Name Date Time

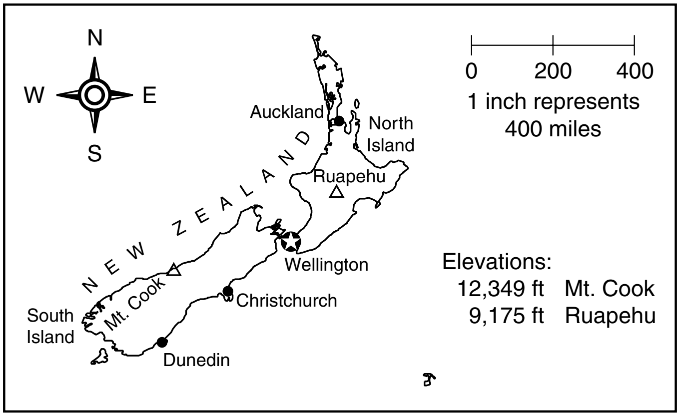
STUDY LINK 2·1

Estimation

SRB 247

Class Medians for: Step Length ________________ Steps in 1 Minute ________________

A group of fifth-grade students in New Zealand are going camping. They will hike from Wellington to Ruapehu. Then they will follow a trail for another $\frac{1}{2}$ mile to their campsite. Use the map on this page (Scale: 1 inch = 400 miles) as well as your class median step length, and number of steps in 1 minute, to make the following estimates. (*Reminder:* 1 mile = 5,280 feet)



1. About how many miles is it from Wellington to Ruapehu? ________________ (unit)

2. About how many miles is it from Wellington to the campsite? ________________ (unit)

3. About how long would it take the students to arrive at their campsite, if they don't make any stops? ________________ (unit)

4. Each day, the students will hike for 12 hours and take 12 hours for stops to eat, rest, and sleep. If they leave at 7:00 A.M. on a Monday, at about what time, and on what day, would you expect them to arrive at their campsite?

   Time: About __________ Day: ________________

Try This

5. Suppose the students take a bus from Wellington to Mt. Cook and then hike to a campsite at the top of the mountain. Would they have to hike more or less than the distance they hiked to their campsite at Ruapehu?

Practice

6. 48 * 15 = ____________

7. 24,029 + 26,840 + 39,492 = ____________

8. 36 / 3 = ____________

9. 35 − 17 = ____________

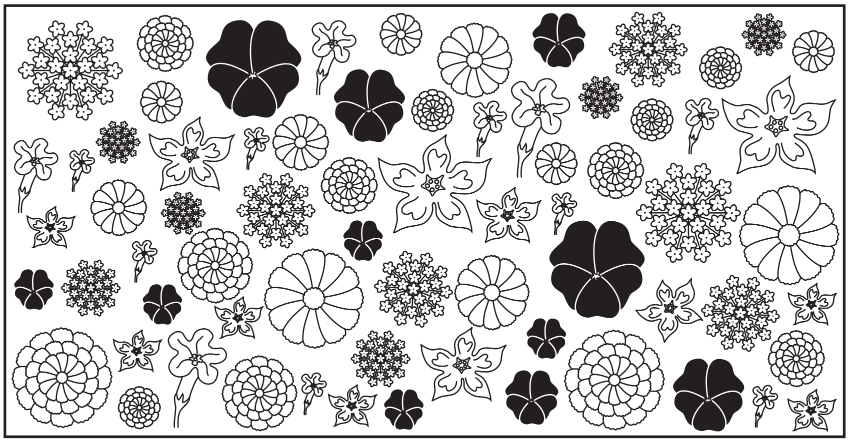
Name Date Time

LESSON 2•1

Estimation Strategies

1. Rosie wants to estimate the number of flowers in this picture. Her estimation strategy has 3 steps. Find the 3 steps in the list of strategies below.

   Write 1 next to the step that you think should be done 1st.
   Write 2 next to the step that you think should be done 2nd.
   Write 3 next to the step that you think should be done 3rd.



_________ Count every flower.

_________ Count the number of flowers in one section.

_________ Make a guess.

_________ Multiply this number by 4.

_________ Ask someone how many flowers are in the picture.

_________ Draw lines to divide the picture into four equal sections.

2. Could you use Rosie's strategy to estimate only the number of all-black flowers in the picture? _________________

3. Explain why or why not.

Name ____________ Date ____________ Time ____________

LESSON 2•1

Estimating

Work with a partner. Use a sample page from the residential section of a telephone book to estimate the total number of names listed on 10 pages of the telephone book. Develop an estimation strategy by answering the following questions.

1. How might dividing the page into equal portions be useful?

____

____

2. What information could you get from the sample page that would let you know how many names are on 10 pages without counting them all?

____

____

Record your estimate.

3. About ________ names are on 1 page of the telephone book.

4. About ________ names are on 10 pages of the telephone book.

Work with a partner. Use your sample page from the residential section of a telephone book to estimate the total number of names listed on 10 pages of the telephone book. Develop an estimation strategy by answering the following questions.

1. How might dividing the sample page into four equal sections be useful?

____

____

2. What information could you get from the sample page that would let you know how many names are on 10 pages without counting them all?

____

____

Record your estimate.

3. About ________ names are on 1 page of the telephone book.

4. About ________ names are on 10 pages of the telephone book.

Name Date Time

STUDY LINK 2·2

Number Hunt

Reminder: A [no-calculator symbol] means *Do not use a calculator.*

SRB 13–17

Use the numbers in the following table to answer the questions below. You may not use a number more than once.

1. Circle two numbers whose sum is 832.

2. Make an X in the boxes containing three numbers whose sum is 57.

3. Make a check mark in the boxes containing two prime numbers whose sum is 42.

19	85.2	533	571
88.2	525	20	17.5
400	261	20.5	125
7	23	901	30

4. Make a star in the boxes containing two numbers whose sum is 658.

5. Make a triangle in the boxes containing two numbers whose sum is 105.7. Explain how you found the answer.

____

____

____

____

Solve Problems 6–9 using any method you want. Show your work in the space below.

6. 3,804 + 768 = ________

7. 2.83 + 1.57 = ________

8. 33 + 148 + 65 = ________

9. 1.055 + 0.863 = ________

Practice

10. 73 − 26 = ________

11. 727 − 519 = ________

12. 27 ÷ 9 = ________

13. 4)34 → ________

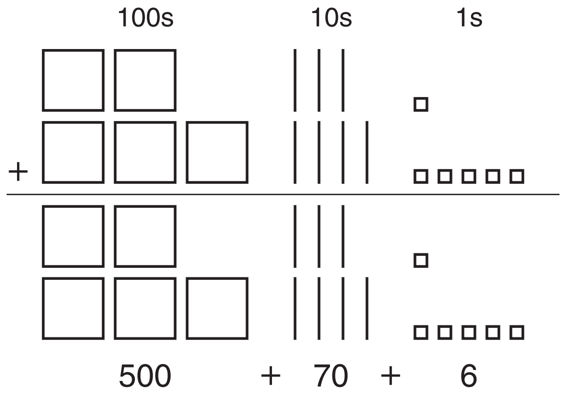
Name Date Time

LESSON 2•2

Modeling with Base-10 Blocks

Example:

		100s	10s	1s
		2	3	1
	+	3	4	5
Add 100s		5	0	0
Add 10s			7	0
Add 1s				6
		5	7	6



Work with a partner. Choose a problem below. Use the base-10 blocks to model the problem. Have your partner solve the problem and record the answer using the partial-sums method. Compare your model with your partner's solution. Reverse roles and continue until all problems are solved.

1. 456
\+ 53

Add 100s

Add 10s

Add 1s

2. 764
\+ 208

Add 100s

Add 10s

Add 1s

3. 271
\+ 653

Add 100s

Add 10s

Add 1s

4. 521
\+ 455

Add 100s

Add 10s

Add 1s

Name Date Time

LESSON 2•2

Place-Value Strategies

Use your favorite addition algorithm to solve the first problem in each column. Then use the answer to the first problem in each column to help you solve the remaining problems.

1. 3,058 + 2,182

a. 3,058 + 2,282

b. 3,058 + 2,082

c. 3,058 + 2,582

d. 3,058 + 2,181

2. 7,401 + 2,659

a. 7,401 + 2,679

b. 7,401 + 2,669

c. 7,401 + 2,689

d. 7,401 + 2,699

3. Explain the strategy you used to solve the problem sets above.

Name Date Time

STUDY LINK 2•3

Another Number Hunt

SRB 13–17

Use the numbers in the following table to answer the questions below.
You may not use a number more than once.

17	15	9	75.03
100.9	803	25	451
1,500	5,000	1	3,096
299	703	75.3	40.03

1. Circle two numbers whose difference is 152.

2. Make an X in the boxes of two numbers whose difference is 25.6.

3. Make a check mark in the boxes of two numbers whose difference is greater than 1,000.

4. Make a star in the boxes of two numbers whose difference is less than 10.

5. Make a triangle in the boxes of two numbers whose difference is equal to the sum of 538 and 259.

6. Use diagonal lines to shade the boxes of two numbers whose difference is equal to 4^2.

Subtract. Show your work for one problem on the grid below.

7. 247 − 186 = ___________

8. ___________ = 405 − 268

9. 24.5 − 18.7 = ___________

10. ___________ = 62.7 − 43.85

Practice

11. 48 ÷ 8 = ___________

12. 81,447 + 2,571 = ___________

13. \$451.17 + \$2.81 = ___________

14. 14 ∗ 7 = ___________

15. 98 ÷ 7 = ___________

Name Date Time

LESSON 2•3

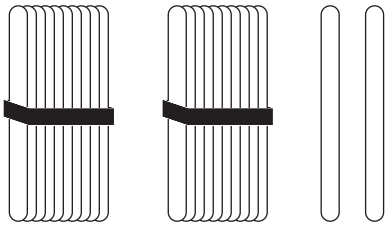
Make and Break Apart

Directions

- Make 10s by putting your wooden craft sticks or straws into bundles of 10.
- Use these bundles to model the subtraction problems.
- Then use your models to solve the problems.

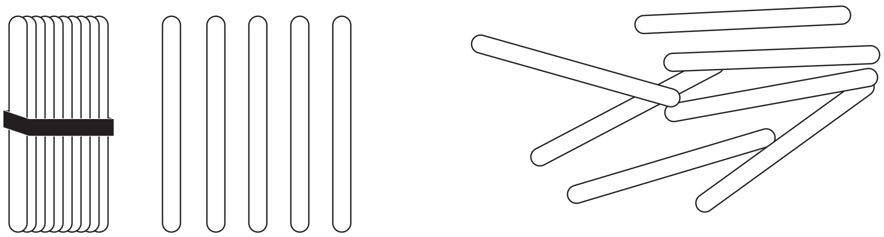
Example: 22 – 7

To begin, you need 2 bundles of 10 and 2 ones.



10 + 10 + 2 = 22

To subtract 7, you need to break apart one bundle. Now you have 12 ones. Remove 7 ones.



10 + 5 = 15 7

Solution: 15

1. 10 − 4 = ______

2. 32 − 6 = ______

3. 71 − 23 = ______

4. 22 − 9 = ______

5. 56 − 38 = ______

6. 110 − 62 = ______

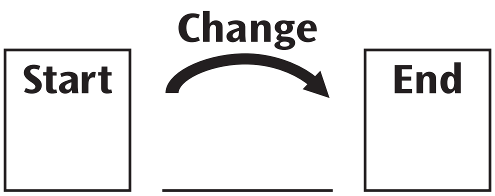
Name Date Time

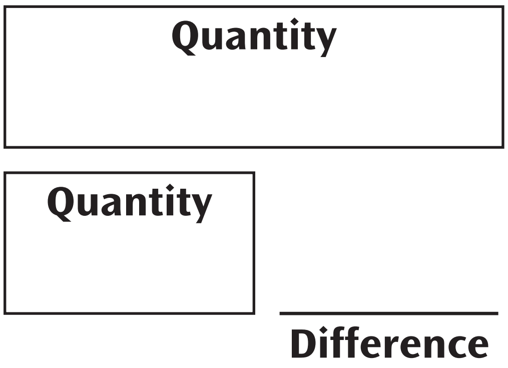
LESSON 2·4

Situation Diagrams

Total	
Part	Part

Total		
Part	Part	Part





______	______ per ______	______ in all

Name Date Time

LESSON 2·4

Using Open Number Sentences

Problem 1: At breakfast, the temperature outside was 47°F. By lunchtime, the temperature was 63°F. How many degrees warmer was it by lunchtime?

Open number sentence: ____________________

Solution: ___________ Answer: __________
(unit)

Name Date Time

Problem 2: Mary had $32.50 in her savings account. After she withdrew some money, she had $17.25 left. How much money did she withdraw?

Open number sentence: ______________________________

Solution: ________________ Answer: ____________
(unit)

Name Date Time

Problem 3: The school library has 486 fiction books and 321 nonfiction books. How many books does the library have in all?

Open number sentence: ________________________

Solution: ____________ Answer: _________________
(unit)

Name Date Time

Problem 4: Mrs. Snow is 49 years old. Her son, Kevin, is celebrating his 24th birthday today. Mr. Snow is 6 years older than Mrs. Snow. How old was Mrs. Snow when Kevin was born?

Open number sentence: ____________________

Solution: ___________ Answer: ___________________
(unit)

STUDY LINK 2•4

Open Sentences and Number Stories

SRB 223

Read each problem. Fill in the blanks and solve the problem.

1. Althea and her brother collect baseball cards. Althea has 148 cards. Her brother has 127 cards. How many cards do they have altogether?

   a. List the numbers needed to solve the problem. ____________

   b. Describe what you want to find. ____________

   c. Open number sentence: ____________

   d. Solution: ____________ e. Answer: ____________ (unit)

2. Mark bought a hamburger for $3.89 and a drink for $1.49. If he paid with a $20 bill, how much change did he receive?

   a. List the numbers needed to solve the problem. ____________

   b. Describe what you want to find. ____________

   c. Open number sentence: ____________

   ____

   d. Solution: ____________ e. Answer: ____________ (unit)

3. Fran has four pieces of ribbon. Each piece of ribbon is a different length: 0.6 meters long, 1.15 meters long, 1.35 meters long, and 0.925 meters long. How many meters of ribbon does Fran have in all?

   a. List the numbers needed to solve the problem.

   ____

   b. Describe what you want to find. ____________

   c. Open number sentence:

   ____

   d. Solution: ____________

   e. Answer: ____________ (unit)

Name Date Time

LESSON 2·4

Using Situation Diagrams

- Use the information in each problem to fill in the diagram.
- Use a ? to show the missing number.
- Write an open number sentence with the information from the diagram.

1. Two angles of a triangle measure 45° and 55°.
What is the sum of the measures of the two angles?

Open number sentence: ______________________

Total	
Part	**Part**

2. There are 64 orange and green tennis balls in a basket. If 35 of them are orange, how many tennis balls are green?

Open number sentence: ______________________

Total	
Part	**Part**

3. Elvin had $15.00 to spend at the school bazaar. He spent $12.75. How much money did he have left?

Open number sentence:

____

Start	Change	End
	________	

4. a. At 7 A.M., the temperature is 76°F. The temperature is expected to drop 17° by 4 P.M. What will the temperature be at 4 P.M.?

Open number sentence:

____

Start	Change	End
	________	

b. What would the temperature be at 4 P.M. if the temperature increased by 17°?

Open number sentence:

____

Start	Change	End
	________	

Name Date Time

LESSON 2·4

Writing Open Number Sentences

Write an open number sentence and solve the problem.

1. Chan brought his collection of 1,500 sports cards to school. He has 156 basketball cards and 625 football cards. The rest were baseball cards. How many baseball cards did Chan bring?

   a. Open number sentence: ______________________

   ____

   b. Solution: __________ c. Answer: ______________________ (unit)

2. Abdul took a bus downtown to see a movie. The bus ride to the theater took 15 minutes. If the movie was $2\frac{1}{4}$ hours long, how many hours and minutes was Abdul away from home?

   a. Open number sentence: ______________________

   ____

   b. Solution: ______________________

   c. Answer: ______________________ (unit)

3. Julie paid $14.08 to fill her gas tank with 10 gallons of gas before starting a trip from Chicago to Topeka, Kansas. After driving about 305 miles, she bought 10 more gallons of gas in Iowa and paid $11.85. How much more did she pay for a gallon of gas in Chicago than in Iowa?

   a. Open number sentence: ______________________

   ____

   b. Solution: __________ c. Answer: ______________________ (unit)

Name Date Time

STUDY LINK 2•5

Comparing Reaction Times

Use your Grab-It Gauge. Collect reaction-time data from two people at home. At least one of these people should be an adult.

SRB 114

1.

Person 1	
Left	**Right**

2.

Person 2	
Left	**Right**

3. Median times:

Left hand ____________

Right hand ____________

4. Median times:

Left hand ____________

Right hand ____________

5. How do the results for the two people compare to your class data?

____

____

____

Practice

6. 2,683 + 2,939 = ____________

7. 3,702 ∗ 8 = ____________

8. 604 − 86 = ____________

9. 39 ÷ 3 = ____________

Name Date Time

LESSON 2•5 Decimal Number-Line Puzzles

Step 1: Clear your calculator. Look at the number line.

Step 2: Enter the end number, subtract the start number, and divide by the number of jumps between. The result is the interval number.

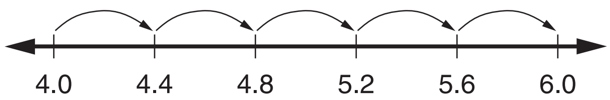
Step 3: Enter the start number and add the interval number. This is the first missing number. Add the interval again to get the next missing number, and so on.

Example:

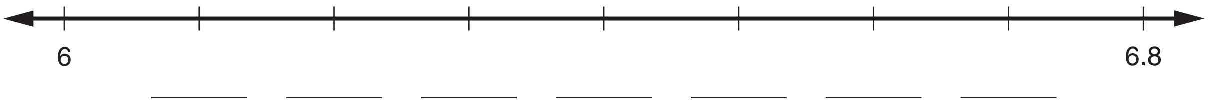
End number − start number = difference $6 - 4 = 2$

Difference ÷ hops = interval $2 \div 5 = 0.4$

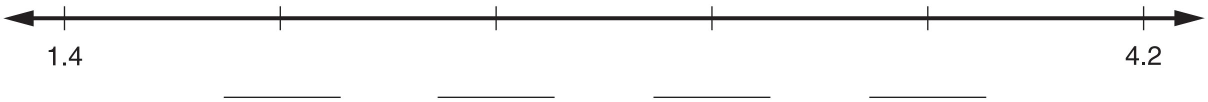
$4 + 0.4 = 4.4$; $4.4 + 0.4 = 4.8$; $4.8 + 0.4 = 5.2$; $5.2 + 0.4 = 5.6$; $5.6 + 0.4 = 6.0$



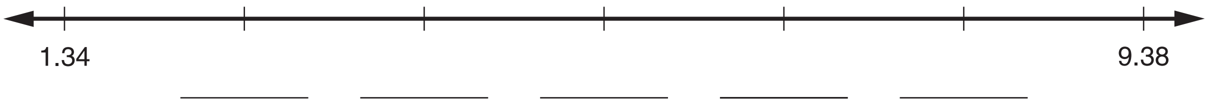
1. Jumps: ________



2. Jumps: ________

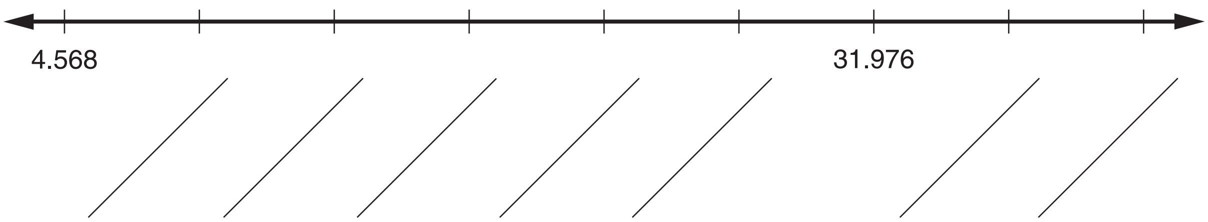


3. Jumps: ________



Try This

4. Jumps: ________



Name Date Time

LESSON 2•5

Interpreting Data

1. Organize the median reaction times for right and left hands for your class by gender—one set of data for girls and one set of data for boys.

Data Landmarks	Girls	Boys
Minimum		
Maximum		
Range		
Mode		
Median		
Mean		

Use the questions below to interpret the data. Write your answers on a separate sheet of paper.

2. a. Who has the faster reaction times, boys or girls? ____________

   b. Which landmark did you use to decide? ____________ c. Why?

3. a. Suppose you put names in a hat and, without looking, pulled the name of one boy and one girl. How would you use the data from your class to predict who would be faster?

   b. Which landmark would you use to decide? ____________ c. Why?

4. a. What true statements can you make about the data?

   b. How might these statements, called findings, be used by your class?

   c. Could your findings have importance to activities outside of school?

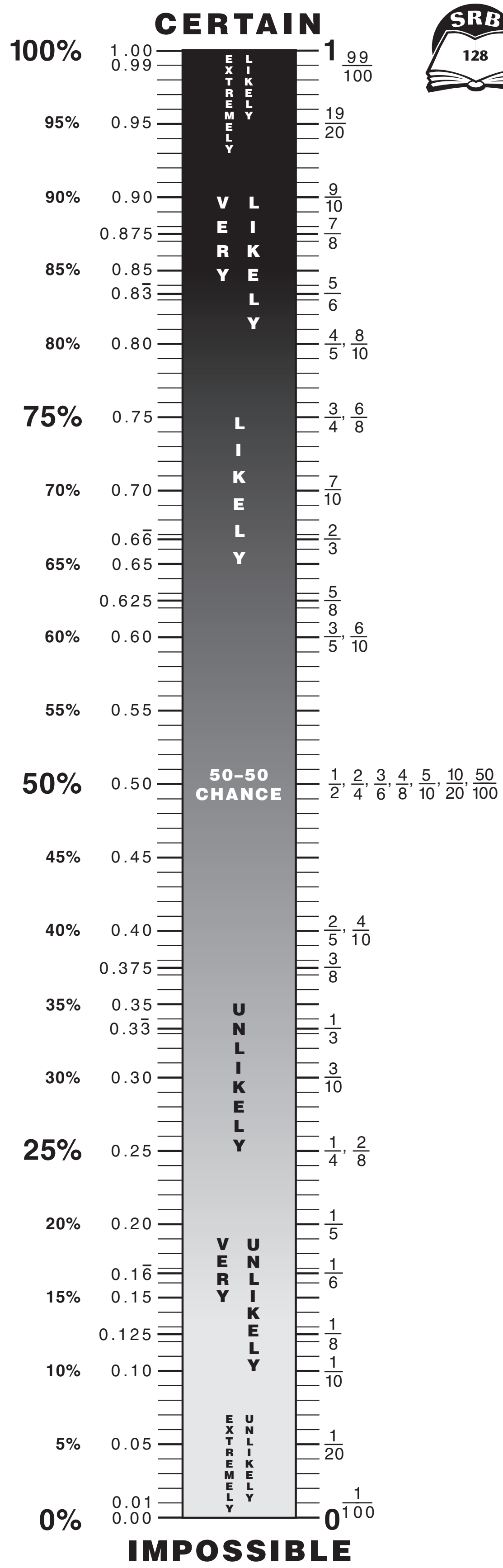
   d. What kind of picture or graph would help people understand your findings?

Name Date Time

STUDY LINK 2·6

How Likely Is Rain?

Many years ago, weather reports described the chances of rain with phrases such as *very likely, unlikely,* and *extremely unlikely.* Today, the chances of rain are almost always reported as percents. For example, "There is a 50% chance of rain tonight."



SRB 128

1. Use the Probability Meter Poster to translate phrases into percents.

Phrase	Percent
Unlikely	30%
Very likely	
Very unlikely	
Likely	
Extremely unlikely	

2. Use the Probability Meter Poster to translate percents into phrases.

Percent	Phrase
30%	Unlikely
5%	
99%	
20%	
80%	
35%	
65%	
45%	

Name Date Time

LESSON 2·6

Order Fractions, Decimals, Percents

Cut out the cards and order them from smallest to largest.

Use the table in the front of the journal to help you.

$\frac{1}{2}$	$33\frac{1}{3}\%$	0.25	$\frac{3}{4}$
20%	0.60	$\frac{4}{5}$	0.10
30%	0.70	$\frac{9}{10}$	$12\frac{1}{2}\%$
0.625	$87\frac{1}{2}\%$	$\frac{2}{3}$	$16\frac{2}{3}\%$

Name Date Time

LESSON 2·6

Making Spinners

Choosing a Pants Color

There is a 30% chance of choosing blue pants.

There is a $\frac{1}{4}$ chance of choosing black pants.

There is a 0.1 chance of choosing white pants.

There is twice the probability of choosing red pants as there is of choosing white pants.

There is a 15 out of 100 chance of choosing brown pants.

Choosing a Favorite Color

28% of the people said red was their favorite color.

$\frac{1}{3}$ of the people reported that blue was their favorite color.

One-half as many people favored white as favored blue.

0.1 of the people chose brown as their favorite color.

3 out of 25 people named black as their favorite color.

Drawing Colored Chips from a Bag

There is a 1 out of 5 chance of drawing a white chip.

There is a 20% chance of drawing a blue chip.

The probability of drawing black is 0.3.

The chance of drawing a red chip is 15%.

A brown chip is as likely to be drawn as a red chip.

Choosing a Car Color

7 out of 70 people chose white.

25% of the people chose black.

0.15 of the people chose red.

$\frac{4}{12}$ of the people chose blue.

$\frac{1}{6}$ of the people chose brown.

Choosing a Notebook Color

3 out of 20 people favored brown.

20% of the people favored blue.

$\frac{1}{4}$ of the people favored black.

0.3 of the people favored red.

Half as many people favored white as favored blue.

Choosing a Sock Color

1 out of 8 socks sold are red.

$\frac{5}{25}$ of the socks sold are blue.

$37\frac{1}{2}$% of the socks sold are black.

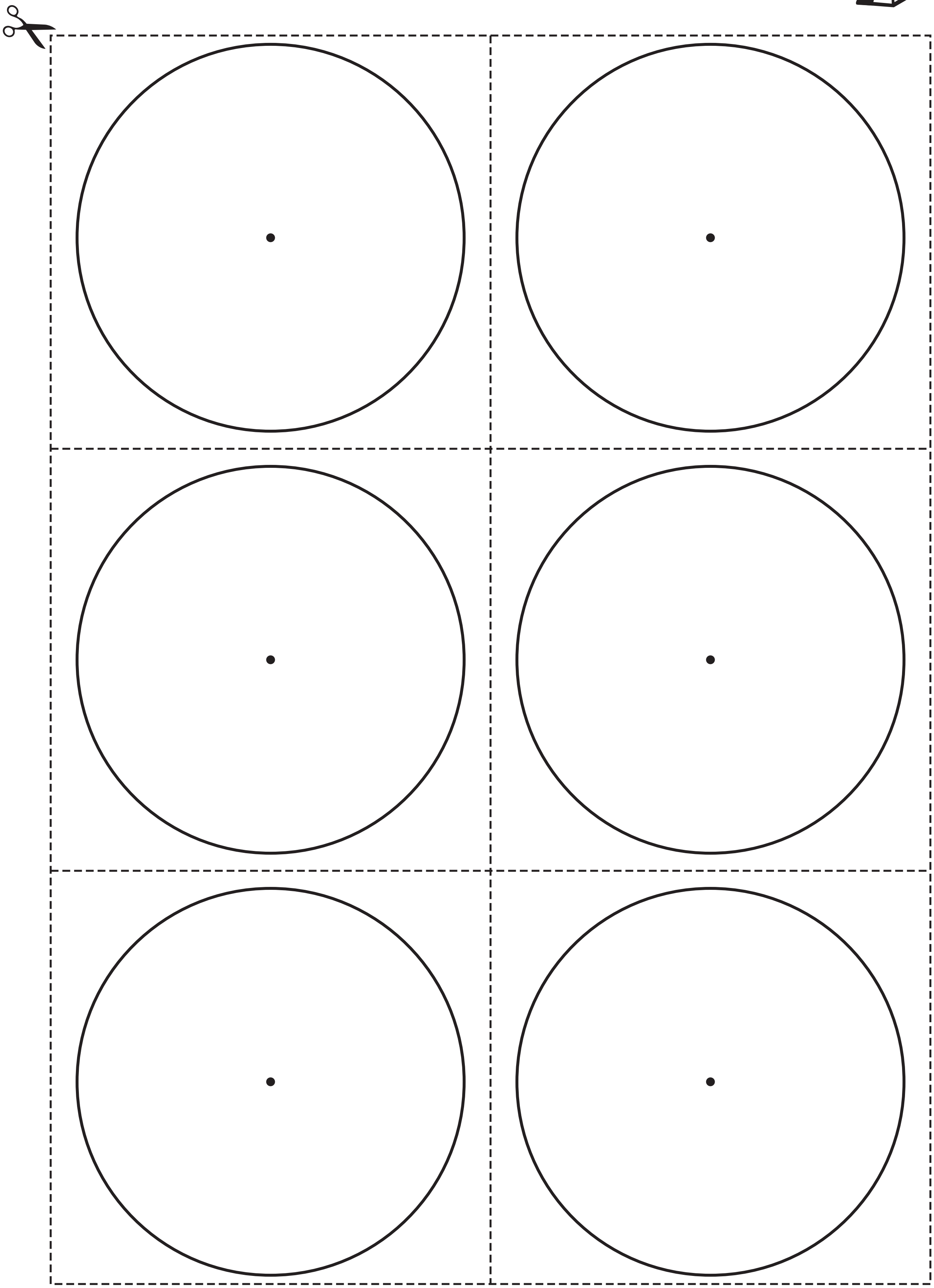
0.2 of the socks sold are white.

Half as many brown socks are sold as white socks.

Name Date Time

LESSON 2·6

Making Spinners *continued*



Name Date Time

STUDY LINK 2•7

Magnitude Estimates

SRB 250

A **magnitude estimate** is a very rough estimate. It tells whether the exact answer falls in the tenths, ones, tens, hundreds, thousands, and so on. For each problem, make a magnitude estimate. Ask yourself: *Is the answer in the tenths, ones, tens, hundreds, thousands, or ten-thousands?* Circle the appropriate box. Do not solve the problems.

Example: 18 ∗ 21

10s	100s	1,000s	10,000s

20 ∗ 20 = 400

How I estimated

1. 73 ∗ 28

10s	100s	1,000s	10,000s

How I estimated

2. 12 ∗ 708

10s	100s	1,000s	10,000s

How I estimated

3. 98 ∗ 105

10s	100s	1,000s	10,000s

How I estimated

4. 17 ∗ 2.2

10s	100s	1,000s	10,000s

How I estimated

5. 2.6 ∗ 3.9

0.1s	1s	10s	100s

How I estimated

Try This

6. Use the digits 4, 5, 6, and 8. Make as many factor pairs as you can that have a product between 3,000 and 5,000. Use a calculator to solve the problems.

Name Date Time

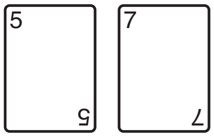
LESSON **2•7**

Extended Facts

Directions

- Shuffle the deck and draw two cards.
- Record and multiply the numbers shown on the cards.
- Then use your solution to write extended facts.

Example:



5 ∗ 7 = 35
35 ∗ 10 = 350
35 ∗ 100 = 3,500
35 ∗ 1,000 = 35,000

1. ________ ∗ ________ = ________

________ ∗ 10 = ________

________ ∗ 100 = ________

________ ∗ 1000 = ________

2. ________ ∗ ________ = ________

________ ∗ 10 = ________

________ ∗ 100 = ________

________ ∗ 1000 = ________

3. ________ ∗ ________ = ________

________ ∗ 10 = ________

________ ∗ 100 = ________

________ ∗ 1000 = ________

4. Explain how you use multiplication facts to help you solve problems with larger numbers.

____

____

____

____

Name Date Time

STUDY LINK 2·8

Estimating and Multiplying

SRB 247

- For each problem, make a magnitude estimate.
- Circle the appropriate box. Do not solve the problem.
- Then choose 3 problems to solve. Show your work on the grid.

1. 8 * 19 ____________

10s	100s	1,000s	10,000s

How I estimated

2. 155 * 6 ____________

10s	100s	1,000s	10,000s

How I estimated

3. 37 * 58 ____________

10s	100s	1,000s	10,000s

How I estimated

4. 5 * 4.2 ____________

10s	100s	1,000s	10,000s

How I estimated

5. 9.3 * 2.8 ____________

10s	100s	1,000s	10,000s

How I estimated

Name ______ Date ______ Time ______

LESSON 2•8

Model the Partial-Products Method

Materials ☐ array grid (*Math Masters,* pp. 416 and 417)

☐ base-10 blocks

Directions

- Draw a line around rows and columns on the grid to model each problem.
- Cover the array you made using as few base-10 blocks as possible.
- Solve using the partial-products method.
- Then match each part of the array with a partial product.
- Record the solution, filling in the sentences to match the blocks you used.

1. 6 ∗ 23 = ______

In each of 6 rows there are…	______ longs, so there are ______ cubes.	Write the problem showing the partial products.
	______ cubes, so there are ______ cubes.	______
	There are ______ cubes in all.	

2. 26 ∗ 18 = ______

In each of 20 rows there are…	______ longs, so there are ______ cubes.	Write the problem showing the partial products.
	______ cubes, so there are ______ cubes.	______
In each of 6 rows there are…	______ longs, so there are ______ cubes.	______
	______ cubes, so there are ______ cubes.	
	There are ______ cubes in all.	

Name Date Time

LESSON 2·8

A Mental Calculation Strategy

When you multiply a number that ends in 9, you can simplify the calculation by changing it into an easier problem. Then adjust the result.

Example 1: $2 * 99 = ?$

- Change $2 * 99$ into $2 * 100$.
- Find the answer: $2 * 100 = 200$
- Ask: *How is the answer to $2 * 100$ different from the answer to $2 * 99$?*
  100 is 1 more than 99, and you multiplied by 2.
  So 200 is 2 more than the answer to $2 * 99$.
- Adjust the answer to $2 * 100$ to find the answer to $2 * 99$:
  $200 - 2 = 198$. So $2 * 99 = 198$.

Example 2: $3 * 149 = ?$

- Change $3 * 149$ into $3 * 150$.
- Find the answer: $3 * 150 = (3 * 100) + (3 * 50) = 450$.
- Ask: *How is the answer to $3 * 150$ different from the answer to $3 * 149$?*
  150 is 1 more than 149, and you multiplied by 3.
  So 450 is 3 more than the answer to $3 * 149$.
- Adjust: $450 - 3 = 447$. So $3 * 149 = 447$.

Use this strategy to calculate these products mentally.

1. $5 * 49$ ____________

2. $5 * 99$ ____________

3. $8 * 99$ ____________

4. $4 * 199$ ____________

5. $2 * 119$ ____________

6. $3 * 98$ ____________

Name Date Time

LESSON 2·9

Lattice Multiplication Table

9	8	7	6	5	4	3	2	1	0	
0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0
0/9	0/8	0/7	0/6	0/5	0/4	0/3	0/2	0/1	0/0	1
1/8	1/6	1/4	1/2	1/0	0/8	0/6	0/4	0/2	0/0	2
2/7	2/4	2/1	1/8	1/5	1/2	0/9	0/6	0/3	0/0	3
3/6	3/2	2/8	2/4	2/0	1/6	1/2	0/8	0/4	0/0	4
4/5	4/0	3/5	3/0	2/5	2/0	1/5	1/0	0/5	0/0	5
5/4	4/8	4/2	3/6	3/0	2/4	1/8	1/2	0/6	0/0	6
6/3	5/6	4/9	4/2	3/5	2/8	2/1	1/4	0/7	0/0	7
7/2	6/4	5/6	4/8	4/0	3/2	2/4	1/6	0/8	0/0	8
8/1	7/2	6/3	5/4	4/5	3/6	2/7	1/8	0/9	0/0	9

Name Date Time

STUDY LINK 2·9

Multiply with the Lattice Method

SRB 20

For each problem:

- Make a magnitude estimate. Circle the appropriate box.
- Solve using the lattice method. Show your work in the grids.

1. 94 * 73 = ____________

10s	100s	1,000s	10,000s

2. 24 * 3.7 = ____________

0.1s	1s	10s	100s

3. 5.4 * 6.18 = ____________

0.1s	1s	10s	100s

4. 384 * 261 = ____________

100s	1,000s	10,000s	100,000s

5. 17.7 * 19.3 = ____________

0.1s	1s	10s	100s

Practice

6. 7,402 + 2,587 = ____________

7. 37 ÷ 7 → ____________

8. 328 − 237 = ____________

9. $15.75 + $3.25 = ____________

Name Date Time

LESSON 2•9

An Ancient Multiplication Method

Over 4,000 years ago, the Egyptians developed one of the earliest multiplication methods. This method, with some modifications, was then used by the ancient Greeks, and in the Middle Ages, by people living in other parts of Europe.

Study the examples of the Egyptian method below. Each problem has been solved by this method of multiplication. Try to figure out how the method works.

13 * 25 = 325	18 * 17 = 306	26 * 31 = 806
✓ 1 25 (1 * 25)	~~1 17~~	~~1 31~~
~~2 50 (2 * 25)~~	✓ 2 34	✓ 2 62
✓ 4 100 (4 * 25)	~~4 68~~	~~4 124~~
✓ 8 200 (8 * 25)	~~8 136~~	✓ 8 248
325 (13 * 25)	✓ 16 272	✓ 16 496
	306	806

Make up a multiplication problem. Solve it using the Egyptian method. Then explain how the method works, using your problem as an example.

Name Date Time

STUDY LINK 2•10

Place-Value Puzzles

SRB 28

Millions			Thousands			Ones		
Hundred-millions	Ten-millions	Millions	Hundred-thousands	Ten-thousands	Thousands	Hundreds	Tens	Ones

Use the clues to solve the puzzles.

Puzzle 1

- The value of the digit in the **thousandths** place is equal to the sum of the measures of the angles in a triangle (180°) divided by 30.
- If you multiply the digit in the **tens** place by 1,000; the answer will be 9,000.
- Double 35. Divide the result by 10. Write the answer in the **tenths** place.
- The **hundreds**-place digit is $\frac{1}{2}$ the value of the digit in the thousandths place.
- When you multiply the digit in the **ones** place by itself, the answer is 0.
- Write a digit in the **hundredths** place so that the sum of all six digits in this number is 30.

What is the number? _______ _______ _______ . _______ _______ _______

Puzzle 2

- Double 12. Divide the result by 8. Write the answer in the **thousands** place.
- If you multiply the digit in the **hundredths** place by 10, your answer will be 40.
- The **tens**-place digit is a prime number. If you multiply it by itself, the answer is 49.
- Multiply 7 and 3. Subtract 12. Write the answer in the **thousandths** place.
- Multiply the digit in the hundredths place by the digit in the thousands place. Subtract 7 from the result. Write the digit in the **tenths** place.
- The digit in the **ones** place is an odd digit that has not been used yet.
- The value of the digit in the **hundreds** place is the same as the number of sides of a quadrilateral.

What is the number? _______, _______ _______ _______ . _______ _______ _______

Check: The sum of the answers to both puzzles is 3,862.305.

Practice

3. 7,772 + 1,568 = ______________

4. 472 − 228 = ______________

5. 826 ∗ 54 = ______________

6. 59 / 3 → ______________

Name Date Time

LESSON 2·10

Number Stories and Estimation

- Read each number story carefully.
- Write an open number sentence to use in estimating.
- Answer the question.

Example:

It is said that the Aztec king, Montezuma, drank about 50 cups of chocolate per day. Did he drink *more* or *less* than 10 gallons of chocolate in a week? (Hint: 16 cups = 1 gallon)

Open number sentence: 10 * 16 = Number of cups in 10 gallons

Answer: more

1. Certain varieties of seahorses can move 10.5 inches per minute. At this rate, could these seahorses be able to travel 6 yards in 1 hour?

a. Open number sentence:

____

b. Answer: __________

2. Orville Wright completed the first airplane flight on December 17, 1903. He traveled 120 feet in 12 seconds. If he had been able to stay in the air for a full minute, would he have traveled 1 mile? (Hint: 1 mile = 5,280 feet)

a. Open number sentence:

____

b. Answer: __________

3. In 1960, the Triton became the first submarine to circumnavigate the world. It covered 36,014 miles in 76 days. Is that more or less than 100 miles per day?

a. Open number sentence:

____

b. Answer: __________

Source: *The Kids' World Almanac of Records and Facts*

Name Date Time

STUDY LINK 2•11

Unit 3: Family Letter

Geometry Explorations and the American Tour

In Unit 3, your child will set out on the American Tour, a yearlong series of mathematical activities examining historical, demographic, and environmental features of the United States. The American Tour activities will develop your child's ability to read, interpret, critically examine, and use mathematical information presented in text, tables, and graphics. These math skills are vital in our technological age.

Many American Tour activities rely on materials in the American Tour section of the *Student Reference Book.* This section—part historical atlas and part almanac—contains maps, data, and other information from a wide range of sources: the U.S. Census Bureau, the National Weather Service, and the National Geographic Society.

Unit 3 also will review some geometry concepts from earlier grades while introducing and expanding on others. In *Fourth Grade Everyday Mathematics,* students used a compass to construct basic shapes and create geometric designs. In this unit, your child will extend these skills and explore concepts of congruent figures (same size, same shape), using a compass and straightedge. In addition, students will use another tool, the Geometry Template. It contains protractors and rulers for measuring, as well as cutouts for drawing a variety of geometric figures.

Finally, students will explore the mathematics and art of tessellations—patterns of shapes that cover a surface without gaps or overlaps. They will use math tools to create their own designs.

You can help your child by asking questions about information presented in newspaper and magazine tables and graphics. Also, the world is filled with many 2-dimensional and 3-dimensional geometric forms: angles, line segments, curves, cubes, cylinders, spheres, pyramids, and so on. Many wonderful geometric patterns can be seen in nature as well as in the things that people create. It will be helpful for you and your child to look for and talk about geometric shapes throughout the year.

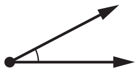
Please keep this Family Letter for reference as your child works through Unit 3.

STUDY LINK 2•11 **Unit 3: Family Letter** *cont.*

Vocabulary

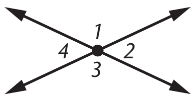
Important terms in Unit 3:

acute angle An angle with a measure greater than 0 degrees and less than 90 degrees.



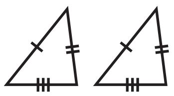
Acute angle

adjacent angles Two angles with a common side and vertex that do not otherwise overlap. In the diagram, angles 1 and 2 are adjacent angles. Angles 2 and 3, angles 3 and 4, and angles 4 and 1 are also adjacent.



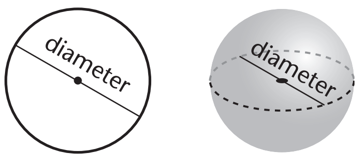
Adjacent angles

congruent Having exactly the same shape and size.

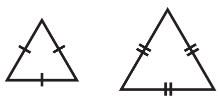


Congruent triangles

diameter A line segment that passes through the center of a circle (or sphere) and has endpoints on the circle (or sphere); also, the length of this line segment. The diameter of a circle or sphere is twice the length of its radius.

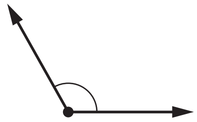


equilateral triangle A triangle with all three sides the same length. In an equilateral triangle, all three angles have the same measure.



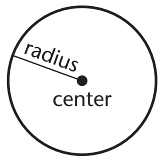
Equilateral triangles

obtuse angle An angle with a measure greater than 90 degrees and less than 180 degrees.

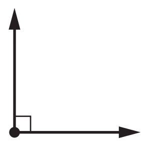


Obtuse angle

radius A line segment from the center of a circle (or sphere) to any point on the circle (or sphere); also, the length of this line segment.

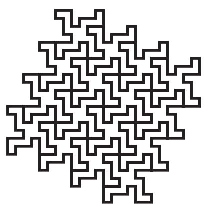


right angle An angle with a measure of 90 degrees.



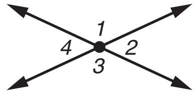
Right angle

tessellation An arrangement of shapes that covers a surface completely without overlaps or gaps. Also called *tiling.*



A tessellation

vertical (opposite) angles The angles made by intersecting lines that do not share a common side. Vertical angles have equal measures. In the diagram, angles 2 and 4 are a pair of vertical angles. Angles 1 and 3 are another pair of vertical angles.



Vertical angles

Building Skills through Games

In Unit 3, your child will practice geometry and computation skills by playing the following games. For detailed instructions, see the *Student Reference Book.*

Angle Tangle See *Student Reference Book,* page 296
Two players will need a protractor and a straightedge to play this game. Playing *Angle Tangle* gives students practice in drawing and measuring angles.

High-Number Toss: Decimal Version See *Student Reference Book,* page 321
This game practices concepts of place value and standard notation. It requires 2 players and number cards 0–9 (4 of each).

Multiplication Top-It See *Student Reference Book,* page 334
This game practices the basic multiplication facts. It requires a deck of cards with 4 each of the numbers 1–10, and can be played by 2–4 players.

Polygon Capture See *Student Reference Book,* page 328
This game uses 16 polygons and 16 Property Cards, and is played by partners or 2 teams each with 2 players. *Polygon Capture* practices identifying properties of polygons related to sides and angles.

Do-Anytime Activities

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

1. Together, read the book *A Cloak for the Dreamer* by Marilyn Burns.
2. When you are at home or at a store, ask your child to identify different types of polygons such as triangles, squares, pentagons, and hexagons.
3. Visit the Web site for the U.S. Bureau of the Census at http://www.census.gov/. Have your child write three interesting pieces of information that he or she learned from the Web site.
4. Look for examples of bar graphs in newspapers or magazines. Ask your child to explain the information shown by a graph.

STUDY LINK 2•11 **Unit 3: Family Letter** *cont.*

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 3•1

1. Illinois

2. 851,000; 4,822,000; 8,712,000; 12,051,000

3. 3,971,000 **4.** 3,890,000 **5.** 3,339,000

6. The population increases by about 4,000,000 every fifty years.

7. About 16,000,000 **8.** About 14,000,000

Study Link 3•2

1. A **2.** 5,472,000 **3.** H

4. a. About 250,000,000 **b.** About 55%

Study Link 3•3

1. 60°; 90°; 60° **2.** 120°; 60°; 60°

3. 90°; 135°; 135° **4.** 30°; 75°

Study Link 3•4

1. 70° **2.** 50° **3.** 110° **4.** 130°

5. 60° **6.** 180° **7.** 120° **8.** 90°

9. 50° **10.** 150° **11.** 170°

Study Link 3•5

1. acute; 12° **2.** acute; 65° **3.** obtuse; 103°

4. Sample answer: Angle *D* and angle *E*

5. Sample answer: Angle *D* and angle *F*

6. Sample answer: Angle *G* and angle *H*

9. 14,670 **11.** 11R1

Study Link 3•6

1. scalene **2.** isosceles **3.** isosceles; right

4. equilateral; isosceles

5. Objects and types of angles vary.

6. 11,761 **7.** 5,750 **8.** 42,405 **9.** 11

Study Link 3•7

Sample answers are given for Problems 1–5.

1.  The pentagon is the only shape that is not regular.

2.  The oval is the only shape that is curved.

3.  The crossed-out shape is the only shape that is not convex.

4.  The trapezoid is the only shape without two pairs of parallel sides.

Study Link 3•8

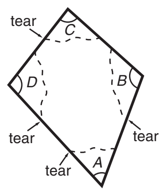
1.–3. Samples of tessellations vary.

Study Link 3•9

1. Sample answer: Draw a line between two of the vertices to create two triangles. Since the sum of the angles in each triangle is 180°, the sum of the angles in a quadrangle is 360°.

2. 360°

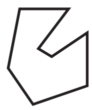
3. a.–b.

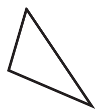


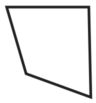
c.–d.

Study Link 3•10

1. Sample answers are given.

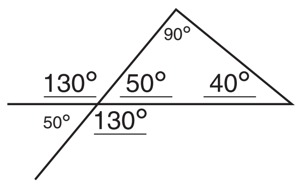
a. 

b. 

c. 

d. 

2.



3. a. 2 **b.** 70° **c.** 360° **d.** trapezoid