Name Date Time

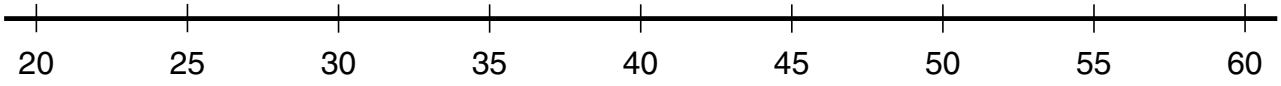
STUDY LINK 6•1

The Standing Long Jump

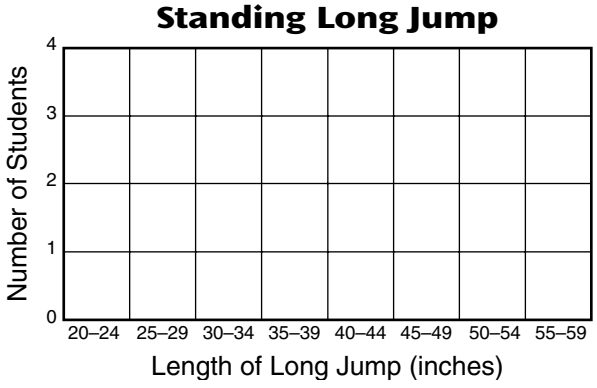
Ms. Perez's physical education class participated in the standing long jump. Following are the results rounded to the nearest inch.

24	35	33	48	33	48	27	35	27	55	43	24
55	33	52	33	29	59	26	59	48	37	42	42

1. Organize these data on the line plot below.



2. Make a bar graph for these data.



3. Find the following landmarks for the standing long jump data:

a. Maximum: _____ in.

b. Minimum: _____ in.

c. Mode: _____ in.

d. Median: _____ in.

e. Mean (average): _____ in. (Use a calculator. Add the distances and divide the sum by the number of jumps. Round to the nearest tenth.)

Practice

4. $48 * 29 =$ _____

5. $98.25 - 79.82$

6. $24\overline{)384}$

7. $767.5 + 30.82 =$ _____

Name Date Time

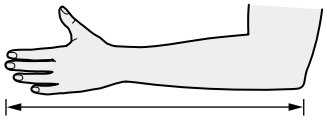
STUDY LINK 6•2

Standard and Nonstandard Units

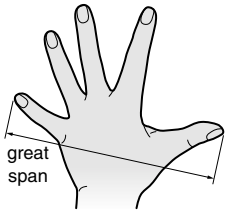
1. Use your body measures to find three objects that are about the size of each measurement below.

SRB 397

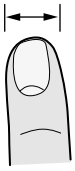
a. 1 cubit



b. 1 great span



c. 1 finger width



_____ _____ _____

_____ _____ _____

_____ _____ _____

2. For each problem below, mark the unit or units you *could* use to measure the object.

a. Height of your ceiling	O cm	O ft	O lb	O miles
b. Amount of milk in a pitcher	O cm	O ounces	O gal	O liters
c. Depth of the ocean	O m	O ounces	O gal	O miles
d. Length of a bee	O cm	O ft	O mm	O liters
e. Weight of a nickel	O in.	O kg	O lb	O grams

Practice

3. $34 * 79 =$ _____

4.
$$\begin{array}{r} 8{,}201 \\ -2{,}190 \\ \hline \end{array}$$

5. $6\overline{)4{,}152}$

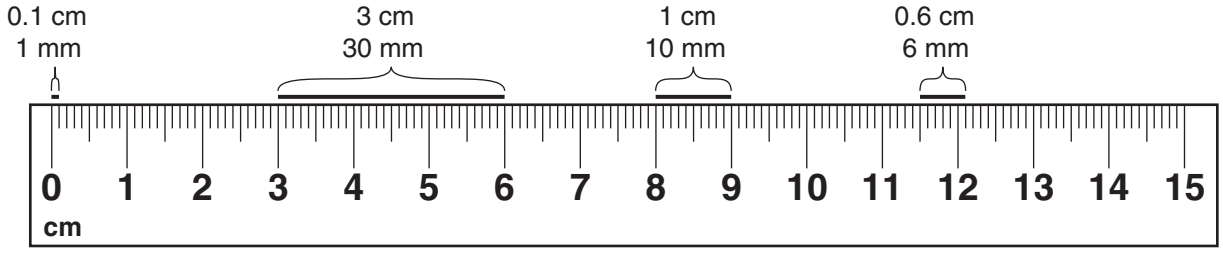
6. $59.46 + 82.17 =$ _____

Name Date Time

LESSON 6•2

Metric Measures and Conversions

On metric rulers, centimeters (cm) are divided into 10 equal parts. Each part is called a millimeter (mm).



1. Measure each line segment to the nearest tenth of a centimeter and then to the nearest millimeter.

a. _____ _____ _____

b. _____ _____ _____

c. _____ _____ _____

2. Draw a line segment that is 6.5 cm long. What is its length in millimeters?

_____

3. Describe a pattern you see when you measure the same line segment in centimeters and in millimeters.

_____

_____

_____

4. If you know that a line segment is 32 mm long, explain how to find its length in centimeters without measuring.

_____

_____

_____

Name Date Time

LESSON 6•2

Another Look at Personal Measures

Different people have different body measures, but is there a relationship between an individual's personal measures? For example, does knowing a person's arm span help predict that person's height? In this activity, you will compare the class measurements for palm width and joint length.

1. Make a prediction: Do students with greater palm widths also have greater joint lengths? _____

2. Collect the data for palm widths and joint lengths in millimeters that you and your classmates recorded on journal page 168.

3. Make a table on the back of this page to organize the data.

Example:

Student	Palm Width	Joint Length
1	70 mm	30 mm
2		

4. What are the landmarks for this data?

Palm Width

Minimum _____	Maximum _____	Mode _____
Median _____	Mean _____	Range _____

Joint Length

Minimum _____	Maximum _____	Mode _____
Median _____	Mean _____	Range _____

5. What relationships exist between the Palm Width and Joint Length data?

_____

6. Explain why the data does or does not support your prediction.

_____

_____

_____

Name Date Time

STUDY LINK 6•3

Reading a Stem-and-Leaf Plot

Use the information below to answer the questions.

Jamal was growing sunflowers. After eight weeks, he measured the height of his sunflowers in inches. He recorded the heights in the stem-and-leaf plot below.

Height of Sunflowers (inches)

Stems (10s)	Leaves (1s)
3	9 1
4	7 6 9 2 9
5	2 3 3 5 2 8 7 3
6	5 3 4
7	3

1. How tall is the tallest sunflower? ____ in.

Which landmark is the height of the tallest flower? Circle its name.

minimum mode

maximum mean

2. How many sunflowers did Jamal measure? ____ sunflowers.

3. What is the mode for his measurements? ____ in.

4. Explain how to find the median for his measurements.

_____

_____

_____

_____

_____

Practice

5. $62 * 53 =$ _____

6. $\begin{array}{r} 6{,}711 \\ -\ 4{,}140 \\ \hline \end{array}$

7. $22\overline{)398} \rightarrow$ _____

8. $725 * 90 =$ _____

Name Date Time

LESSON 6•3

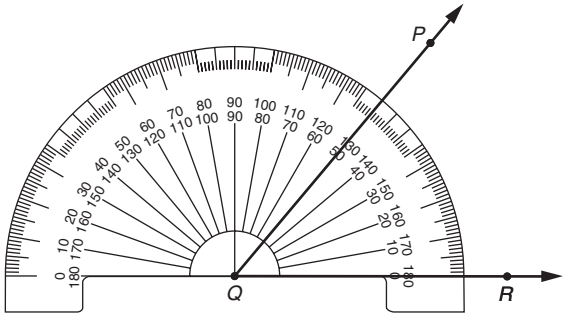
Using a Half-Circle Protractor

Example: To measure angle *PQR* with a half-circle protractor:

Step 1 Lay the baseline of the protractor on $\overrightarrow{QR}$.

Step 2 Slide the protractor so the center of the baseline is over the vertex of the angle, point *Q*.

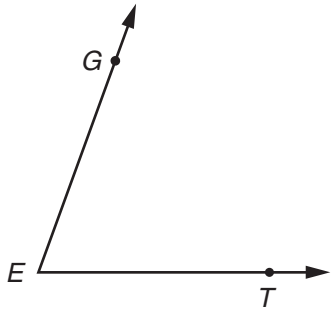
Step 3 Read the degree measure where $\overrightarrow{QP}$ crosses the edge of the protractor. There are two scales on the protractor. Use the scale that makes sense for the size of the angle you are measuring.



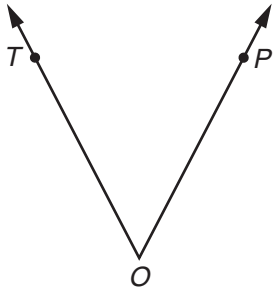
The measure of angle *PQR* = 50°

Use your half-circle protractor to find the measures of the angles below.

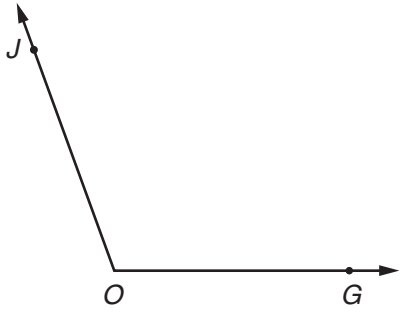
1. The measure of angle *GET* is _____.



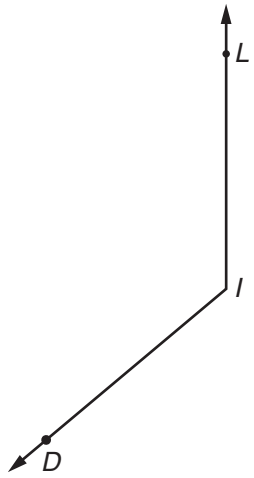
2. The measure of angle *TOP* is _____.



3. The measure of angle *JOG* is _____.



4. The measure of obtuse angle *LID* is _____.



Name Date Time

LESSON 6•4

Math Message

Find the minimum, maximum, range, mode, and median for this stem-and-leaf plot.

Unit: inches

Stems (10s)	**Leaves** (1s)
4	4 7
5	0 8 6 0
6	1 5 3

minimum _____

maximum _____

range _____

mode _____

median _____

Name Date Time

LESSON 6•4

Math Message

Find the minimum, maximum, range, mode, and median for this stem-and-leaf plot.

Unit: inches

Stems (10s)	**Leaves** (1s)
4	4 7
5	0 8 6 0
6	1 5 3

minimum _____

maximum _____

range _____

mode _____

median _____

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Name Date Time

STUDY LINK 6•4

How Much Do Students Spend?

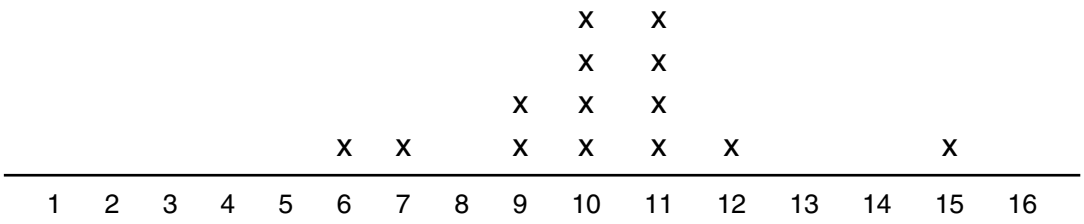
SRB 117 118

A fifth-grade class collected data about class spending per month on various items. Below are some of the results.

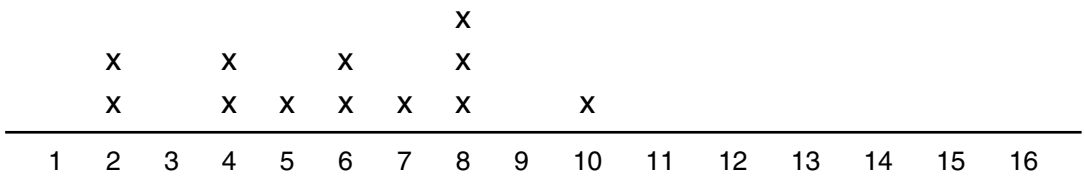
- A median amount of $6 per month was spent for books and magazines.
- A median amount of $10 per month was spent for tapes and CDs.
- A median amount of $8 per month was spent for movie tickets.

The number-line plots below display the data. Match the plots with the items: books and magazines, tapes and CDs, and movie tickets.

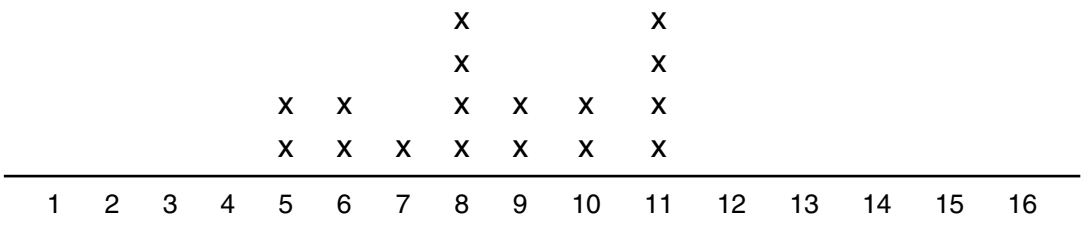
1. _____



2. _____



3. _____



Practice

4. 119 ∗ 47 = _____

5. 9,402
+ 7,137

6. $9\overline{)5{,}241}$ → _____

7. 9,487 ∗ 8 = _____

Name Date Time

LESSON 6•4

More Mystery Plots

Match each of the following data set descriptions with the appropriate line plot. Then fill in the unit for each plot.

1. The number of days students were tardy in the first 2 weeks of school.

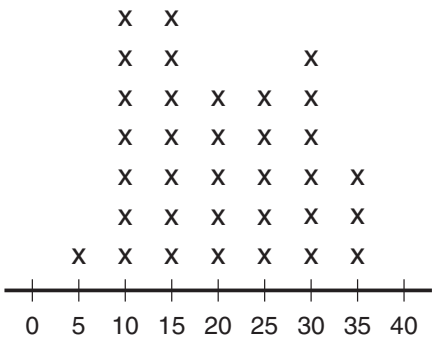
2. The ages of students participating in organized sports at a community center.

3. The number of books read by each of Ms. Wong's fifth-grade students in 1 month.

4. The number of minutes it takes each fifth-grade student to get ready for school.

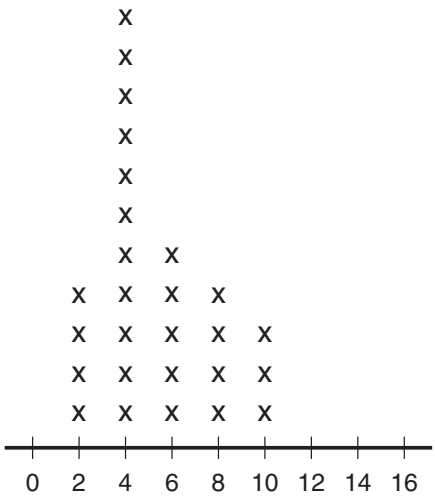
Plot A

Unit: _____



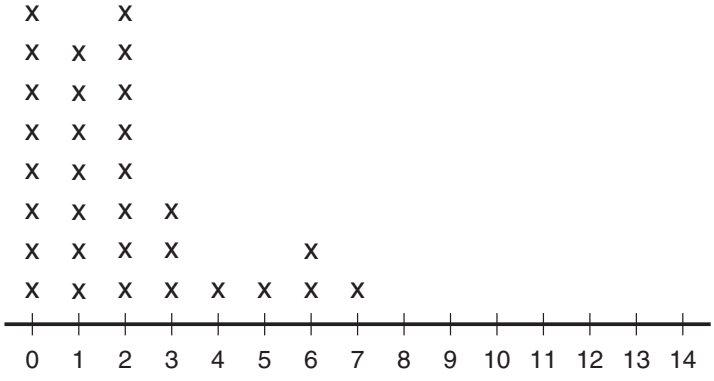
Plot B

Unit: _____



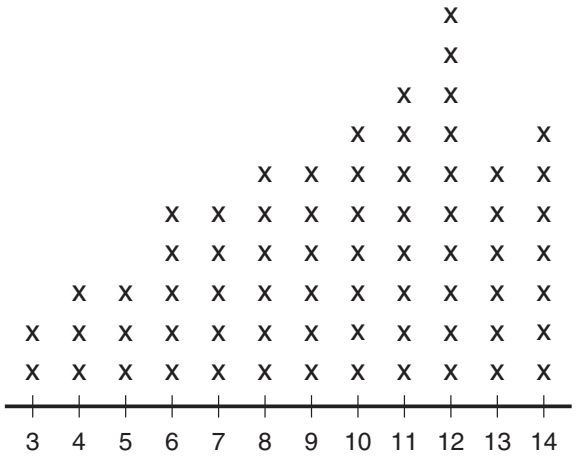
Plot C

Unit: _____



Plot D

Unit: _____



Name Date Time

LESSON 6•4

Making the Grade

Ms. Hallaran has her students collect their spelling test scores for 9 weeks. She asks students if they want her to record the median or mean of their scores. For each set of scores below, which landmark should they choose?

After finding the landmarks for each student, circle the better score.

1. Eliezer's scores: 0, 70, 95, 85, 90, 70, 95, 100, 80

median _____ mean _____

2. Miles' scores: 100, 80, 80, 80, 95, 80, 95, 100, 80

median _____ mean _____

3. Charlene's scores: 80, 80, 70, 65, 60, 80, 60, 80, 80

median _____ mean _____

4. Kiyada's scores: 75, 80, 95, 80, 100, 80, 95, 100, 80

median _____ mean _____

5. How can they decide which landmark to choose without finding the median and the mean?

_____

_____

_____

_____

_____

_____

6. An *outlier* is a data point that is located far from the rest of the data. What score is the outlier in the spelling score data?

_____

Name Date Time

STUDY LINK 6•5

Constructing a Graph from Landmarks

SRB 119 122

1. Make up a list of data with the following landmarks:

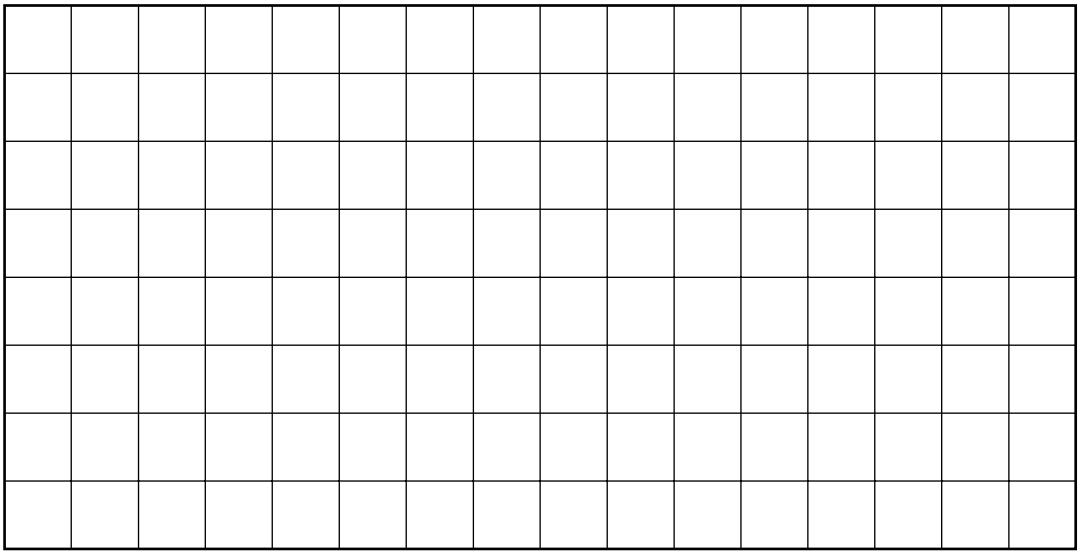
mode: 15 minimum: 5 median: 10 maximum: 20

Use at least 10 numbers.

_____

2. Draw and label a bar graph to represent your data.

_____
(title)



3. Describe a situation in which these data might actually occur.

_____

_____

Practice

4. 305 ∗ 29 = _____

5. 524 − 81 = _____

6. 671 ∗ 132 = _____

7. 7,356 ÷ 4 = _____

Name Date Time

LESSON 6•5

Identify the Whole

In the following number stories, find the whole using parts-and-total diagram. Write the fraction for the given part, and rename the fraction as a percent.

Example: Two girls each have 5 hats. Three of their hats are purple. What percent of the hats are purple?

Solution: $2 * 5 = 10$ hats; 3 out of 10 $= \frac{3}{10}$; Rename $\frac{3}{10}$ as a fraction with 100 as the denominator, $\frac{10 * 3}{10 * 10} = \frac{30}{100}$; $\frac{30}{100} = 0.30$, or 30%.

Reminder: To use a calculator to convert a fraction to a percent, divide the numerator by the denominator. Use your fix key to round to the nearest hundredth, or multiply the decimal by 100 to display the percent.

1. Lamont, Jose, and Kenji are recycling soda cans. Lamont collects 13 cans. Jose collects 20 cans, and Kenji collects 17 cans. What percent of the cans does Jose collect?

Unit: _____ Whole: _____

Fraction: _____ Percent: _____

Total ?		
Part 13	Part 20	Part 17

2. Jacqui and Edna decide to share their hot lunches. They put together their fried potatoes and their onion rings. There are 33 pieces of fried potatoes and 17 onion rings. What percent of the lunches are the onion rings?

Unit: _____ Whole: _____

Fraction: _____ Percent: _____

Total ?	
Part 33	Part 17

3. The boy's club is having a popcorn sale. Each of the 10 members of the club is given 5 boxes of popcorn, but Edward sells only 3. What percent of the 5 boxes remain for Edward to sell?

Unit: _____ Whole: _____

Fraction: _____ Percent: _____

Total 5	
Part 3	Part ?

Name Date Time

LESSON 6•5

Investigating Sample Size

1. Choose a specific outcome or event for one of the following actions.

   ◆ Flipping a coin

   Example: The coin will land heads up. _____

   ◆ Rolling a die

   Example: The die will land with a 4 on the top. _____

2. Predict the results of 10 trials and 100 trials. Report your predictions as the fraction of the total you think will result in a favorable outcome, or favorable event. For example, the coin will land heads up about $\frac{1}{2}$ of the time, or the die will land with a 4 on the top about $\frac{1}{6}$ of the time.

Event	10 trials		100 trials		1,000 trials
	Prediction	Result	Prediction	Result	Prediction

3. Perform 10 trials. Record the results first with tally marks on a separate piece of paper and then in the table as a fraction.

4. Repeat for 100 trials. Record the results first with tally marks on a separate piece of paper and then in the table as a fraction.

5. How do your predictions compare with the actual results?

_____

_____

6. Predict the results for 1,000 trials, and explain your prediction.

_____

_____

_____

7. On the back of this page, name two ways you and your partner could get data on the actual results for 1,000 trials.

STUDY LINK 6•6

Data Analysis

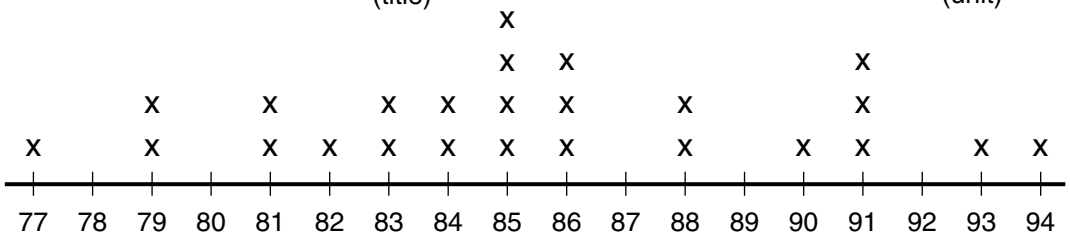
1. Describe a situation in which the data in the line plot below might occur. Then give the plot a title and a unit.

SRB 117–119

_____

_____ _____

(title) (unit)



2. Find the following landmarks for the data in the line plot.

a. minimum: _____ **b.** maximum: _____ **c.** mode: _____ **d.** median: _____

3. Describe a situation in which the data in the stem-and-leaf plot shown below might occur. Then give the plot a title and a unit.

_____

(title)

_____

(unit)

_____

_____

Stems (10s)	Leaves (1s)
3	2
4	0
5	1 3 7
6	0 4 5 6 6 6 7 9
7	1 3 8 8 9
8	0 2 2 5 5 8 8 9
9	0 2 2 5 5 8 9 9

4. Find the following landmarks for the data in the stem-and-leaf plot.

a. minimum: _____ **b.** maximum: _____

c. mode: _____ **d.** median: _____

Practice

5. 245 ∗ 51 = _____ **6.** 764 + 37 = _____

7. 2,121 ∗ 4 = _____ **8.** 1,976 ÷ 38 = _____

Name Date Time

LESSON 6•6

Stem-and-Leaf Plots

List the data sets for each stem-and-leaf plot on the lines below.

1. Candy bars sold by art club members (Bars)

Stem 10s	Leaves 1s
1	0 1 3
2	5 7 7 8
3	2 4

How many people are in the art club? _____

2. Rainy days in April for 10 cities (Days)

Stem 10s	Leaves 1s
0	3 4 5 5
1	0 1 2 3 3
2	1

3. Number of people visiting the reptile display at the zoo in one week (People)

Stem 100s and 10s	Leaves 1s
23	3 4 5 9
31	1 3
40	0

4. Seed sprouting time science experiment (Days)

Stem 10s	Leaves 1s
1	0 0 1 2
2	0 1 4 6
3	2 3 4

What was the maximum seed sprouting time? _____

Name Date Time

LESSON 6•6

Making Stem-and-Leaf Plots

1. Make a stem-and-leaf plot for the following data:

74, 86, 68, 90, 98, 60, 94, 74, 84, 72, 90, 96, 88, 92, 88, 70, 80, 90, 98, 88, 68, 76, 88, 62, 90, 82, 90, 72, 74, 98

_____ _____

(title) (unit)

Stem	Leaves
10s	1s

2. Find the following landmarks for this set of data.

a. minimum: _____

b. maximum: _____

c. mode: _____

d. median: _____

3. Describe a situation in which the data in the stem-and-leaf plot might occur. Then give the plot a title and a unit.

_____

_____

_____

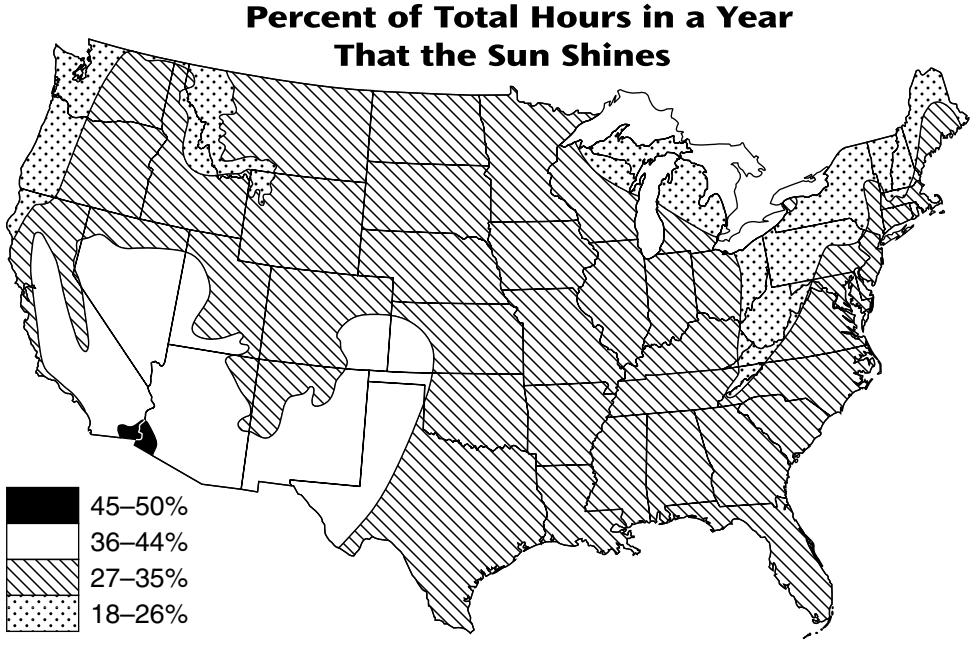
Name Date Time

STUDY LINK 6•7

Contour Map

Study the map below to answer the questions.

SRB 377



1. States where at least part of the state has sunny days more than 45% of the time.

O Washington O California O Arizona O New York

2. States that border Canada where at least some part of the state has days that are NOT sunny at least 31% of the time.

O California O Montana O Nebraska O Washington

3. Make up your own question about the map. Answer your question.

_____

_____

Practice

4. 149 ∗ 14 = _____

5. 134 ∗ 29 = _____

6. 2,997 ÷ 37 = _____

7. 3,682
−1,590

Name Date Time

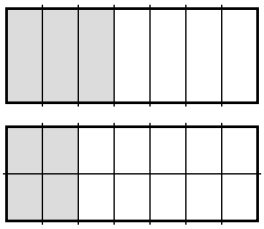
STUDY LINK 6•8

Calculating with Fraction Sticks

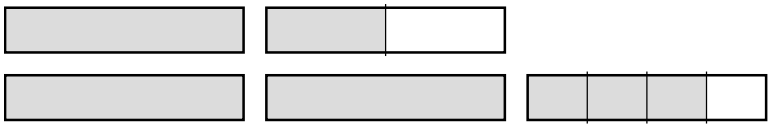
Solve. Use the fraction sticks to help you.

SRB 68–70

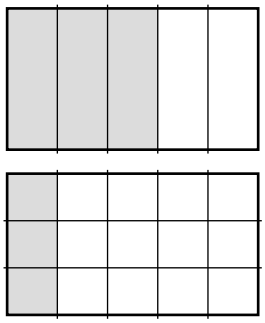
1. $\frac{3}{7} + \frac{4}{14} =$ _____



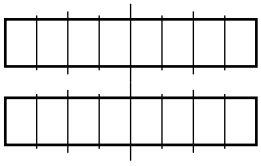
2. $1\frac{1}{2} + 2\frac{3}{4} =$ _____



3. $\frac{3}{5} - \frac{3}{15} =$ _____



4. Write an open number sentence and solve. Shade in the fraction stick to help you.



= 8 eighths

_____

Practice

Show your work.

5. 408 * 23 = _____

6. 0.85 + 0.3 = _____

7. 492 * 6 = _____

8. $45\overline{)2{,}297} \rightarrow$ _____

Number Sense 2.3; Number Sense 1.0; Number Sense 2.1

Name Date Time

LESSON 6•8

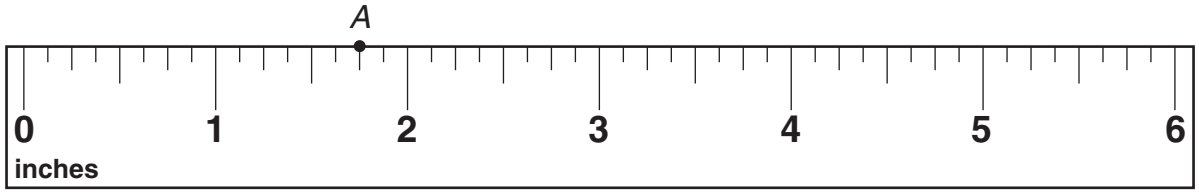
Locating Fractions on a Ruler

Locate each fraction or mixed number on the ruler below. Label the location with the letter. The first one is done for you.

A. $1\frac{6}{8}$ **B.** $1\frac{2}{8}$ **C.** $3\frac{1}{2}$

D. $\frac{4}{8}$ **E.** $5\frac{6}{8}$ **F.** 3

G. $\frac{6}{8}$ **H.** $\frac{3}{2}$ **I.** $\frac{9}{2}$



For each label you put on the ruler above, rename the fraction or mixed number as fourths. The first one is done for you.

A. $1\frac{3}{4}$, or $\frac{7}{4}$ **B.** _____ **C.** _____

D. _____ **E.** _____ **F.** _____

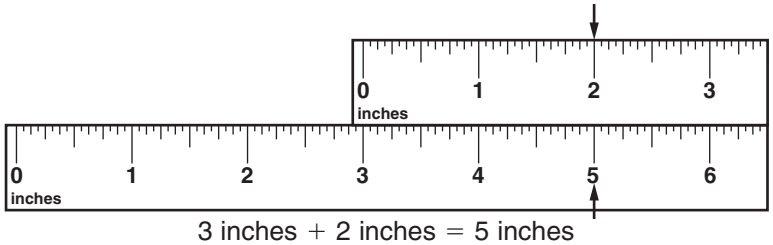
G. _____ **H.** _____ **I.** _____

Name Date Time

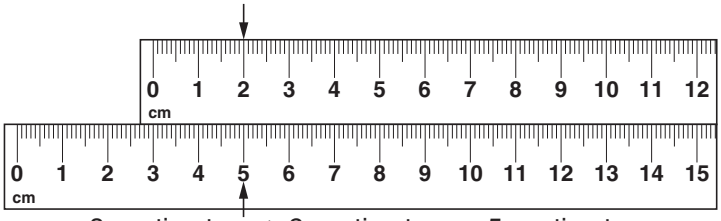
LESSON 6•8

Slide Rule Scales

The slide rule from the journal uses two number lines with the same scale, or units, to add or subtract. This is like lining up two rulers.



3 inches + 2 inches = 5 inches



3 centimeters + 2 centimeters = 5 centimeters

Work with a partner and use Geometry Templates to solve the following problems.

1. $4\frac{1}{2} + 2$

Measure in inches _____ in.

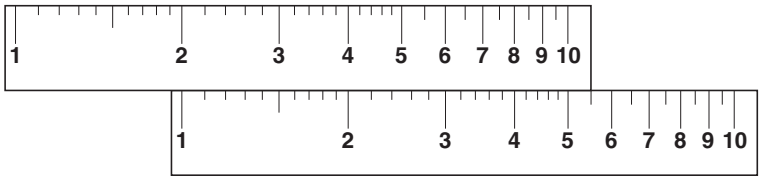
Measure in centimeters _____ cm

2. $2 + 4\frac{1}{2}$

Measure in inches _____ in.

Measure in centimeters _____ cm

Study the following slide rule.



3. What do you notice about the scale for this slide rule?

_____

_____

4. What operation is shown? _____

5. Write a number sentence for the operation shown on the two rulers. _____

Name Date Time

LESSON 6•9

Number Strips

Cut out each of the strips below.

10	20	30	40	50	60	70	80	90	100

4	8	12	16	20	24	28	32	36	40

7	14	21	28	35	42	49	56	63	70

9	18	27	36	45	54	63	72	81	90

6	12	18	24	30	36	42	48	54	60

8	16	24	32	40	48	56	64	72	80

3	6	9	12	15	18	21	24	27	30

1	2	3	4	5	6	7	8	9	10

5	10	15	20	25	30	35	40	45	50

2	4	6	8	10	12	14	16	18	20

Name Date Time

STUDY LINK 6•9

Adding and Subtracting Fractions

Multiplication Rule

To find a fraction equivalent to a given fraction, multiply the numerator and the denominator of the fraction by the same number.

$$\frac{a}{b} = \frac{a * n}{b * n}$$

Example 1: $\frac{4}{9} - \frac{1}{3} = ?$

$\frac{1}{3} = \frac{2}{6} = \left(\frac{3}{9}\right) = \frac{4}{12} = \frac{5}{15} = \frac{6}{18} = \ldots$

9 is a common denominator.

$\frac{4}{9} - \frac{1}{3} = \frac{4}{9} - \frac{3}{9} = \frac{1}{9}$

Example 2: $\frac{5}{8} + \frac{2}{5} = ?$

$\frac{5}{8} = \frac{10}{16} = \frac{15}{24} = \frac{20}{32} = \left(\frac{25}{40}\right) = \frac{30}{48} = \ldots$

$\frac{2}{5} = \frac{4}{10} = \frac{6}{15} = \frac{8}{20} = \frac{10}{25} = \frac{12}{30} = \frac{14}{35} = \left(\frac{16}{40}\right) = \frac{18}{45} = \ldots$

Both fractions can be rewritten with the common denominator 40.

$\frac{5}{8} + \frac{2}{5} = \frac{25}{40} + \frac{16}{40} = \frac{41}{40}$, or $1\frac{1}{40}$

Find a common denominator. Then add or subtract.

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

2. $\frac{8}{9} - \frac{5}{6} =$ _____

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

4. Lisa was 4 feet $10\frac{1}{2}$ inches tall at the end of fifth grade. During the year, she had grown $2\frac{3}{4}$ inches. How tall was Lisa at the start of fifth grade?

_____ feet _____ in.

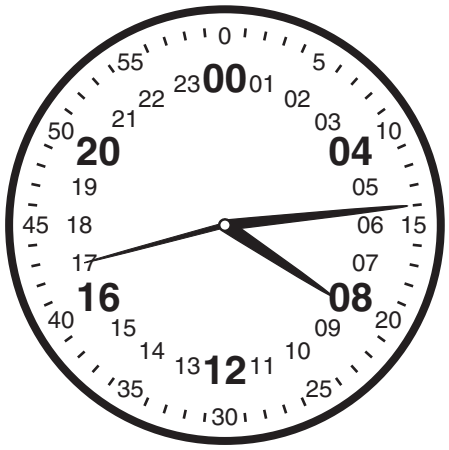
5. Bill was baking two different kinds of bread. One recipe called for $3\frac{1}{2}$ cups of flour. The other called for $2\frac{1}{3}$ cups of flour. How much flour did Bill need in all?

_____ cups

Name Date Time

LESSON 6•9

Fractions in Military Time



Whole
day

On a military clock, the whole is 1 day or 24 hours. $\frac{1}{24}$ is one hour. The time shown on this clock face is 08:14:42 (8 hours, 14 minutes, and 42 seconds).

Using the clock face, write the fractions as days, hours, and minutes. The first one has been done for you.

1. $\frac{2}{24} = \frac{1}{12}$ of a day = 2 hours = 120 minutes

2. $\frac{18}{24} = \frac{\square}{\square}$ of a day = ☐ hours = ☐ minutes

3. $\frac{10}{24} = \frac{\square}{\square}$ of a day = ☐ hours = ☐ minutes

4. $\frac{1}{2}$ hour = $\frac{\square}{\square}$ of a day

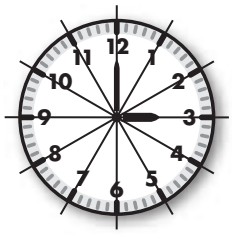
5. Explain how you found your answer for Problem 4.

Name Date Time

LESSON 6•9

Writing Elapsed-Time Number Stories

The numbers on a clock face divide one hour into twelfths. Each $\frac{1}{12}$ of an hour is 5 minutes.



Whole
hour

Use fractions to represent amounts of elapsed time and write a number story for a partner to solve.

Example:

Maria started her piano practice at 3:15. She practiced for $\frac{8}{12}$ of an hour. At what time did she finish practicing?

Think: $\frac{1}{12}$ hour $=$ 5 minutes; $\frac{8}{12}$ hour is $8 * 5$, or 40 minutes; 40 minutes more than 3:15 is 3:55.

Maria finished practicing at 3:55.

Your Elapsed-Time Number Story:

Your Partner's Solution:

Explain your answer.

Name Date Time

STUDY LINK 6•10

Fractions

Find a common denominator. Then add or subtract.

1. $\frac{9}{11} - \frac{1}{2} =$ _____

2. $\frac{5}{9} - \frac{1}{4} =$ _____

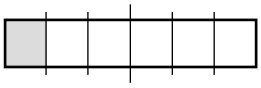
3. $\frac{7}{10} + \frac{4}{15} =$ _____

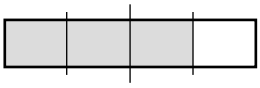
4. $\frac{7}{10} - \frac{4}{15} =$ _____

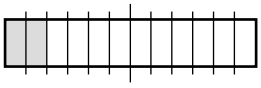
5. $\begin{array}{r} \frac{3}{2} \\ -\ \frac{4}{9} \\ \hline \end{array}$

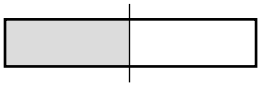
6. $\begin{array}{r} \frac{5}{6} \\ +\ \frac{4}{7} \\ \hline \end{array}$

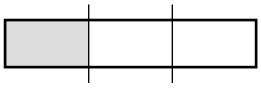
Write the fraction represented by the shaded part of each fraction stick.

7.  _____

8.  _____

9.  _____

10.  _____

11.  _____

12. The sum of the five fractions in Problems 7–11 is _____.

Use the information on Kwame's shopping list to fill in the blanks below.

13. He plans to buy _____ pounds of meat.

14. He plans to buy _____ pounds of cheese.

Kwame's Shopping List

$\frac{1}{2}$ *pound ham*
$\frac{3}{4}$ *pound roast beef*
$\frac{2}{3}$ *pound turkey*
$\frac{2}{3}$ *pound Swiss cheese*
$\frac{1}{4}$ *pound Parmesan cheese*
$\frac{2}{3}$ *pound cheddar cheese*

Name Date Time

LESSON 6•10

Common Denominators

1. For each pair of fractions below:

- Find a common denominator.
- Rewrite the fractions with this common denominator.
- Add the fractions.

Original Fractions	Fractions with a Common Denominator	Sum
$\frac{1}{2}$ and $\frac{3}{4}$		
$\frac{2}{9}$ and $\frac{7}{3}$		
$\frac{3}{8}$ and $\frac{5}{16}$		
$\frac{3}{5}$ and $\frac{9}{20}$		
$\frac{7}{14}$ and $\frac{6}{8}$		
$\frac{8}{10}$ and $\frac{15}{25}$		
$\frac{6}{9}$ and $\frac{8}{12}$		
$\frac{2}{3}$ and $\frac{3}{4}$		
$\frac{1}{5}$ and $\frac{3}{8}$		
$\frac{3}{10}$ and $\frac{6}{7}$		

2. Explain how you found a common denominator for one of the fraction pairs above.

Name Date Time

STUDY LINK 6•11

Unit 7: Family Letter

Exponents and Negative Numbers

In Unit 7, your child will learn to write exponential and scientific notation for naming very large and very small numbers. These topics become increasingly important later on when your child begins algebra. If you have enjoyed playing math games in the past, you might want to play *Exponent Ball* during these lessons.

Your child will also review how parentheses make expressions unambiguous and will learn rules that determine the order for performing operations in a mathematical expression.

Finally, your child will learn to work with positive and negative numbers, using a variety of tools. For example, your child will use number lines, a slide rule, and red and black "counters" to model addition and subtraction problems.

The counter activities are especially helpful. Students use counters to represent an account balance. The red counters (−$1) represent a debit, and the black counters (+$1) represent a credit. If there are more red counters than black ones, the account is "in the red," that is, the balance is negative. On the other hand, if there are more black counters than red ones, the account is "in the black," that is, the balance is positive. By adding or subtracting red and black counters from an account, your child can model addition and subtraction of positive and negative numbers. To assist your child, you might want to explain how a checking or savings account works. Students will practice their new skills in the *Credits/Debits Game*.

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

Vocabulary

Important terms in Unit 7:

account balance An amount of money that you have or that you owe.

exponential notation A way to show repeated multiplication by the same factor. For example, 2^3 is exponential notation for $2 * 2 * 2$.

expression A mathematical phrase made up of numbers, variables, operation symbols, and/or grouping symbols. An expression does not contain symbols such as $=$, $>$, and $<$.

in the black Having a positive balance; having more money than is owed.

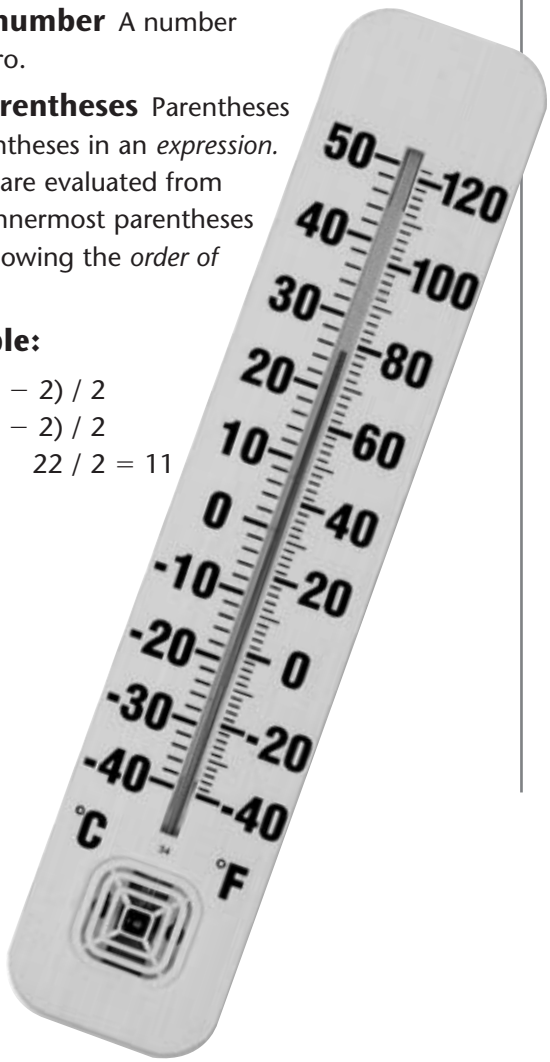
in the red Having a negative balance; owing more money than is available.

negative number A number less than zero.

nested parentheses Parentheses within parentheses in an *expression.* Expressions are evaluated from within the innermost parentheses outward following the *order of operations.*

Example:

$((6 * 4) - 2) / 2$
$(24 - 2) / 2$
$22 / 2 = 11$



number-and-word notation A way of writing a large number using a combination of numbers and words. For example, *27 billion* is number-and-word notation for 27,000,000,000.

opposite of a number A number that is the same distance from 0 on the number line as a given number but on the opposite side of 0. For example, the opposite of $+3$ is -3; the opposite of -5 is $+5$.

order of operations Rules that tell the order in which operations in an *expression* should be carried out. The order of operations is:

1. Do operations inside grouping symbols first. (Use rules 2–4 inside the grouping symbols.)
2. Calculate all the expressions with exponents.
3. Multiply and divide in order from left to right.
4. Add and subtract in order from left to right.

parentheses ( ) Grouping symbols used to indicate which operations in an expression should be done first.

scientific notation A system for writing numbers in which a number is written as the product of a power of 10 and a number that is at least 1 and less than 10. Scientific notation allows you to write big and small numbers with only a few symbols. For example, $4 * 10^{12}$ is scientific notation for 4,000,000,000,000.

slide rule An *Everyday Mathematics* tool for adding and subtracting integers and fractions.

standard notation Our most common way of representing whole numbers, integers, and decimals. Standard notation is base-ten, place-value numeration. For example, standard notation for three hundred fifty-six is 356.

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. Have your child pick out a stock from the stock-market pages of a newspaper. Encourage your child to watch the stock over a period of time and to report the change in stock prices daily, using positive and negative numbers.
2. Using the same stock in Activity 1, have your child write the high and low of that stock for each day. After your child has watched the stock over a period of time, have him or her find. . .
   - ◆ the *maximum* value observed.
   - ◆ the *minimum* value observed.
   - ◆ the *range* in values.
   - ◆ the *mode,* if there is one.
   - ◆ the *median* value observed.
3. Review tessellations with your child. Encourage your child to name the regular tessellations and to draw and name the 8 semiregular tessellations. Challenge your child to create Escher-type translation tessellations. You might want to go to the library first and show your child examples of Escher's work.
4. Practice finding perimeters of objects and circumferences of circular objects around your home.

Building Skills through Games

In Unit 7, your child will practice operations and computation skills by playing the following games. For detailed instructions, see the *Student Reference Book.*

Credits/Debits Game See *Student Reference Book,* page 301. Two players use a complete deck of number cards, cash and debt cards, and a record sheet to tally a balance. This game helps students add and subtract signed numbers.

Exponent Ball See *Student Reference Book,* page 305. This game involves two players and requires a gameboard, 1 six-sided die, a penny or counter, and a calculator. This game develops skills dealing with forming and comparing exponential values.

Name That Number See *Student Reference Book,* page 325. This is a game for two or three players using the Everything Math Deck or a complete deck of number cards. Playing *Name That Number* helps students review operations with whole numbers.

Scientific-Notation Toss See *Student Reference Book,* page 329. Two players will need 2 six-sided dice to play this game. This game develops skill in converting numbers from scientific notation to standard notation.

As You Help Your Child with Homework

As your child brings assignments home, you might 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 7•1

2. Should be $6^3 = 6 * 6 * 6$; 216

3. Should be $2^9 = 2 * 2 * 2 * 2 * 2 * 2 * 2 * 2 * 2$; 512

4. Should be $4^7 = 4 * 4 * 4 * 4 * 4 * 4 * 4$; 16,384

5. 14.7 **6.** 0.48 **7.** $\frac{15}{7}$, or $2\frac{1}{7}$

Study Link 7•2

1. billion **2.** 10^3 **3.** trillion

4. 10^6 **5.** thousand; 10^3 **6.** million; 10^6

7. $2^4 * 3$ **8.** $2^2 * 3 * 5$

9. 3,000 + 200 + 60 + 4

Study Link 7•3

1. 600; 3 **2.** 6 **3.** 500 million

4. 260 million **5.** 10 million **6.** 125

Study Link 7•4

1. $2 = (3 * 2) - (4 / 1)$ **2.** $3 = (4 + 3 - 1) / 2$

3. $4 = (3 - 1) + (4 / 2)$ **5.** $1 = ((4 + 1) - 3) / 2$

6. $6 = (1 + (4 * 2)) - 3$

7. $(4^2 - ((3 * 3)) + 1((2 + 1)^4 \div 9) - 1$

8. $a = 1\frac{4}{12}$, or $1\frac{1}{3}$ **9.** $p = 1\frac{1}{2}$

10. $d = 2\frac{2}{8}$, or $2\frac{1}{4}$ **11.** $y = 0$

Study Link 7•5

1. 34 **2.** 25 **3.** 28 **4.** 30

5. 21 **6.** 28 **7.** false **8.** true

9. true **10.** true **11.** false **12.** true

13. false **14.** true **15.** $z = 9{,}204$

16. $r = 78{,}002$ **17.** $s = 1.25$

Study Link 7•6

1. Sales were at their highest in 1930. Sales dropped by 60 million from 1940 to 1970.

3. Before TV sets were common, more people went to the movies.

Study Link 7•7

1. 2.6 **2.** 1.58 **3.** −5.5

4. −9.8 **5.** −1.2, −1, 3.8, $5\frac{1}{4}$, $5\frac{3}{8}$

7. F **8.** F **9.** T

10. T **11.** $-1 < 1$; T **13.** $f = 12.53$

15. $n = \frac{3}{4}$

Study Link 7•8

1. < **2.** > **3.** > **4.** >

5. 2 debt **6.** 5 cash **7.** 9 **9.** −88

11. 3 **15.** $a = 30$ **17.** $p = 5$

Study Link 7•9

1. −41 **2.** 43 **3.** 0 **4.** −8

5. 40 **6.** 20 **7.** −85 **8.** −0.5

9. 2 **10.** (−10) **12.** $u = 65, 664$

13. $e = 3$ **14.** $w = 30.841$ **15.** $m = 5.46$

Study Link 7•10

1. < **2.** > **3.** > **4.** >

5. > **6.** > **7.** −5 **8.** −21

9. 4 **10.** −6 **11.** −11 **12.** −26

13. 16 **14.** −4 **15.** true

16. true **17.** $(-2 + 3) * 4 = 4$

Study Link 7•11

1. $-5 - (-58) = 53$ **3.** 10^4

7. 20,000 **13.** $7 * 10^9$ **19.** $b = 0.46$

21. $a = 1{,}571$ **23.** $137\frac{4}{7}$, or 137 R4