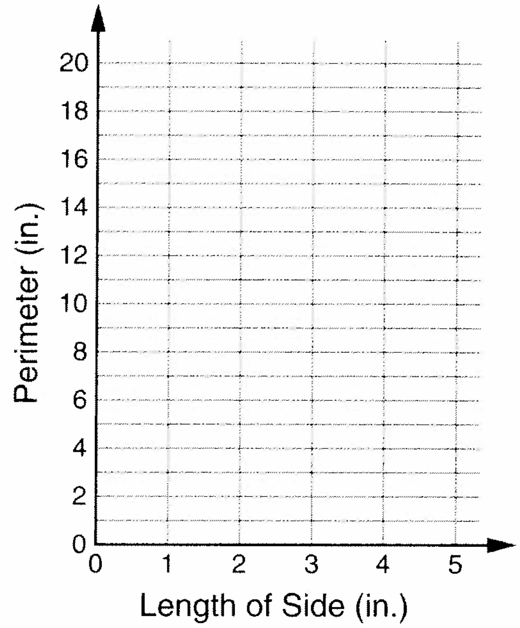
Name Date Time

STUDY LINK 3·6 Area and Perimeter *continued*

2. Graph the perimeter data from the table on page 86. Use the grid at the right.



Use the graph you made in Problem 2 to answer the following questions.

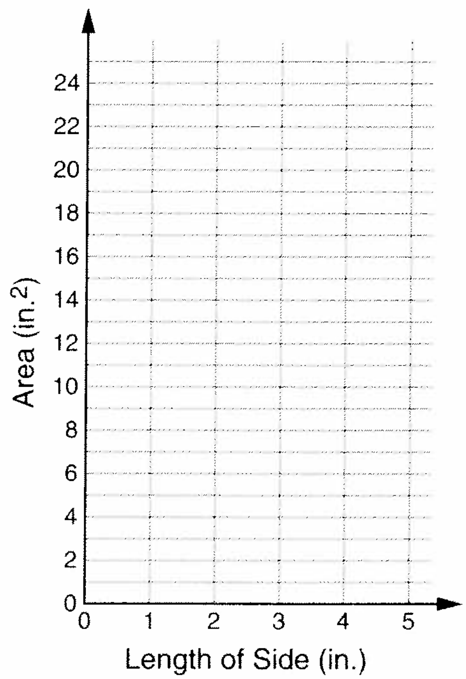
3. If the length of the side of a square is $2\frac{1}{2}$ inches, what is the perimeter of the square?

____
(unit)

4. If the length of the side of a square is $4\frac{1}{4}$ inches, what is the perimeter of the square?

____
(unit)

5. Graph the area data from the table on page 86. Use the grid at the right.



Use the graph you made in Problem 5 to answer the following questions.

6. If the length of the side of a square is $1\frac{1}{2}$ inches, what is the approximate area of the square?

About __________
(unit)

7. If the length of the side of a square is $3\frac{1}{4}$ inches, what is the approximate area of the square?

About __________
(unit)

Practice

Find the missing dimension for each rectangle.

8. $b = 5.5$ cm; $h = 9.9$ cm; $A =$ __________ cm^2

9. $b = 36$ in.; $h =$ __________ in.; $A = 151.2$ $in.^2$

Name Date Time

LESSON **3·6**

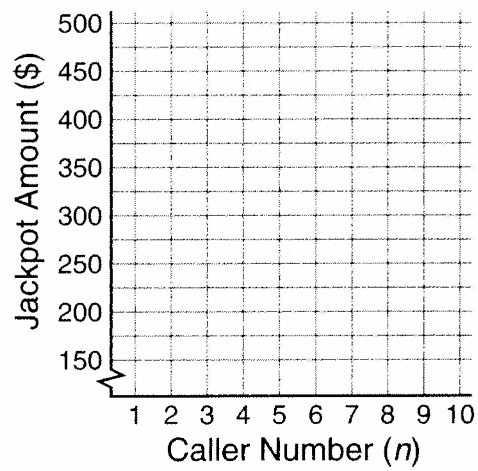
Using Graphs to Make Predictions

Radio station WSUM has a contest in which listeners call in to win money. The contest begins with a $200 jackpot. One caller each hour can win the jackpot by correctly answering a math question. If the caller does not give a correct answer, $25 is added to the jackpot for the next hour.

1. Some available jackpot amounts for callers appear in the table below. Complete the table. Then graph the data values from the table.

Caller Number (*n*)	Jackpot Amount ($)
1	200
2	225
3	
	275
5	

WSUM Contest



2. Suppose you were the eighth caller to WSUM and you answered correctly. Extend your graph to predict the amount of money you would win. ____________

3. The formula (*n* − 1) ∗ $25 + $200 can be used to express the jackpot amount for any caller. Use this formula to complete the table below. Refer to page 247 of the *Student Reference Book* if you need to review the order of operations.

Rule: (*n* − 1) ∗ $25 + $200

in	out
n	(*n* − 1) ∗ $25 + $200
2	$225
4	
15	
	$825
101	

Try This

Predict the number of the caller who would win a jackpot of $1,000,000. Use the formula (*n* − 1) ∗ $25 + $200 to check your prediction.

Name Date Time

STUDY LINK 3•7

Spreadsheet Practice

SRB 142–144

Ms. Villanova keeps a spreadsheet of her monthly expenses. Use her spreadsheet to answer the questions below.

	A	B	C	D	E
1		January	February	March	**Total**
2	Groceries	$125.25	$98.00	$138.80	$362.05
3	Phone Bill	$34.90	$58.50	$25.35	
4	Car Expenses	$25.00	$115.95	$12.00	
5	Rent	$875.00	$875.00	$875.00	

1. What is shown in cell B1? ____________

2. What is shown in cell C4? ____________

3. Which cell contains the word *Rent?* ____________

4. Which cell contains the amount $58.50? ____________

5. Ms. Villanova used column E to show the total for each row. Find the missing totals and enter them on the spreadsheet.

6. Write a formula for calculating E3 that uses cell names. ____________

7. Write a formula for calculating E5 that uses cell names. ____________

8. Ms. Villanova found that she made a mistake in recording her March phone bill. Instead of $25.35, she should have entered $35.35. After she corrects her spreadsheet, what will the new total be in cell E3?

____

Practice

Find the missing dimension for each square.

9. s = 12 cm; A = ____________ cm^2

10. s = ____________ in.; A = 81 in.^{2}

11. s = 8.6 mm; A = ____________ mm^2

12. s = ____________ ft; A = 289 ft^2

Name Date Time

STUDY LINK 3·8

Adding Positive and Negative Numbers

Solve.

1. $b + 9 = 3$; $b =$ ________

2. $-5 + a = -1$; $a =$ ________

3. $m + (-5) = -4$; $m =$ ________

4. $k + 3 = -3$; $k =$ ________

Add.

5. $13 + (-5) =$ ________

6. $(-10) + 12 =$ ________

7. ________ $= (-7) + (-8)$

8. ________ $= (-15) + 10$

9. $(-4) + (-9) =$ ________

10. ________ $= 7 + (-19)$

11. Complete the "What's My Rule?" table.

x	y
8	2
4	−2
2	−4
	−6
	−8
	−15

a. Give the rule for the table in words.

____

b. Circle the formula that describes the rule.

$x + 6 = y$ $\quad x * (-6) = y$ $\quad x + (-6) = y$ $\quad \frac{x}{6} = y$

Practice

12. Evaluate when $k = 5$.

a. k^2 ________ **b.** 2^k ________ **c.** $10k$ ________ **d.** $-24 + k$ ________

13. Evaluate when $x = -1$.

a. 10^x ________ **b.** 2^x ________ **c.** $(\frac{1}{2})^x$ ________ **d.** $x + (-8)$ ________

Name Date Time

LESSON 3·8

Spreadsheet Scramble Problems

Study the completed *Spreadsheet Scramble* game mat at the right.

Player 1 gets 1 point each for F3, F4, and C5.

Player 2 gets 1 point each for F2 and E5.

Player 1 wins the game, 3 points to 2 points.

Notice that if the numbers in cells C2 and B4 were interchanged and new totals were calculated, Player 2 would win the game, 4 points to 2 points.

	A	B	C	D	E	F
1						Total
2		−1	−6	3	−5	−9
3		4	2	−4	6	+8
4		−3	5	1	−2	+1
5	Total	0	+1	0	−1	

	A	B	C	D	E	F
1						Total
2		−1	−6	3	−5	−9
3		4	2	−4	6	+8
4		−3	5	1	−2	+1
5	Total	0	+1	0	−1	

→

	A	B	C	D	E	F
1						Total
2		−1	−3	3	−5	−6
3		4	2	−4	6	+8
4		−6	5	1	−2	−2
5	Total	−3	+4	0	−1	

Can you switch the values of two other cells so that Player 2 would win the game?

1. Which cells would you interchange?

____

2. What would be the new score of the game?

Player 1 ________ Player 2 ________

3. Fill in the new game mat.

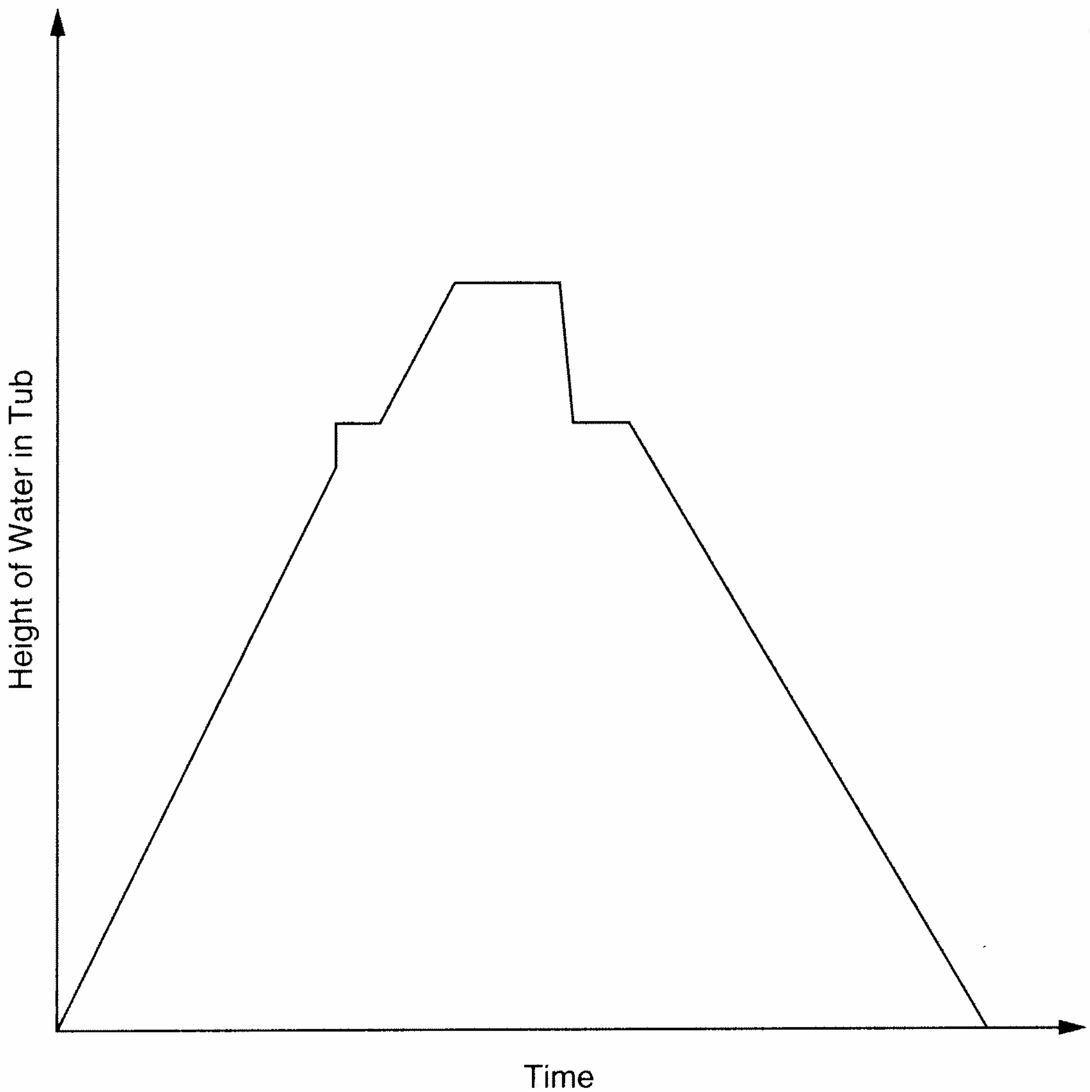
	A	B	C	D	E	F
1						Total
2						
3						
4						
5	Total					

Name Date Time

LESSON 3•9

A Time Story

Satya runs water into his bathtub. He steps into the tub, sits down, and bathes. He gets out of the tub and drains the water. The graph shows the height of the water in the tub at different times.



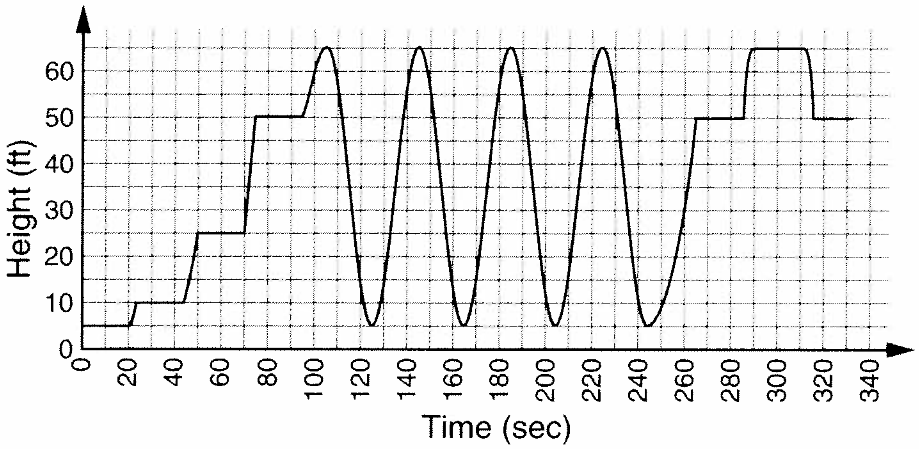
Name Date Time

STUDY LINK 3•9

Ferris Wheel Time Graph

The time graph below shows the height of Rose's head from the ground as she rides a Ferris wheel. Use the graph to answer the following questions.

SRB 140



1. Explain what is happening from 0 to 95 seconds. ______________________

____

2. How long is Rose on the Ferris wheel before she is back to the position from which she started? About ______ (unit)

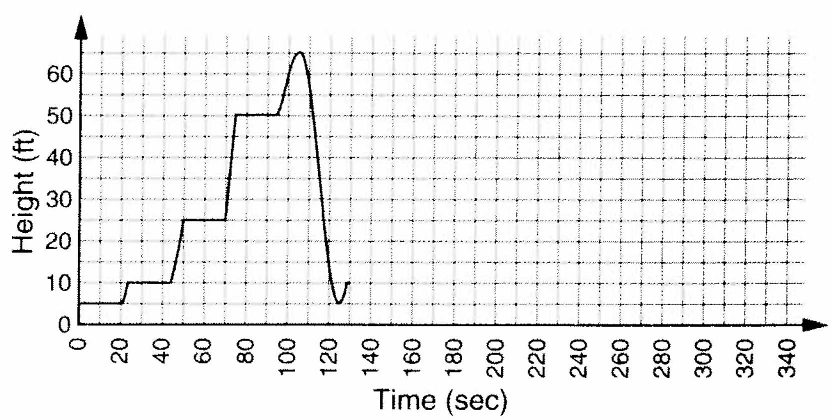
3. After the Ferris wheel has been completely loaded, about how long does the ride last before unloading begins? ______ (unit)

4. After the Ferris wheel has been loaded, how many times does the wheel go around before unloading begins? ______ (unit)

5. When the ride is in full swing, approximately how long does one complete revolution of the wheel take? ______ (unit)

Try This

6. Rose takes another ride. After 130 seconds, the Ferris wheel comes to a complete stop because of an electrical failure. It starts moving again 2 minutes later. Complete the graph to show this event.



Name Date Time

LESSON 3•9

Matching Events, Tables, and Graphs

Cut out the situations, tables, and graphs. After you match each situation with one table and one graph, tape or glue them onto a separate sheet of paper. When you are finished, you will have one table and one graph left over.

A fern was growing rapidly in its pot for a while until it didn't get enough water. The fern then stopped growing.

A fern was growing slowly in its pot due to a lack of sunlight. When the fern was moved to a nearby windowsill, it began to grow more rapidly.

A fern was growing rapidly in its pot for a while until it was knocked over and a dog bit off the top. It stopped growing for a while before it eventually began to grow again.

Table 1

Week	Height
1	4 in.
2	6 in.
3	8 in.
4	9.5 in.
5	7 in.
6	7 in.
7	8 in.

Table 2

Week	Height
1	4 in.
2	5 in.
3	6 in.
4	7 in.
5	8 in.
6	9 in.
7	10 in.

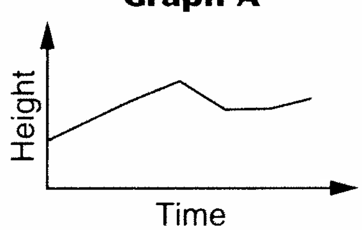
Table 3

Week	Height
1	4 in.
2	4.5 in.
3	5 in.
4	5.5 in.
5	6 in.
6	8 in.
7	10 in.

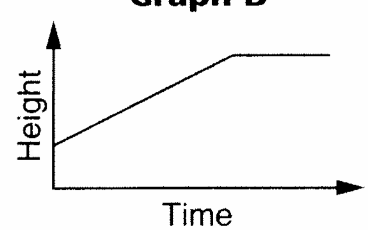
Table 4

Week	Height
1	4 in.
2	6 in.
3	8 in.
4	10 in.
5	12 in.
6	12 in.
7	12 in.

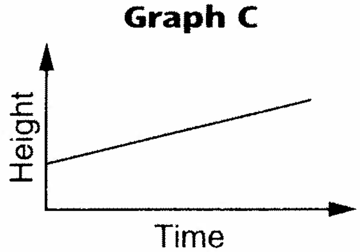
Graph A



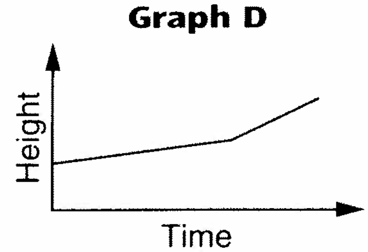
Graph B



Graph C



Graph D



Name Date Time

LESSON 3•9

Mystery Graphs

Make a mystery graph on the grid below. Be sure to label the horizontal and vertical axes. Describe the situation that corresponds to your graph on the lines provided.

Name Date Time

STUDY LINK 3·10

Comparing Pet-Sitting Profits

Jenna and Thomas like to pet-sit for their neighbors. Jenna charges $3 per hour. Thomas charges $6.00 for the first hour and $2 for each additional hour.

SRB 254

1. Complete the table below. Use the table to graph the profit values for each sitter.

Time (hours)	Jenna's Profit ($)	Thomas's Profit ($)
1		
2		
3		
4		
5		

2. Extend both line graphs to find the profit each sitter will make for 6 hours.

Jenna (6 hours) ________ Thomas (6 hours) ________

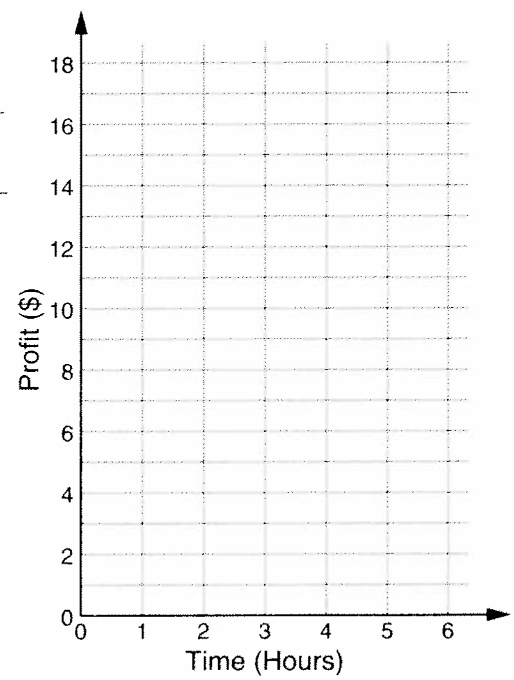
3. Which sitter, Jenna or Thomas, earns more money for jobs of 5 hours or more? ____________

4. Which line graph rises more quickly? ____________

5. Complete each statement. For every hour that passes, Jenna's profit increases by ________; Thomas's profit increases by ________.

6. At what point do the line graphs intersect?

____



Practice

7. Evaluate when $m = 3$.

a. m^4 ________ **b.** 20^m ________ **c.** $4^m + 4m$ ________ **d.** $10^m - 5^m$ ________ **e.** $\frac{m^3}{m^2}$ ________

Name ______________________ Date ______________ Time ______________

LESSON 3•10

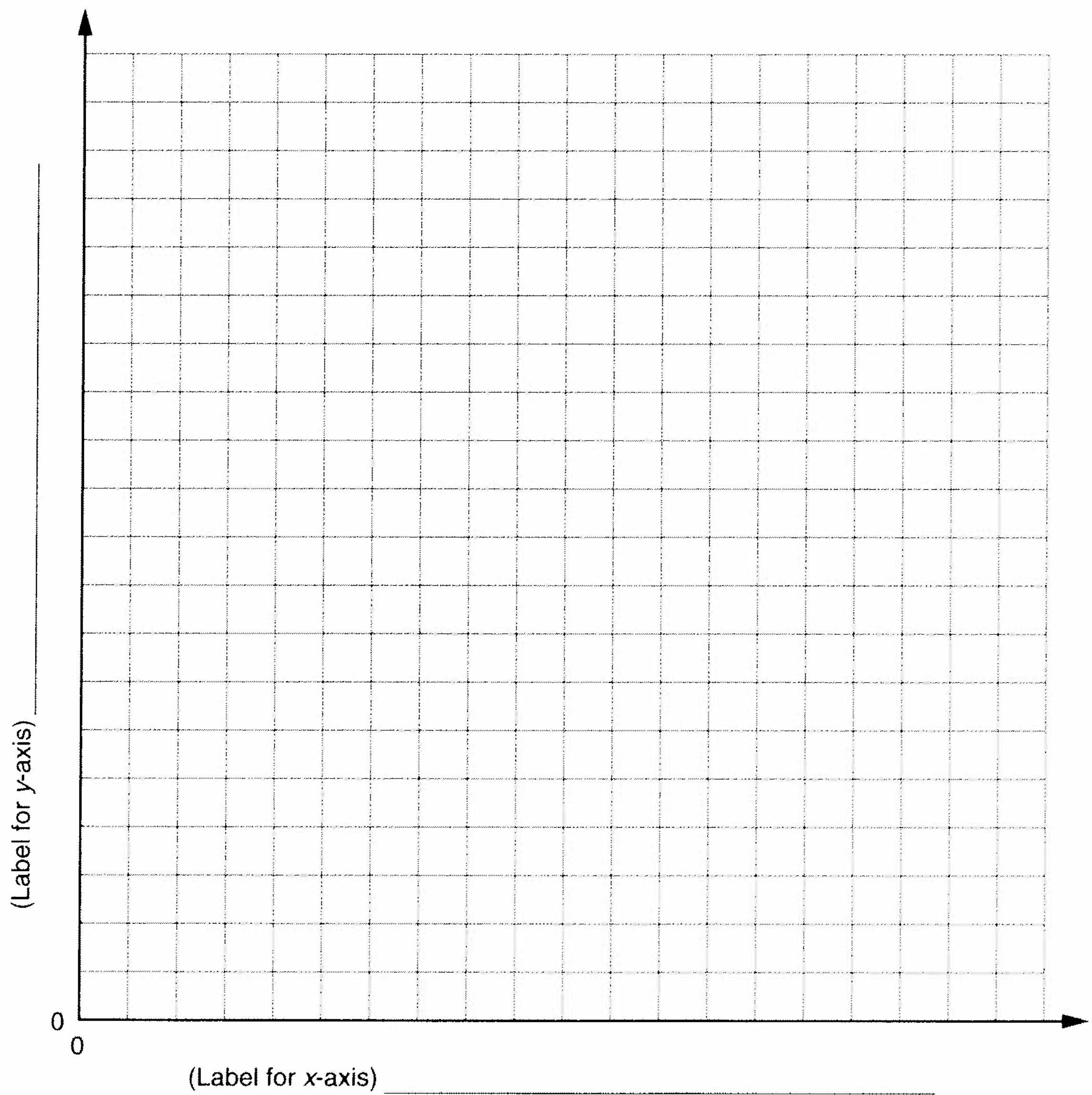
Reviewing Rules, Tables, and Graphs

Rule: ____

____

____

in	out



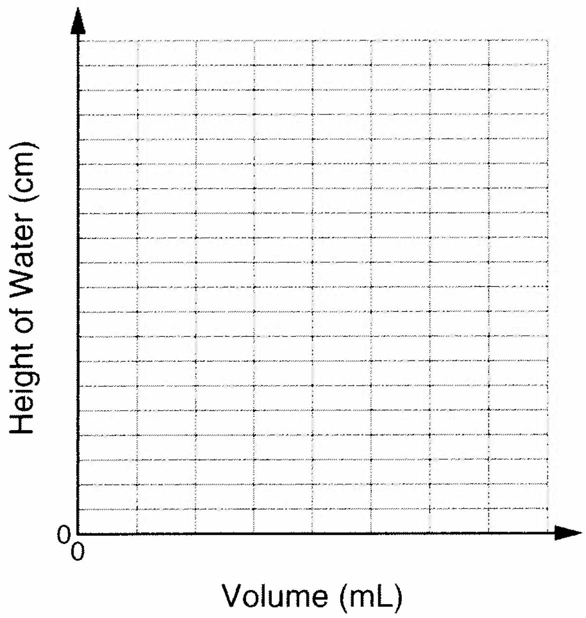
Name Date Time

LESSON 3•10

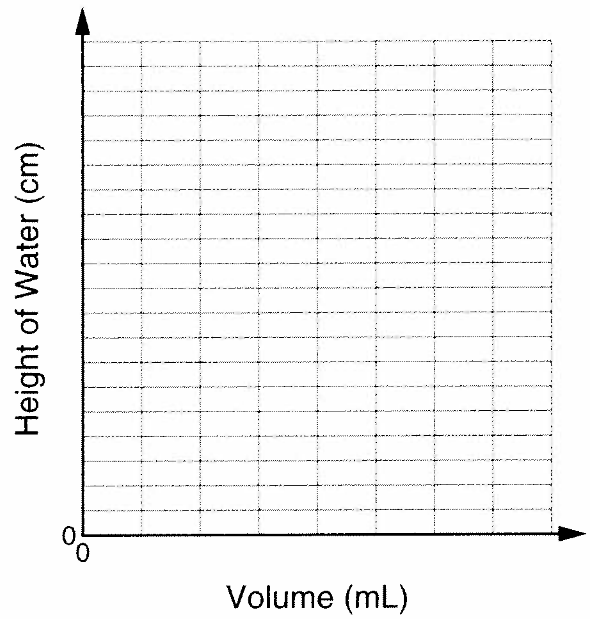
Rate of Change Experiment

Using a metric measuring cup, pour 100 mL of water into each of 4 bottles of different shapes. Each time you add water to a bottle, measure the height of the water level in centimeters. On a separate sheet of paper, make a table to record each change in volume and water height. Use your table to make a graph for each bottle on the grids below.

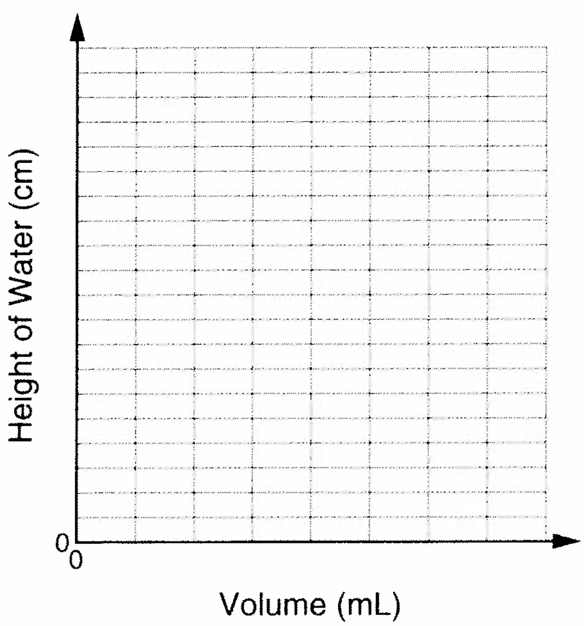
Bottle 1



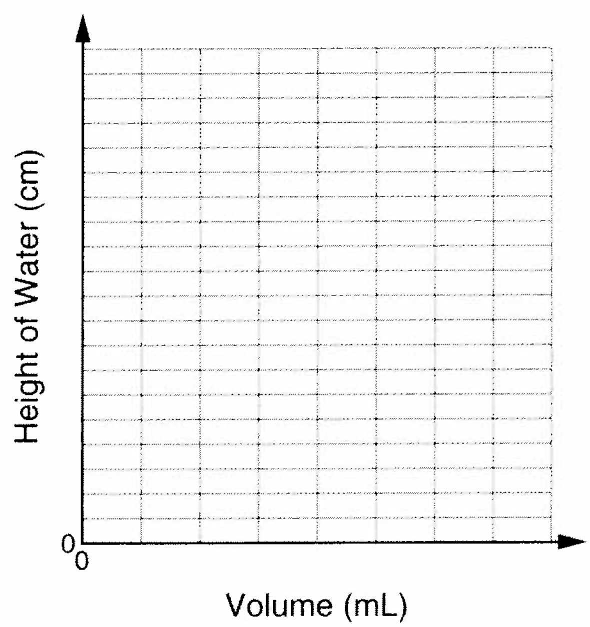
Bottle 2



Bottle 3



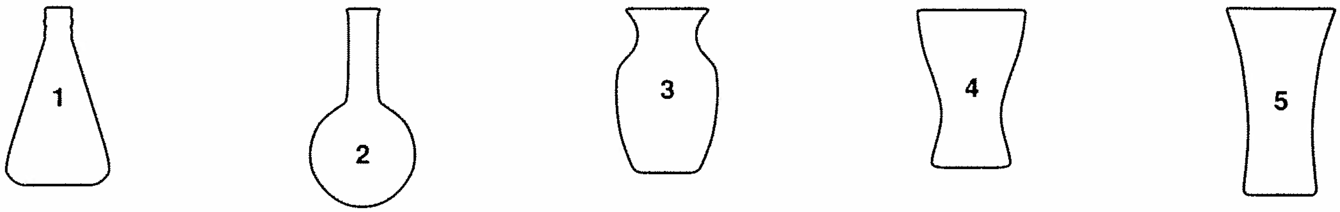
Bottle 4



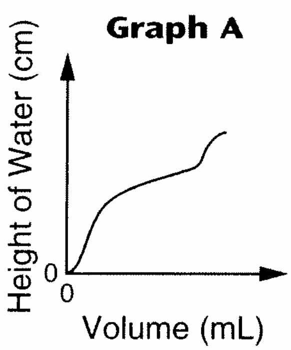
Name Date Time

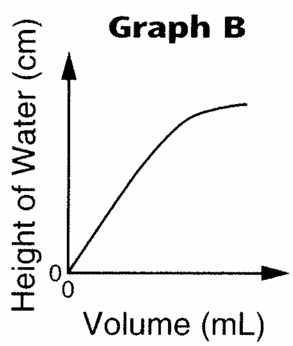
LESSON 3•10 The Shape of Change

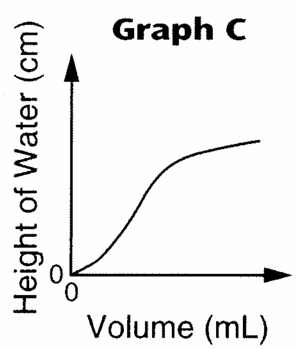
Assume the bottles are filled with water at a constant rate. Match the graphs with their bottles. Write the letter of the graph under the bottle it represents.

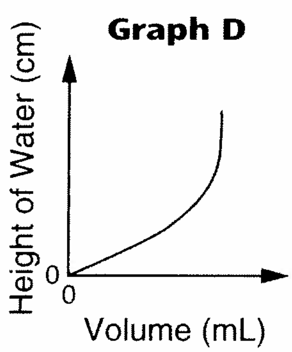


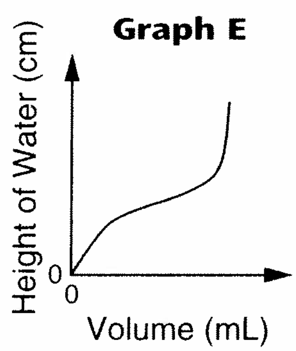
______ ______ ______ ______ ______











Name Date Time

STUDY LINK 3•11

Unit 4: Family Letter

Rational Number Uses and Operations

One reason for studying mathematics is that numbers in all their forms are an important part of our everyday lives. We use decimals when we are dealing with measures and money, and we use fractions and percents to describe parts of things.

Students using *Everyday Mathematics* began working with fractions in the primary grades. In *Fifth Grade Everyday Mathematics,* your child worked with equivalent fractions, operations with fractions, and conversions between fractions, decimals, and percents.

In Unit 4, your child will revisit these concepts and apply them. Most of the fractions with which your child will work (halves, thirds, fourths, sixths, eighths, tenths, and sixteenths) will be fractions that they would come across in everyday situations—interpreting scale drawings, following a recipe, measuring distance and area, expressing time in fractions of hours, and so on.

Students will be exploring methods for solving addition and subtraction problems with fractions and mixed numbers. They will look at estimation strategies, mental computation methods, paper-and-pencil algorithms, and calculator procedures.

Students will also work with multiplication of fractions and mixed numbers. Generally, verbal cues are a poor guide as to which operation (+, −, ∗, /) to use when solving a problem. For example, *more* does not necessarily imply addition. However, *many of* and *part of* generally involve multiplication. At this point in the curriculum, your child will benefit from reading and understanding $\frac{1}{2} * 12$ as *one-half of 12,* rather than *one-half times 12;* or reading and understanding $\frac{1}{2} * \frac{1}{2}$ as *one-half of one-half,* rather than *one-half times one-half.*

Finally, students will use percents to make circle graphs to display the results of surveys and to learn about sales and discounts.

Jambalaya Recipe

4 ounces each of chicken and sausage

4 cups peppers

$\frac{3}{4}$ cup rice

$1\frac{2}{3}$ cups chopped onions

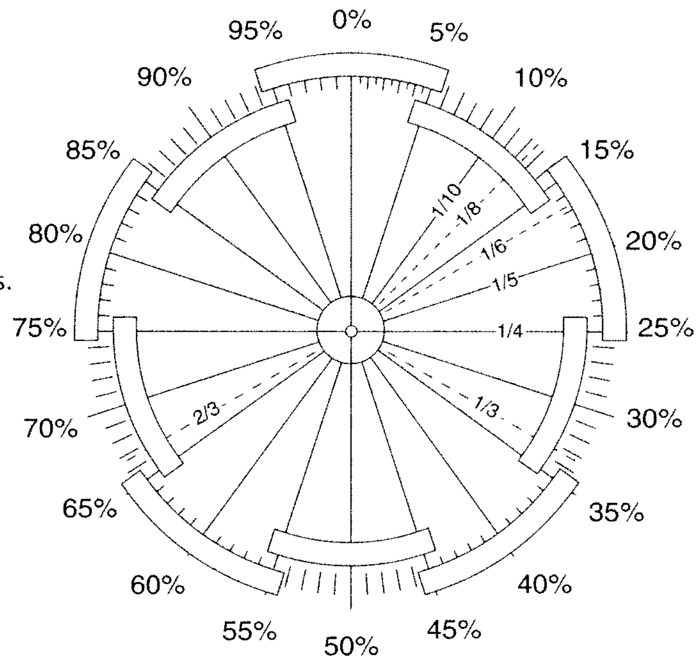
$1\frac{1}{2}$ tablespoons chopped thyme

$\frac{1}{8}$ teaspoon salt

Please keep this Family Letter for reference as your child works through Unit 4.

Math Tools

The **Percent Circle,** on the Geometry Template, is used to find the percent represented by each part of a circle graph and to make circle graphs. The Percent Circle is similar to a full-circle protractor with the circumference marked in percents rather than degrees. This tool allows students to interpret and make circle graphs before they are ready for the complex calculations needed to make circle graphs with a protractor.



Vocabulary

Important terms in Unit 4:

common denominator A nonzero number that is a multiple of the denominators of two or more fractions. For example, the fractions $\frac{1}{2}$ and $\frac{2}{3}$ have common denominators 6, 12, 18, and other multiples of 6. Fractions with the same denominator already have a common denominator.

common factor A factor of two or more counting numbers. For example, 4 is a common factor of 8 and 12.

discount The amount by which a price of an item is reduced in a sale, usually given as a fraction or percent of the original price, or a percent off. For example, a $4 item on sale for $2 is discounted by 50%, or $\frac{1}{2}$. A $10.00 item at "10% off!" costs $9.00, or $\frac{1}{10}$ less than the usual price.

equivalent fractions Fractions with different denominators that name the same number.

greatest common factor (GCF) The largest factor that two or more counting numbers have in common. For example, the common factors of 24 and 36 are 1, 2, 3, 4, 6, and 12, and their greatest common factor is 12.

improper fraction A fraction whose numerator is greater than or equal to its denominator. For example, $\frac{4}{3}$, $\frac{5}{2}$, $\frac{4}{4}$, and $\frac{24}{12}$ are improper fractions. In *Everyday Mathematics,* improper fractions are sometimes called top-heavy fractions.

interest A charge for the use of someone else's money. Interest is usually a percentage of the amount borrowed.

least common denominator (LCD) The least common multiple of the denominators of every fraction in a given collection. For example, the least common denominator of $\frac{1}{2}$, $\frac{4}{5}$, and $\frac{3}{8}$ is 40.

least common multiple (LCM) The smallest number that is a multiple of two or more given numbers. For example, common multiples of 6 and 8 include 24, 48, and 72. The least common multiple of 6 and 8 is 24.

mixed number A number that is written using both a whole number and a fraction. For example, $2\frac{1}{4}$ is a mixed number equal to $2 + \frac{1}{4}$.

percent (%) Per hundred, for each hundred, or out of a hundred. $1\% = \frac{1}{100} = 0.01$. For example, *48% of the students in the school are boys* means that out of every 100 students in the school, 48 are boys.

proper fraction A fraction in which the numerator is less than the denominator. A proper fraction is between −1 and 1. For example, $\frac{3}{4}$, $-\frac{2}{5}$, and $\frac{21}{24}$ are proper fractions. Compare to *improper fraction. Everyday Mathematics* does not emphasize these distinctions.

quick common denominator (QCD) The product of the denominators of two or more fractions. For example, the quick common denominator of $\frac{3}{4}$ and $\frac{5}{6}$ is 4 * 6, or 24. In general, the quick common denominator of $\frac{a}{b}$ and $\frac{c}{d}$ is $b * d$. As the name suggests, this is a quick way to get a *common denominator* for a collection of fractions, but it does not necessarily give the *least common denominator.*

simplest form of a fraction A fraction that cannot be renamed in simpler form. Also called "lowest terms." A mixed number is in simplest form if its fractional part is in simplest form. Simplest form is not emphasized in *Everyday Mathematics* because other equivalent forms are often equally or more useful. For example, when comparing or adding fractions, fractions with a common denominator are likely to be easier to work with than fractions in simplest form.

Do-Anytime Activities

Try these ideas to help your child with the concepts taught in this unit.

1. Consider allowing your sixth grader to accompany you on shopping trips when you know there is a sale. Have him or her bring a calculator to figure out the sale price of items. Ask your child to show you the sale price of the item and the amount of the discount. If your child enjoys this activity, you might extend it by letting him or her calculate the total cost of an item after tax has been added to the subtotal. One way to calculate the total cost is simply to multiply the subtotal by 1.08 (for 8% sales tax). For example, the total cost of a $25 item on which 8% sales tax is levied would be $25 * 1.08 = 25 * (1 + 0.08) = (25 * 1) + (25 * 0.08) = 25 + 2 = 27$, or $27.
2. On grocery shopping trips, point out to your child the decimals printed on the item labels on the shelves. These often show unit prices (price per 1 ounce, price per 1 gram, price per 1 pound, and so on), reported to three or four decimal places. Have your child round the numbers to the nearest hundredth (nearest cent).
3. Your child's teacher may display a Fractions, Decimals, Percents Museum in the classroom and expect students to contribute to this exhibit. Help your child look for examples of the ways in which printed advertisements, brochures, and newspaper and magazine articles use fractions, decimals, and percents.

Building Skills through Games

In Unit 4, your child will work on his or her understanding of rational numbers by playing games like the ones described below.

Fraction Action, Fraction Friction See *Student Reference Book,* page 317
Two or three players gather fraction cards that have a sum as close as possible to 2, without going over. Students can make a set of 16 cards by copying fractions onto index cards.

Frac-Tac-Toe See *Student Reference Book,* pages 314–316
Two players need a deck of number cards with 4 each of the numbers 0–10; a game board, a 5-by-5 grid that resembles a bingo card; a *Frac-Tac-Toe* Number-Card board; markers or counters in two different colors, and a calculator. The different versions of *Frac-Tac-Toe* help students practice conversions between fractions, decimals, and percents.