

unit rate A *rate* with 1 in the denominator. For example, 600 calories per 3 servings $\left(\frac{600 \text{ calories}}{3 \text{ servings}}\right)$ is not a unit rate, but 200 calories per serving $\left(\frac{200 \text{ calories}}{1 \text{ serving}}\right)$ is a unit rate.



Do-Anytime Activities

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

1. Have your child examine the Nutrition Facts labels on various cans and packages of food. The label lists the number of servings in the container and the number of calories per serving. Have your child use this information to calculate the total number of calories in the full container or food. *For example:*

   A can of soup has 2.5 servings.
   There are 80 calories per serving.
   So the full can has 2.5 * 80 = 200 calories.

2. Have your child point out rates in everyday situations. *For example:*

   store price rates: cost per dozen, cost per 6-pack, cost per ounce
   rent payments: dollars per month, or dollars per year
   fuel efficiency: miles per gallon
   wages: dollars per hour
   sleep: hours per night
   telephone rates: cents per minute
   copy machine rates: copies per minute

3. Use supermarket visits to compare prices for different brands of an item, and for different sizes of the same item. Have your child calculate unit prices and discuss best buys.

Building Skills through Games

In this unit, your child will extend his or her understanding of addition and subtraction of positive and negative numbers by playing the following game. For detailed instructions, see the *Student Reference Book,* page 193.

***Credits/Debits Game* (Advanced Version)** This game for 2 players simulates bookkeeping for a small business. A deck of number cards represents "credits" and "debits." Transactions are entered by the players on recording sheets that are easily drawn. The game offers practice in addition and subtraction of positive and negative integers.

As You Help Your Child with Homework

As your child brings assignments home, you may want to go over the instructions together, clarifying them as necessary. The answers listed below will guide you through this unit's Study Links.

Study Link 12.1

Answers vary.

Study Link 12.2

1. $315

2. $12

3. 14 hours

Hours	2	4	6	8	10	12	14
Days	1	2	3	4	5	6	7

4. **a.** 364 **b.** 156

Minutes	52	104	156	208	260	312	364
Days	1	2	3	4	5	6	7

Study Link 12.3

1.

Gallons	20	140	600	7,300
Days	1	7	30	365

7,300 gallons per year

2.

Gallons	300	2,100	9,000	109,500
Days	1	7	30	365

109,500 gallons per year

3.

Gallons	3	21	90	1,095
Days	1	7	30	365

90 gallons per month

4. 195,000 gallons

Study Link 12.4

Answers vary.

Study Link 12.5

1. $0.63

2. $0.37

3. $0.15

4. $0.15

5. $0.94

6. Sample answer: The 8-ounce cup costs $0.09 per ounce, and the 6-ounce cup costs $0.10 per ounce, so the 8-ounce cup is the better buy.

Study Link 12.6

1. 1,245

2. 9

3. **a.** 70

b. 50

4. $\frac{1}{7}$

5. **a.** China

b. Dem. Rep. of Congo, Germany, and Sudan

c. 6

d. $9\frac{1}{2}$

e. 9