


• Rectangles

Power Up

**facts**

Power Up 51

**jump start**

-  Count up by 3s from 0 to 45.
- Count up by 7s from 0 to 63.



Write these numbers in order from least to greatest:

457    375    407



Draw a  $4\frac{1}{2}$ -inch segment on your worksheet. Record the length next to the segment.

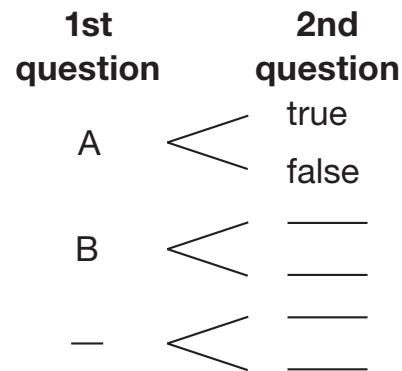
**mental math**

- a. **Money:** Marcus bought an eraser for \$0.20. He paid \$1.00. How much change did he receive?
- b. **Number Sense:**  $22 - 8$
- c. **Time:** What is the time 2 hours after 4:05 in the afternoon?
- d. **Money:** Find the value of these bills and coins:



**problem solving**

The first question on the quiz is multiple choice with three choices—A, B, or C. The second question is “true or false.” Complete this tree diagram and list the possible combinations of answers.

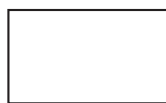


## New Concept

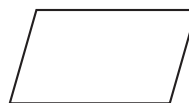
Rectangles are all around us. Look around your classroom and you will see walls, windows, doors, book covers, and papers that are all the shape of rectangles.

How can you tell if a shape is a rectangle? Here are some things to look for.

- Rectangles are flat. A box is not a rectangle, but the sides of a box may be rectangles.
- A rectangle has four sides. Other shapes also have four sides, so just having four sides is not enough.

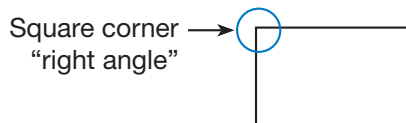


Rectangle



Not a rectangle

- A rectangle has four square corners.



The square corners are called **right angles**. In fact, the word **rectangle** means right-angle shape.

- The first three descriptions are enough to identify a rectangle. We also see that the opposite sides of a rectangle are **parallel**. The sides that intersect are **perpendicular**.

### Activity

#### Rectangle List

1. As a class, make a list of the rectangles you can see in your classroom. Some rectangles are long and narrow. Some rectangles look like squares. A **square** is a special type of rectangle because it has four equal sides.
2. After you make your list of rectangles, describe how you know that a shape is a rectangle.

### Example

Identify each figure below as a rectangle or not a rectangle. If the figure is not a rectangle, state why it is not.



- a. The shape is a **rectangle**.
- b. The shape is not a rectangle because the corners are not right angles.
- c. A square is a specific kind of **rectangle**.
- d. The shape is not a rectangle because it does not have four sides.

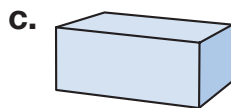
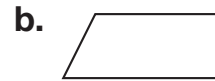
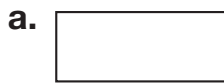
**Verify** Is this statement true or false?

*“Every square is a rectangle. Not every rectangle is a square.”*

Why or why not?

### Lesson Practice

Identify each shape below as a rectangle or not a rectangle. If the shape is not a rectangle, write why it is not.



- e. Draw a rectangle that is not a square.
- f. Draw a rectangle that is a square.

### Written Practice

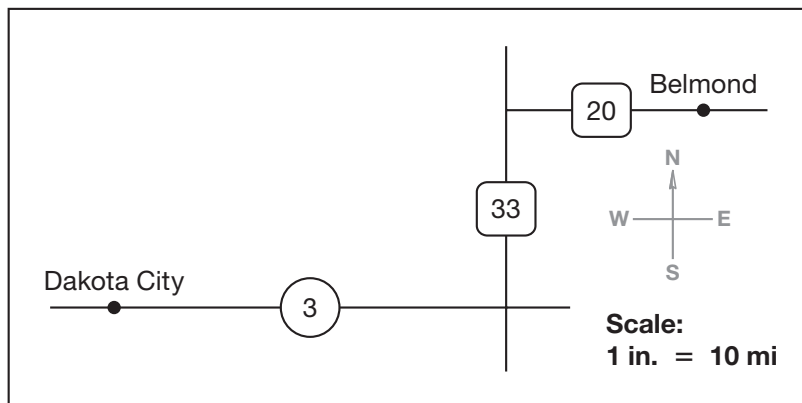
*Distributed and Integrated*

**Formulate** Write number sentences for problem 1. Write a complete sentence to answer the question.

1. The regular price of the sofa was \$398. It was on sale for \$50 off the regular price. What was the sale price of the sofa?

2. <sup>(12, 16)</sup> The price of the aquarium was \$142. Tax was \$12. Write the total price of the aquarium with tax using words.
3. <sup>(34, 44)</sup> One foot is what fraction of one yard?
4. <sup>(42)</sup> Draw a circle and divide it into thirds by imagining three hands of a clock pointing to 12, 4, and 8. Then shade  $\frac{1}{3}$  of the circle.
5. <sup>(39)</sup> George Washington lived from 1732 to 1799. How many years did he live?
6. <sup>(11)</sup> Write 487 in expanded form.
7. <sup>(51)</sup> **Represent** Draw a rectangle. A rectangle has how many right angles?

This map shows the location of the towns of Dakota City and Belmond and Highways 3, 33, and 20. One inch on the map represents a distance of ten miles. Use this map to help you answer problems **8–10**.

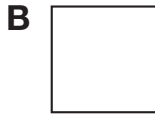


8. <sup>(31, Inv. 4)</sup> **Analyze** Write directions to Belmond from Dakota City using compass directions and miles.
9. <sup>(Inv. 4)</sup> About how many miles is the drive between Dakota City and Belmond? (1 inch = 10 miles)
10. <sup>(Inv. 4)</sup> a. Which road is parallel to Highway 3?  
b. Which road is perpendicular to Highway 3?

11. If you double 1, the answer is 2. If you double 2, the answer is 4.  
<sup>(2)</sup> If you double 4, the answer is 8. Find the next two numbers in this doubling sequence.

1, 2, 4, 8, \_\_\_\_\_, \_\_\_\_\_, ...

12. **Multiple Choice** Which shape is not a rectangle? Explain your answer.  
<sup>(51)</sup>



13. Cassie grew two bean plants for a science fair project. After  
<sup>(39)</sup> three weeks, one measured 24 inches long and one measured 32 inches long. How much longer was the second bean plant? Write a greater-lesser-difference number sentence to find the answer.

Add or subtract, as shown:

14.  $\$3 + 48\text{¢} + 76\text{¢}$   
<sup>(21, 22)</sup>

15.  $\$5.00 - \$3.47$   
<sup>(28)</sup>

16.  $562 + 348$   
<sup>(16)</sup>

17.  $460 - 148$   
<sup>(19)</sup>

18.  $3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3$   
<sup>(10)</sup>

19. a. Round \$889 to the nearest hundred dollars.  
<sup>(15, 30)</sup>

b. Round \$61 to the nearest ten dollars.

c. Estimate the sum of the numbers in **a** and **b**.

20. **Represent** Draw two parallel line segments  $2\frac{1}{2}$  inches long.  
<sup>(35, Inv. 4)</sup>


## • Length and Width

## Power Up

## facts

Power Up 52

jump  
start

-  Count up by 4s from 0 to 40.  
Count up by 8s from 0 to 80.



Write the fraction “one half” using digits.



Write a fact family using the numbers 5, 7, and 12.

mental  
math

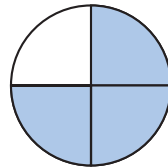
- a. **Money:** Compare these money amounts using the symbol  $<$ ,  $>$ , or  $=$ .

2 quarters  50¢

- b. **Money:**  $70¢ + 30¢$

- c. **Time:** A century is 100 years. How many years are in 2 centuries?

- d. **Fractions:** What fraction of the circle is shaded?

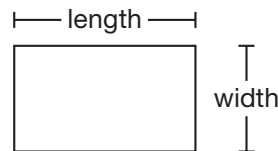
problem  
solving

Karlos collects stamps. This table shows how many stamps Karlos has from each of several countries. If Karlos collects two more stamps from France and collects his first stamp from Mexico, how many stamps will he have in all?

Country	Number of Stamps
United States	40
Canada	6
France	2
Nigeria	2

## New Concept

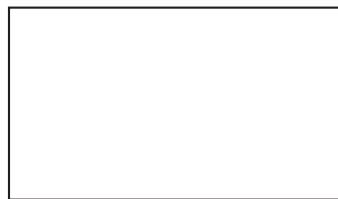
A rectangle has a **length** and a **width**. The measure of the longer side of a rectangle is called the length of the rectangle. The measure of the shorter side is called the width.



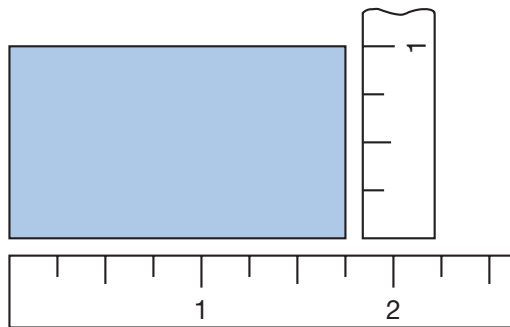
In this lesson, you will use your ruler to measure the lengths and widths of rectangles. For practice, use your ruler to measure the rectangle in the example to the nearest quarter inch.

### Example

What are the length and width of this rectangle?



We place a ruler along two sides of the rectangle. The **length is  $1\frac{3}{4}$  inches**, and the **width is 1 inch**.



This means that the two longer sides are both  $1\frac{3}{4}$  inches, and the two short sides are both 1 inch.



## Activity

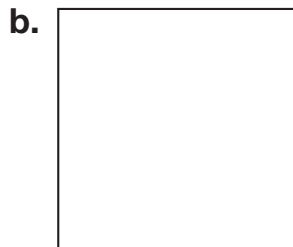
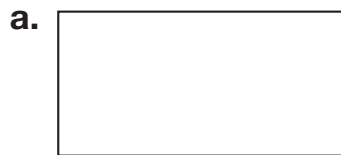
### Measuring Length and Width

Measure the lengths and widths of the rectangles on **Lesson Activity 20**.

**Analyze** One side of a rectangle is 3 inches long. How long is the opposite side?

### Lesson Practice

Use your ruler to find the length and width of each rectangle. On your paper, write the length and width.



c. Draw a rectangle that is  $1\frac{1}{2}$  inches long and 1 inch wide.

d. Draw a rectangle with four sides that are each 1 inch long. What kind of rectangle did you draw?

### Written Practice

*Distributed and Integrated*

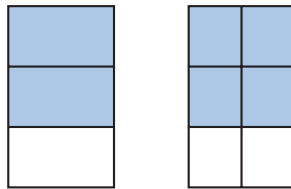
1. Lisa had \$2.40. She earned \$4.25 more helping a neighbor in the yard. Then how much money did Lisa have?  
(18, 22)

2. There are 28 students in room A and 31 students in room B. Altogether, how many students are in rooms A and B?  
(18)

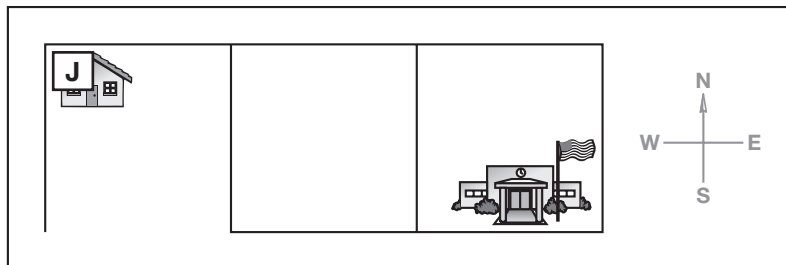
3. An inch is what fraction of a foot?  
(34, 44)



4. Look at your answer to problem 3. Which number is the numerator? Which number is the denominator?  
(41)
5. The first postage stamp was issued in England in 1840. How many years ago was that?  
(39)
6. Sketch a number line from 0 to 1 and divide the number line into fourths. Draw a dot on the number line at  $\frac{3}{4}$  and write the fraction under the dot.  
(48)
7. The two shaded rectangles below represent which two equivalent fractions?  
(47)



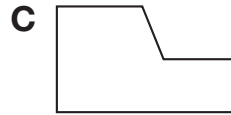
8. Julie lives four blocks from school. Write directions from Julie's home to school.  
(31)



9. The odometer shows this display.  
(32)



- a. How many miles are shown?
- b. Use words to write the number of miles shown.
10. Brent took ten big steps. With each big step, Brent traveled about one yard. About how many feet did Brent travel in ten big steps?  
(34)
11. **Multiple Choice** Which figure is not a rectangle? Explain your answer.  
(51)



- 12.** **Represent** Draw a rectangle that is two inches long and one inch wide.  
(34, 52)

**13.**  $\$5.90 - \$2.75$   
(26)

**14.** **Analyze** 1 ft. - 2 in. = \_\_\_\_ in.  
(14, 34)

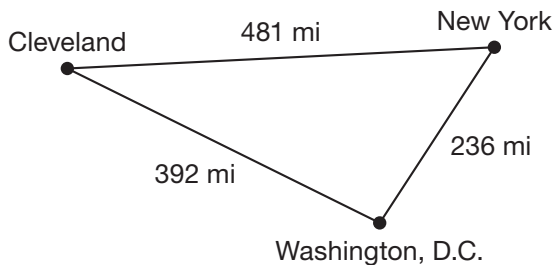
**15.**  $450 - 125$   
(19)

**16.**  $87 + 56 + 36$   
(24)

- 17.** Veronica gave Paolo 15 pretzels. Then she had 18 pretzels left. How many pretzels did Veronica have before she gave pretzels to Paolo? Write a some-went-away number sentence to find the answer.  
(40)

- 18.** Write a fraction equal to 1 that has a denominator of 7.  
(46)

- 19.** On their vacation, the Lees drove from Cleveland to Washington, D.C., to New York and then back to Cleveland. Write the miles in order from greatest to least.  
(27)



- 20.** Use your ruler to find the length and width of this rectangle.  
(35, 52)

**Early Finishers**

Real-World Connection

Suni uses four lemons to make a three-liter pitcher of lemonade. How many lemons will Suni use to make 15 liters of lemonade? How many pitchers will she need? You may use manipulatives to find the answer.


# • Rectangular Grid Patterns


## Power Up


### facts

Power Up 53

### jump start

 Count up by 10s from 4 to 94.  
Count down by 100s from 1,000 to 0.

 The alarm clock rang at 20 minutes after 6 in the morning. Draw hands on your clock to show this time. Write the time in digital form.

 The temperature in the mountains was 40°F. At the beach it was 50 degrees warmer. Mark your thermometer to show the temperature at the beach.

### mental math

a. **Fractions:** Compare these fractions using the symbol  $<$ ,  $>$ , or  $=$ .

$$\frac{3}{4} \bigcirc \frac{1}{4}$$

b. **Number Sense:**  $25 - 9$

c. **Number Sense:**  $400 + 30 + 3$

d. **Patterns:** What number is missing from the pattern shown below?

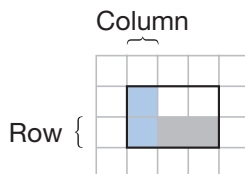
2	12	_____	32	42
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### problem solving

Five shoppers were waiting in the checkout line. Then one more shopper got in line. To make the checkout quicker, the store opened a second checkout line. One half of the shoppers in the first line moved to the second line. How many shoppers moved to the second line?

## New Concept

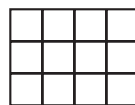
We can draw rectangles on grid paper. We trace over the grid lines to make the size rectangle we want. To describe the size of the rectangle, we say “units” instead of “inches.” We can count the units by looking at the grid. This rectangle is 3 units long and 2 units wide.



Inside the rectangle, we see small squares arranged in **columns** and **rows**. Columns go up and down. Rows go from side to side.

### Example 1

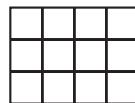
What is the length and width of this rectangle?



Start at one corner and count the number of columns and the number of rows. This rectangle is **4 units long** and **3 units wide**.

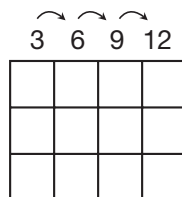
### Example 2

How many small squares are inside this rectangle?

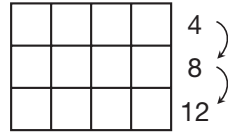


We can find the number of squares a few ways. One way is to count them one by one.

Another way is to count four columns of 3 squares: 3, 6, 9, 12.



We can also count three rows of 4 squares: 4, 8, 12.



Whatever way we choose to count, the total is **12 small squares**.

## Activity

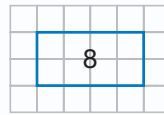
### Rectangular Patterns

Materials: **Lesson Activity 21** or grid paper

On grid paper, draw rectangles with the following lengths and widths.

1. 5 unit by 4 unit
2. 3 unit by 3 unit
3. 6 unit by 3 unit
4. 7 unit by 4 unit

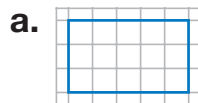
Inside each rectangle, write the total number of small squares in the rectangle. For example, a 4 unit by 2 unit rectangle would look like this.



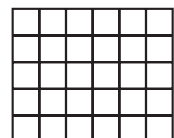
**Generalize** What shape could you draw on the grid paper that has the same number of columns and rows?

### Lesson Practice

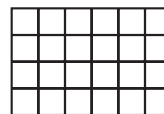
Find the number of small squares inside each of these rectangles. You may use grid paper to draw the rectangles for problems **c** and **d**, or you may find the answer mentally.



- 5 unit by 2 unit
- 5 unit by 5 unit
- How many columns of squares are in this rectangle?
- How many rows of squares are in this rectangle?



1. <sup>(19, 20)</sup> The book had 194 pages. Nelson has read 54 pages. How many pages does he need to read to finish the book?
  
2. <sup>(39)</sup> Vernon saw 19 constellations at the planetarium. Suzanne saw 22 constellations. How many more constellations did Suzanne see? Write a greater-lesser-difference number sentence to find the answer.
  
3. <sup>(44)</sup> Most of the ten digits from 0 to 9 are written with curves. What fraction of the digits are written without curves? What are those digits?
  
4. <sup>(41, 42)</sup> Use fraction manipulatives to build a model of  $\frac{3}{5}$ . Then draw a picture of the model.
  
5. <sup>(39)</sup> George Washington Carver lived from 1864 to 1943. How many years did he live?
  
6. <sup>(53)</sup>
  - a. How many units long is this rectangle?
  - b. How many units wide is this rectangle?
  - c. How many small squares are inside this rectangle?



7. <sup>(35, 52)</sup> **Represent** Draw a rectangle that is  $2\frac{1}{2}$  inches long and  $1\frac{1}{4}$  inches wide.
  
8. <sup>(35, 37)</sup> Estimate the distance in inches from the left-hand side of your desk to the right-hand side. Then use your ruler to measure the distance across your desk to the nearest quarter inch.

9. <sup>(2)</sup> **Predict** What is the 7th number in this sequence?  
3, 6, 9, 12, ...

Add or subtract, as shown:

10. <sup>(39)</sup>  $1920 - 1620$

11. <sup>(24)</sup>  $72 + 10 + 28$

12. <sup>(28)</sup>  $\$5.00 - \$3.85$

13. <sup>(22)</sup>  $\$5.49 + \$3.94$

**14.** **Analyze**  $1 \text{ yd} - 12 \text{ in.} = \underline{\hspace{2cm}} \text{ in.}$   
(14, 34)

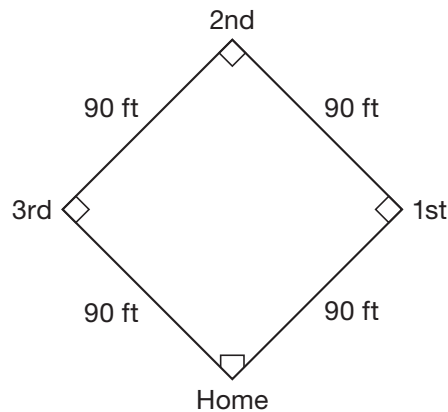
**15.**  $10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10 + 10$   
(10)

**16. a.** Round \$27 to the nearest ten dollars.  
(15, 30)

**b.** Round \$367 to the nearest hundred dollars.

**c.** Estimate the sum of the numbers in **a** and **b**.

**17.** Pedro hit a home run. He ran from home to first base, to second base, to third base, and to home. How many feet did Pedro run?  
(18, 24)



**18.** Sketch a number line from 0 to 1. Equally space four tick marks to divide the distance into five equal segments. Draw a dot at  $\frac{2}{5}$  and a dot at  $\frac{3}{5}$ . Below each dot write the fraction.  
(48)

**19.** Use the number line in problem **18** to help you compare  $\frac{2}{5}$  and  $\frac{3}{5}$ .  
(49)

**20.** In a bag are five marbles. Two are red and three are blue. If one marble is taken from the bag without looking, which color is more likely to be picked?  
(50)

# • Multiplication as Repeated Addition

## Power Up

### facts

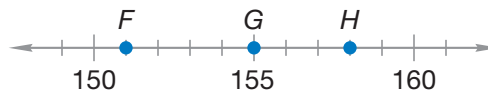
Power Up 54

### jump start

1. Count down by 3s from 30 to 0.  
Count down by 4s from 40 to 0.
2. It's afternoon. Draw hands on your clock to show 1:19. Write the time in digital form.
3. The morning temperature was  $65^{\circ}\text{F}$ . It was 11 degrees warmer in the afternoon. Mark your thermometer to show the afternoon temperature.

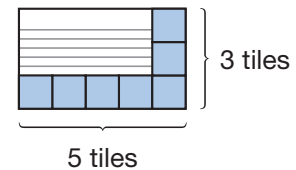
### mental math

- a. **Number Sense:**  $60 + 70$
- b. **Estimation:** Round  $\$27.00$  to the nearest ten dollars.
- c. **Time:** A decade is 10 years. How many years are in 4 decades?
- d. **Number Line:** What number is represented by Point  $F$ ?



### problem solving

Anya is using square tiles to cover an index card. She has already placed 7 tiles on the card. How many more tiles does she need to cover the entire index card?





## New Concept

To find the total value of 6 nickels we can add.



We can also count by fives.



Another way to find the total is to **multiply**. We **multiply** when we combine equal groups.

$$6 \times 5¢ = 30¢$$

“6 times 5¢ equals 30¢”

“6 nickels is 30¢”

6 groups of 5 is 30

The  $\times$  between the 6 and 5¢ is a **multiplication sign**, which we usually read by saying “times.”

### Example 1

**Write  $4 \times 7$  as an addition problem and find the total.**

Since  $4 \times 7$  means 4 sevens, we write four 7s and add.

$$7 + 7 + 7 + 7 = 28$$

This addition shows that  $4 \times 7 = 28$ .

### Example 2

**Write this addition as a multiplication and show the total.**

$$3 + 3 + 3 + 3 + 3$$

We count five 3s, which total 15. So we write “5 times 3 is 15.”

$$5 \times 3 = 15$$

We can use multiplication to find the number of small squares in a rectangle.

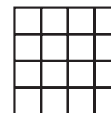


We see 4 columns with 2 squares in each column. We see 8 squares in all.

$$4 \times 2 = 8$$

### Example 3

Write the multiplication and total shown by this rectangle.



There are 4 columns and 4 rows and a total of 16 squares.

$$4 \times 4 = 16$$

**Discuss** Could  $3 + 4 + 6 + 3 = 16$  be written as a multiplication? Why or why not?

### Lesson Practice

For problems **a–d**, write the multiplication as an addition, then write the total.

**a.**  $3 \times 5$

**b.** 4 times 6

**c.**  $2 \times 8$

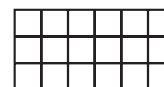
**d.**  $4 \times 10$

For problems **e** and **f**, write each addition as a multiplication, then write the total.

**e.**  $2 + 2 + 2 + 2 + 2$

**f.**  $4 + 4 + 4$

**g.** Write the multiplication and total shown by this rectangle.

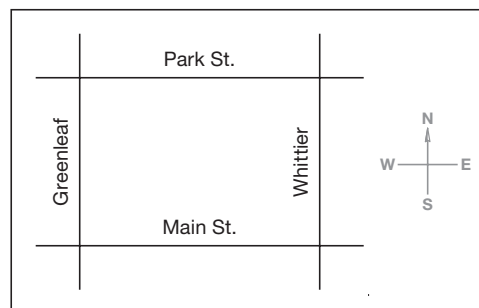


### Written Practice

*Distributed and Integrated*

**Analyze** The park shown here is 300 yards long and 200 yards wide. Use this information for problems **1**, **2**, and **3**.

**1.** If Melody starts at the corner of Greenleaf and Park St., jogs east to the corner of Park St. and Whittier, and then south to the corner of Whittier and Main St., how many yards will she jog?



2. If Melody continues jogging to the corner of Main St. and Greenleaf, how many yards will she jog altogether?  
(16, 52)

3. **Multiple Choice** Read problem 1 again. When Melody reaches the corner of Whittier and Main, what fraction of the distance around the park has she jogged?  
(47)

A  $\frac{1}{2}$

B  $\frac{2}{3}$

C  $\frac{3}{4}$

D  $\frac{3}{5}$

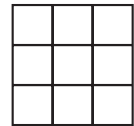
4. Jeremy bought a 500-page notebook. He used some of the pages for a book report. Then his notebook had 489 pages. How many pages did Jeremy use for his book report? Write and solve a some went away number sentence to find the answer.  
(40)

5. **Represent** Use a ruler to draw a rectangle that is  $1\frac{1}{2}$  inches long and  $1\frac{1}{2}$  inches wide. What kind of a rectangle did you draw?  
(35, 52)

6. Write this addition as a multiplication and show the total.  
(54)

$$4 + 4 + 4 + 4 + 4$$

7. Write the multiplication and the total shown by this rectangle.  
(53)



8. Write this multiplication as an addition and show the total.  
(54)

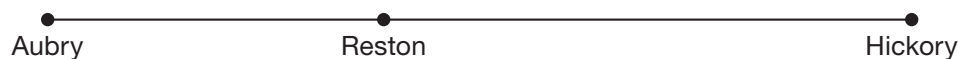
$$4 \times 5$$

9. On this map, how many inches is it from:  
(35)

a. Aubry to Reston?

b. Reston to Hickory?

c. Aubry to Hickory?



10. How many different numbers can you roll with one dot cube?  
(44, Inv. 5) What fraction of those numbers are less than 3?

11. Write 276 in expanded form.  
(11)

- 12.** Chad and Vic are playing a game with a dot cube. If a roll turns up a 1 or a 2, Chad wins a point. If a roll turns up a number greater than 2, Vic wins a point. If the cube is rolled once, which player is more likely to win the point? Why?

(50,  
Inv. 5)

Add or subtract, as shown:

**13.**  $\$6.45 + \$0.50$

(22)

**14.**  $\$3.65 - \$3.48$

(26)

**15.**  $24 + 36 + 64$

(24)

**16.** 1 foot – 8 inches

(34)

**17.**  $2 + 2 + 2 + 2 + 2 + 2 + 2 + 2$

(10)

- 18.** **Predict** Find the eighth number in this sequence:

(2)

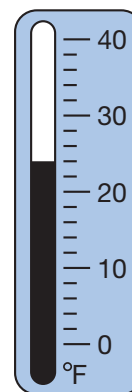
4, 8, 12, 16, ...

- 19.** Find the missing addend:  $8 + 6 + m + 5 = 25$

(9, 10)

- 20.** Hector noticed a layer of ice on the road. He checked the thermometer. What was the temperature?

(4)




## • Multiplication Table


## Power Up


## facts

Power Up 55

jump  
start

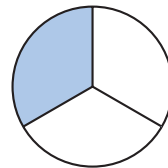
 Count up by 8s from 0 to 80.  
Count up by 6s from 0 to 60.

 The bus arrives at school at 10 minutes to 8 in the morning. Draw hands on your clock to show this time. Write the time in digital form.

 The daily low temperature was  $13^{\circ}\text{C}$ . The daily high temperature was 15 degrees warmer. Mark the high temperature on your thermometer.

mental  
math

- Number Sense:**  $7 + 16$
- Number Sense:**  $19 - 9$
- Calendar:** How many days are in 4 weeks?
- Fractions:** What fraction of the circle is shaded?

problem  
solving

Melia learned in science class that insects have six legs. She made a chart to find the total number of legs on 5 insects. Which number is incorrect in Melia's chart? What is the correct number? Explain your answer.

Insects	Legs
1	6
2	12
3	17
4	24
5	30

## New Concept

We can find the answer to a multiplication problem on a **multiplication table**. Notice that a multiplication table is a list of the numbers we say when we count by ones, twos, threes, fours, and so on.

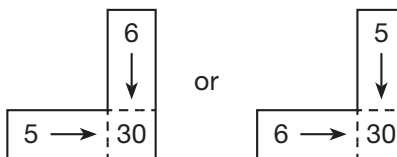
	0	1	2	3	4	5	6	7	8	9	10	11	12
0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10	11	12
2	0	2	4	6	8	10	12	14	16	18	20	22	24
3	0	3	6	9	12	15	18	21	24	27	30	33	36
4	0	4	8	12	16	20	24	28	32	36	40	44	48
5	0	5	10	15	20	25	30	35	40	45	50	55	60
6	0	6	12	18	24	30	36	42	48	54	60	66	72
7	0	7	14	21	28	35	42	49	56	63	70	77	84
8	0	8	16	24	32	40	48	56	64	72	80	88	96
9	0	9	18	27	36	45	54	63	72	81	90	99	108
10	0	10	20	30	40	50	60	70	80	90	100	110	120
11	0	11	22	33	44	55	66	77	88	99	110	121	132
12	0	12	24	36	48	60	72	84	96	108	120	132	144

The two numbers that are multiplied are called **factors**, and the answer is the **product**.

$$6 \times 5 = 30$$

factor  $\times$  factor = product

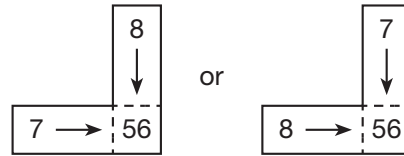
To find a product, we look where a row and column meet. For example, to find the product of  $6 \times 5$ , we trace column 6 and row 5. Column 6 and row 5 meet at 30, so  $6 \times 5 = 30$ . We could also trace column 5 and row 6 and find the same answer.



### Example 1

Use the multiplication table to find the product of 7 and 8.

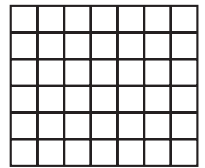
The product is the answer when we multiply. To find the product for  $7 \times 8$ , we look where a column and row with 7 and 8 meet.



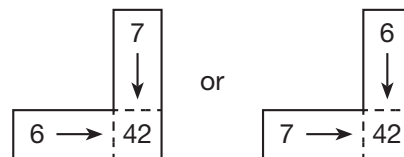
We see that  $7 \times 8 = 56$ .

### Example 2

Use the multiplication table to find the number of small squares in this rectangle.



There are 7 columns and 6 rows. We find  $7 \times 6$  on the table.



We see that  $7 \times 6 = 42$ .

The factors and products on a multiplication table are called **multiplication facts**. It is very important for you to memorize the multiplication facts. We will practice the multiplication facts so that you learn them well.

## Activity

### Using a Multiplication Table

Use the multiplication table in this lesson to find each product.

1.  $6 \times 8$

2.  $8 \times 6$

3.  $9 \times 9$

4.  $7 \times 11$

5. How many inches is 7 feet? Find  $7 \times 12$ .

6. How many feet is 8 yards? Find  $8 \times 3$ .

**Discuss** What patterns do you see on the multiplication chart?

top of the column; numbers in each row skip count by the number of the row.

## Lesson Practice

Use a multiplication table to find each product.

a.  $4 \times 6$

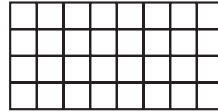
b.  $6 \times 3$

c.  $8 \times 12$

d.  $9 \times 7$

e. What is the value of 8 nickels?

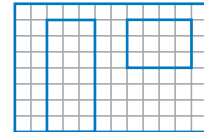
f. How many small squares are in an 8 unit by 4 unit rectangle?



## Written Practice

*Distributed and Integrated*

On a piece of grid paper, Paul drew a picture of a wall of his home showing door and a window. A side of each small square represents 1 foot. Use this picture to help you answer problems 1 and 2.



1. a. How many feet long is the wall?

(53)

b. How many feet high is the wall ?

2. Write a multiplication and total to show how many small squares are inside the rectangle for the window.

(54)

3. Sharon was born in 1999. How old was she on her birthday in 2007?

(39)

4. **Represent** The description below tells how Juan goes to Michael's house. Draw a map that matches the description. Show both homes and school.

(31)

*From home, Juan walks 3 blocks west to school. From school, Juan walks 2 blocks north to Michael's home.*

5. Look at the map you drew for problem 4. How many blocks is it from Juan's home to Michael's home? What fraction of the distance to Michael's home has Juan walked when he is at the school?

(44)



6. Write an addition sentence and a multiplication sentence to show how to find the value of four nickels.

(54)



Use a multiplication table to find each product.

7.  $7 \times 9$

(55)

8.  $6 \times 12$

(55)

9.  $8 \times 8$

(55)

10.  $3 \times 7$

(55)

11. Wesley bought a carton of milk for 45¢ and paid with five dimes. List the coins he should get back in change.

(14, 25)

12. **Predict** What is the 6th number in this sequence?

(2)

12, 24, 36, 48, ...

Add or subtract, as shown:

13.  $360 - 160$

(19)

14.  $\$4.58 + \$4.84$

(22)

15.  $75 + 89 + 98$

(24)

16.  $\$5.25 - \$2.75$

(26)

17.  $3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3$

(10)

18. Find the missing number:  $48 - \square = 27$ .

(40)

19. Marsha looked up from her breakfast to see the clock. What time was it?

(3)

20. **Multiple Choice** One hour is 60 minutes, so 15 minutes is  $\frac{15}{60}$  of an hour. Which fraction below is equivalent to  $\frac{15}{60}$  of an hour?

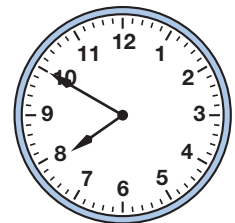
(47)

A  $\frac{1}{5}$

B  $\frac{1}{4}$

C  $\frac{1}{2}$

D  $\frac{1}{10}$



# • Multiplication Facts: 0s, 1s, and 10s

## Power Up

### jump start

- 1**<sub>2,3</sub> Count up by halves from 0 to 5.  
Count up by fourths from 0 to 2.



Write these numbers in order from least to greatest:

1,059      950      1,095

- 912** Label the number line by 10s from 0 to 100.

### mental math

- Number Sense:**  $6 + 16 + 4$
- Time:** What is the time 2 hours after 9:30 in the morning?
- Money:**  $\$1.00 - \$0.85$
- Money:** Find the value of these bills and coins:



### problem solving

Aunt Didi packed a cooler with drinks for the picnic. The cooler held 24 bottles altogether. There were 12 more bottles of water than bottles of juice. How many bottles of water were in the cooler? How many bottles of juice were in the cooler?

## New Concept

There are 169 multiplication facts to learn from  $0 \times 0$  through  $12 \times 12$ . Many of these facts can be learned quickly.

In the multiplication table below the blue columns and rows have 0, 1, or 10 as a factor. These are the facts we will learn in this lesson. When we know these 69 facts, there will be 100 facts left to learn.

	0	1	2	3	4	5	6	7	8	9	10	11	12
0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10	11	12
2	0	2	4	6	8	10	12	14	16	18	20	22	24
3	0	3	6	9	12	15	18	21	24	27	30	33	36
4	0	4	8	12	16	20	24	28	32	36	40	44	48
5	0	5	10	15	20	25	30	35	40	45	50	55	60
6	0	6	12	18	24	30	36	42	48	54	60	66	72
7	0	7	14	21	28	35	42	49	56	63	70	77	84
8	0	8	16	24	32	40	48	56	64	72	80	88	96
9	0	9	18	27	36	45	54	63	72	81	90	99	108
10	0	10	20	30	40	50	60	70	80	90	100	110	120
11	0	11	22	33	44	55	66	77	88	99	110	121	132
12	0	12	24	36	48	60	72	84	96	108	120	132	144

Look at the column and row with 0. Notice that when 0 is a factor, the product is 0 no matter what the other factor is.

$$0 \times 4 = 0$$

**Discuss** Why is the product always 0 when a factor is zero?

Now look at the column and row with 1. Notice that when 1 is a factor, the product equals the other factor.

$$1 \times 4 = 4$$

Finally, look at the column and row with 10. We see that when 10 is a factor, the product is the other factor with a zero to its right. Here are some examples.

$$10 \times 4 = 40 \quad 10 \times 6 = 60 \quad 10 \times 11 = 110$$

 **Activity****Zeros, Ones, and Tens**

Practice the multiplication facts in this lesson with a partner. Ask each other multiplication questions with 0, 1, or 10 as a factor.

For example, you can ask “What is  $0 \times 8$ ?” The answer is 0.

**Lesson Practice**

Find each product.

**a.**  $5 \times 0$

**b.**  $9 \times 10$

**c.**  $4 \times 1$

**d.**  $10 \times 3$

**e.**  $6 \times 1$

**f.**  $0 \times 11$

**g.**  $1 \times 9$

**h.**  $12 \times 0$

**i.**  $7 \times 10$

**Written Practice**

*Distributed and Integrated*

- 1. Multiple Choice** <sup>(55)</sup> The answer when numbers are multiplied is called the  
**A** sum.      **B** product.      **C** factor.      **D** difference.
- 2.** <sup>(47)</sup> What fraction of a dollar is two quarters? Five dimes is what fraction of a dollar? Are the two fractions you wrote equivalent? How do you know?
- 3.** <sup>(19, 20)</sup> There are 169 multiplication facts to learn. There are 69 facts that have 0, 1, or 10 as a factor. How many facts do not have 0, 1, or 10 as a factor?
- 4.** <sup>(40)</sup> Find the missing number:  $357 - \square = 82$
- 5.** <sup>(54)</sup> Write the multiplication and total shown by this rectangle.  

- 6.** <sup>(54)</sup> Write the multiplication and total shown by this rectangle.  


7. Write a multiplication fact for finding the value of 6 dimes.  
(54, 56)



8. Find each product.

(56)

a.  $1 \times 8$

b.  $5 \times 0$

c.  $0 \times 12$

9. Find each product.

(56)

a.  $1 \times 8$

b.  $9 \times 1$

c.  $1 \times 11$

10. Find each product.

(56)

a.  $10 \times 6$

b.  $4 \times 10$

c.  $10 \times 11$

11. **Formulate** How many feet are in 2 yards? Write an addition sentence and a multiplication sentence to show the answer.  
(34, 54)

12. **Represent** Draw a rectangle that is  $1\frac{1}{4}$  inches long and  $\frac{1}{2}$  inch wide.  
(35, 52)

Find these products on a multiplication table.

13.  $6 \times 7$   
(55)

14.  $9 \times 4$   
(55)

15.  $11 \times 11$   
(55)

Add or subtract, as shown.

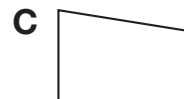
16.  $440 \text{ yd} + 440 \text{ yd}$   
(16)

17.  $\$200 - \$125$   
(28)

18.  $\$9.90 + 10\text{¢}$   
(21, 22)

19.  $1 \text{ yd} - 1 \text{ in.} = \underline{\hspace{1cm}} \text{ in.}$   
(34)

20. **Multiple Choice** Which of these shapes does not have four right angles?  
(51)




## • Arrays

## Power Up

## facts

Power Up 57

jump  
start

-  Count up by 7s from 0 to 63.  
Count up by 5s from 2 to 52.



Write “one thousand two hundred sixty” using digits.  
What number is in the thousands place?



Draw a  $3\frac{3}{4}$ -inch segment on your worksheet. Record  
the length next to the segment.

mental  
math

- a. **Time:** A **century** is 100 years. How many years are in  
3 centuries?
- b. **Fractions:** Compare these fractions using the symbol  
<, >, or =.

$$\frac{2}{2} \bigcirc \frac{3}{3}$$

- c. **Money:** \$26 + \$9
- d. **Number Line:** Which point represents 1,840?

problem  
solving

There were 18 students on the school bus. One half of the  
students got off at the first stop. Then 6 students got off the  
bus at the second stop. How many students were left on  
the bus after the second stop?

## New Concept

An **array** is a rectangular pattern of items arranged in columns and rows.

Here we show 12 pennies arranged in an array. This array has 4 columns and 3 rows. It shows the multiplication fact  $4 \times 3 = 12$ .



### Example 1

Write a multiplication fact shown by this rectangular array.

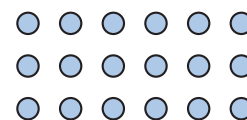


We see 5 columns of 3 stars. We also see 3 rows of 5 stars. There are 15 stars in all. We can write two multiplication facts.

$$5 \times 3 = 15 \text{ or } 3 \times 5 = 15$$

### Example 2

Draw a rectangular array of dots to represent  $6 \times 3$ . Then write the multiplication fact.



We make 6 columns of 3 dots (or 3 rows of 6 dots). We see 18 dots in all.

$$6 \times 3 = 18$$

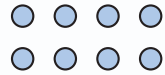
**Connect** How can you use addition to verify that  $6 \times 3 = 18$ ?

## Activity

### Arrays

Use counters or other objects to make an array for each pair of factors. For each array, write a multiplication fact on your paper that shows both factors and the product.

For example, for  $4 \times 2$ , make this array.



Then write this fact,  $4 \times 2 = 8$ .

1.  $5 \times 2$

2.  $6 \times 4$

3.  $7 \times 3$

4.  $3 \times 8$

### Lesson Practice

For problems **a** and **b**, write a multiplication fact illustrated by each array.

a.  $\begin{array}{cccccccc} x & x & x & x & x & x & x & x & x \\ x & x & x & x & x & x & x & x & x \\ x & x & x & x & x & x & x & x & x \end{array}$

b.  $\begin{array}{cccccccc} \circ & \circ & \circ & \circ & \circ & \circ & \circ & \circ \\ \circ & \circ & \circ & \circ & \circ & \circ & \circ & \circ \\ \circ & \circ & \circ & \circ & \circ & \circ & \circ & \circ \\ \circ & \circ & \circ & \circ & \circ & \circ & \circ & \circ \end{array}$

For **c** and **d**, draw a rectangular array of dots to represent each pair of factors. Then write the multiplication fact.

c.  $6 \times 2$

d.  $3 \times 9$

### Written Practice

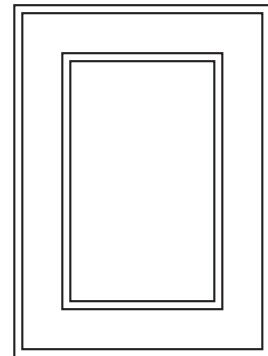
*Distributed and Integrated*

1. Jenna bought a picture frame, shown here. How many rectangles do you see?  
(51)

2. For **a** and **b** measure the smallest rectangle with your ruler.  
(35, 52)

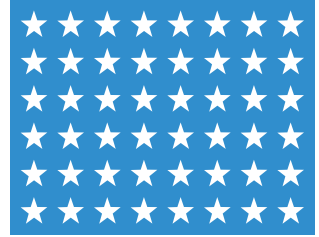
a. What is the length of the rectangle?

b. What is the width of the rectangle?



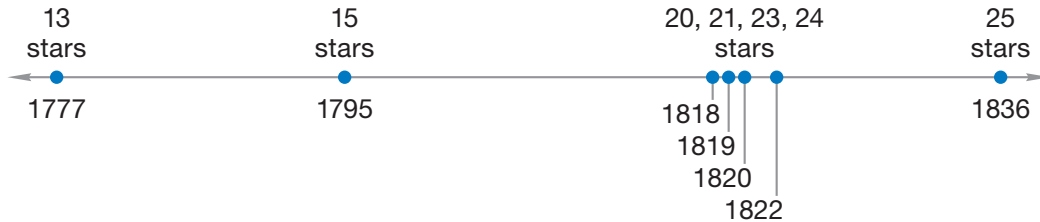


3. From 1912 to 1959, the United States flag had 48 stars.  
(39) For how many years did the flag have 48 stars?



4. Write a multiplication fact illustrated by this array  
(57) of stars.

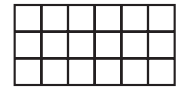
5. Look at this timeline to answer the question below.  
(33, 39) stars on U.S. flag



For how many years did the United States flag have 15 stars?

6. **Represent** From 1822 to 1836, the stars on the flag were  
(57) arranged in an array of 6 columns and 4 rows. Draw the array with stars (or dots), and then write the multiplication fact for the array.
7. Find the missing number:  $811 - m = 299$ .  
(40)
8. Grace paid \$50 for a \$39 jacket. How much money should she  
(14) get back?
9. Grace spent \$3.90 on a metro ride. She donated \$6.10 when she  
(22) visited the Smithsonian Museum. How much did she spend in all?

10. Write a multiplication fact shown by this rectangle.  
(53)



11. Find each product.  
(56)

a.  $5 \times 1$

b.  $7 \times 0$

c.  $6 \times$

10

Use a multiplication table to find each product.

12.  $8 \times 7$   
(55)

13.  $6 \times 9$   
(55)

14.  $12 \times 12$   
(55)

Add or subtract as shown.

15.  $880 \text{ yd} + 88 \text{ yd}$   
(16)

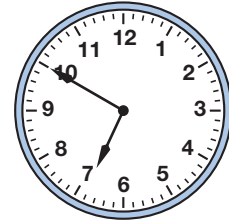
16.  $\$200 - \$172$   
(28)

Write a multiplication fact for each addition in problems **17** and **18**.

**17.**  $2 + 2 + 2 + 2 + 2 + 2 + 2$   
(54)

**18.**  $5 + 5 + 5 + 5 + 5 + 5 + 5$   
(54)

**19.** At sunset, the bus left for the airport. Marty looked at the clock. What time was it?  
(3)



**20.** How many pennies equal a dime? The value of a penny is what fraction of the value of a dime?  
(44)

**Early Finishers**  
*Real-World Connection*

The Carrollton dirt bike track is 25 yards all the way around. Sandra likes to ride the trail 4 times a day. How many yards does Sandra ride in 6 days?


## • Perimeter

## Power Up


## facts

Power Up 58

jump  
start

 Count up by 3s from 0 to 45.  
Count up by 9s from 0 to 90.

 Write 3,455 as words.

 Write two multiplication facts using the numbers 3, 10, and 30.

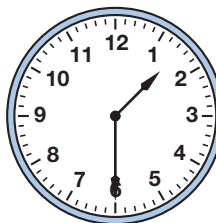
mental  
math

a. **Estimation:** Round \$18 to the nearest ten dollars.

b. **Money:**  $90\text{¢} - 50\text{¢}$

c. **Number Sense:**  $12 + 12$

d. **Time:** It is afternoon. The movie will begin 1 hour after the time shown on the clock. What time will the movie begin?

problem  
solving

Samir keeps a chart to show how much money he has at the end of each month. How much money do you predict Samir will have at the end of July?

Month	Money
January	\$36
February	\$48
March	\$60
April	\$72
May	\$84

## New Concept

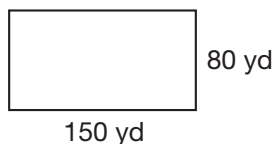
The distance around a shape is called its **perimeter**. To find the perimeter of a rectangle we add the lengths of the four sides.

### Example

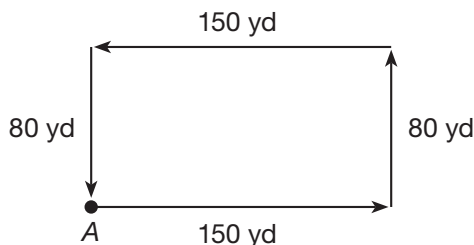


Visit [www.SaxonMath.com/Int3Activities](http://www.SaxonMath.com/Int3Activities) for an online activity.

**Chris walked the perimeter of the block. How far did he walk?**



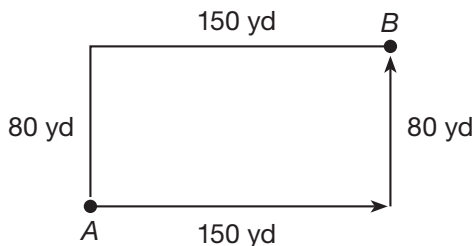
The perimeter is the distance around the block. We choose a corner and trace a path around the rectangle. Starting from point A, Chris walked 150 yards, then 80 yards, then 150 yards, and then 80 yards back to point A.



$$150 \text{ yd} + 80 \text{ yd} + 150 \text{ yd} + 80 \text{ yd} = 460 \text{ yd}$$

Chris walked **460 yd**.

Notice that when Chris reaches point B, he is halfway around the block. He has walked 230 yd. So another way to find perimeter is to double 230 yd.

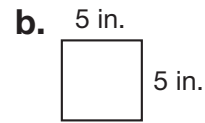
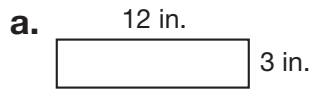


$$230 \text{ yd} + 230 \text{ yd} = \mathbf{460 \text{ yd}}$$

**Analyze** A square has a perimeter of 12 inches. What is the length of each side? (*Hint:* Think  $\underline{\quad} + \underline{\quad} + \underline{\quad} + \underline{\quad} = 12$  or  $4 \times \underline{\quad} = 12$ . You may use your multiplication table to find the missing number.)

## Lesson Practice

Find the perimeter of each rectangle.

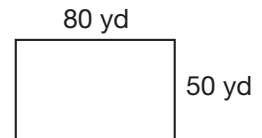


- c. Trinh lives on a block that is 200 yards long and 100 yards wide. What is the perimeter of the block?

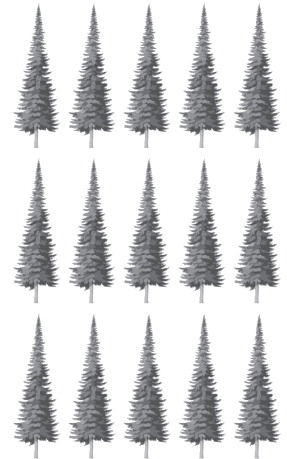
## Written Practice

*Distributed and Integrated*

1. <sup>(58)</sup> Morton is building fence around the pasture. What is the perimeter of the pasture?
2. <sup>(18, 22)</sup> If one section of fence costs \$4.25, then how much do two sections of the fence cost?



3. <sup>(57)</sup> Heidi planted trees in an array. Write the multiplication fact shown by this array.
4. <sup>(47)</sup> **Connect** Look at the trees in problem 3. Heidi says one row of trees is  $\frac{5}{15}$  of the trees. Debbie says one row of trees is  $\frac{1}{3}$  of the trees. Which girl is right? Explain your answer.
5. <sup>(57)</sup> **Represent** Draw an array of dots to show the multiplication fact  $5 \times 4$ .

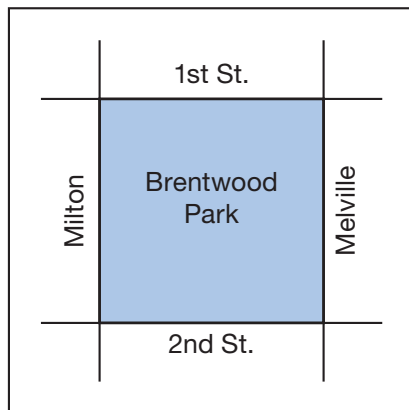


6. <sup>(53, 54)</sup> Which multiplication fact is shown by the squares in this rectangle?



7. <sup>(19)</sup> There are 169 multiplication facts from  $0 \times 0$  to  $12 \times 12$ . There are 105 facts that have 0, 1, 2, 5, or 10 as a factor. How many facts do not have these factors?

Use the map showing the park for problems 8–10.



8. a. Name a street parallel to 1st Street.  
(Inv. 4) b. Name a street perpendicular to 1st Street.
9. Each side of the park is 110 yards. What is the perimeter of the park?  
(58)
10. **Verify** Is the park a rectangle? Is the park a square? How do you know?  
(51)
11. The length of one side of the park in problem 10 is what fraction of the perimeter of the park?  
(47)

Use a multiplication table to find each product.

12.  $9 \times 8$   
(55)

13.  $9 \times 12$   
(55)

14.  $9 \times 11$   
(55)

15. Find each product.  
(56)

a.  $7 \times 10$

b.  $7 \times 1$

c.  $7 \times 0$

16. Find each product.  
(56)

a.  $7 \times 2$

b.  $2 \times 9$

c.  $8 \times 2$

17. Find each product.  
(56)

a.  $4 \times 5$

b.  $8 \times 5$

c.  $5 \times 7$

18. Write this addition as a multiplication. Show the product.  
(54)

$$5 + 5 + 5 + 5 + 5$$

19. Write this multiplication as an addition. Show the sum.

(54)

$$3 \times 11$$

20. **Multiple Choice** In  $6 \times 7 = 42$ , both 6 and 7 are

(55)

**A** addends.      **B** factors.      **C** products.      **D** sums.

**Early  
Finishers**

*Real-World  
Connection*

Darnell and his friends went bowling. Darnell knocked down 7 of the 10 pins. Peter knocked down 4 of the 10 pins, and Mark knocked down 8 of the 10 pins. What fraction of the pins did each boy knock down? Who had the most pins still standing?


# • Multiplication Facts: 2s and 5s

## Power Up

### facts

Power Up 59

### jump start

-  Count up by 2s from 0 to 30 and back down to 0.  
Count up by 5s from 0 to 60 and back down to 0.



Write 2,974 in expanded form.

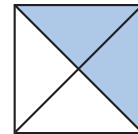
-  Label the number line by halves from 0 to 5.

### mental math

- a. **Money:**  $80\text{¢} + 40\text{¢}$   
b. **Money:** Compare these money amounts using the symbol  $<$ ,  $>$ , or  $=$ .

4 nickels  $\bigcirc$  1 quarter

- c. **Number Sense:**  $27 - 8$   
d. **Fractions:** What fraction of the square is shaded?



### problem solving

#### Focus Strategy: Work Backwards

Ginnie has a stack of \$1 bills. She puts aside half of the bills. Then she uses the other half to make two equal groups of \$5. How many \$1 bills does Ginnie have in all?

**Understand** Ginnie has some \$1 bills, but we do not know how many. We are asked to find how many \$1 bills she has.

**Plan** We can *work backwards* to solve this problem.

**Solve** We know that Ginnie makes two equal groups of \$5 each, which is  $\$5 + \$5 = \$10$ . We are told that this amount is half of the bills. If \$10 is one half, then the other half is also \$10. So Ginnie has a total of \$20.



**Check** We worked backwards to find that Ginnie has **20 \$1 bills**. We know that our answer is reasonable, because two groups of \$5 each is \$10, and \$10 is half of \$20.

## New Concept

In Lesson 56 we saw that 69 multiplication facts include 0, 1, or 10 as a factor. We have shaded these facts in the multiplication table below. The **blue** columns and rows show facts that have 2 or 5 as a factor.

	0	1	2	3	4	5	6	7	8	9	10	11	12
0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10	11	12
2	0	2	4	6	8	10	12	14	16	18	20	22	24
3	0	3	6	9	12	15	18	21	24	27	30	33	36
4	0	4	8	12	16	20	24	28	32	36	40	44	48
5	0	5	10	15	20	25	30	35	40	45	50	55	60
6	0	6	12	18	24	30	36	42	48	54	60	66	72
7	0	7	14	21	28	35	42	49	56	63	70	77	84
8	0	8	16	24	32	40	48	56	64	72	80	88	96
9	0	9	18	27	36	45	54	63	72	81	90	99	108
10	0	10	20	30	40	50	60	70	80	90	100	110	120
11	0	11	22	33	44	55	66	77	88	99	110	121	132
12	0	12	24	36	48	60	72	84	96	108	120	132	144

Until we memorize the facts, if 2 is a factor we can quickly find the product by doubling the other factor or by counting by 2s. If 5 is a factor we can find the product by counting by 5s.

### Example 1

**Find the product:  $2 \times 8$**

Here are two ways to find  $2 \times 8$ .

1. Double 8. Since  $2 \times 8$  means  $8 + 8$ , we know that  $2 \times 8 = 16$ .
2. Count by 2s. We can count up by 2s to the 8th number.

2, 4, 6, 8, 10, 12, 14, 16 so  $2 \times 8 = 16$

**Generalize** What is another way to find  $2 \times 8$ ?

### Example 2

Find the product:  $7 \times 5$

We can quickly count by 5s to the seventh number.

5, 10, 15, 20, 25, 30, 35

So  $7 \times 5 = 35$ .

### Lesson Practice

Find each product.

a.  $6 \times 5$

b.  $6 \times 2$

c.  $5 \times 5$

d.  $5 \times 2$

e.  $5 \times 8$

f.  $2 \times 8$

g.  $5 \times 9$

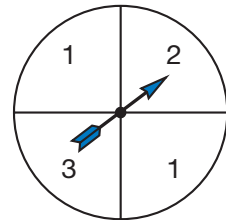
h.  $2 \times 9$

### Written Practice

*Distributed and Integrated*

1. If the spinner is spun once, then is the spinner most likely to stop on 1, on 2, or on 3?

2. If the spinner is spun once, then the spinner is equally likely to stop on which two numbers?



3. **Analyze** What fraction of the face of the spinner is labeled 1? What fraction of the spinner is labeled 2? Compare your two fraction answers.

4. **Analyze** Yoli walked once around the row of classrooms. What is the perimeter of the building? What is the perimeter of each classroom?



5. Diem has a half dollar, a quarter, a dime, and a nickel in his pocket. What is the total value of the four coins?

6. Find each product.

a.  $6 \times 5$

b.  $6 \times 10$

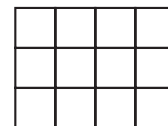
c.  $6 \times 2$

7. Change this addition to multiplication and find the total on a multiplication table.  
(54, 55)

$$\$7 + \$7 + \$7 + \$7 + \$7 + \$7 + \$7 + \$7$$

8. George Washington was born in 1732. How old was he when he became president in 1789?  
(39)

9. Molly made this rectangular shape with square tiles.  
(53) The sides of each tile are one inch long.



- How long is this rectangle?
- How wide is this rectangle?
- How many tiles did she use?

10. Write a multiplication fact shown by the rectangle in problem 9.  
(54)

11. **Represent** Draw a rectangle that is  $2\frac{1}{4}$  inches long and  $1\frac{3}{4}$  inches wide.  
(35, 52)

12. Find each product on a multiplication table.  
(55)

a.  $3 \times 6$

b.  $7 \times 3$

c.  $3 \times 9$

13. Find each product.  
(55)

a.  $9 \times 1$

b.  $9 \times 5$

c.  $9 \times 0$

Add or subtract, as shown.

14.  $\$126 - \$95$   
(19)

15.  $\$4.58 + \$4.60$   
(22)

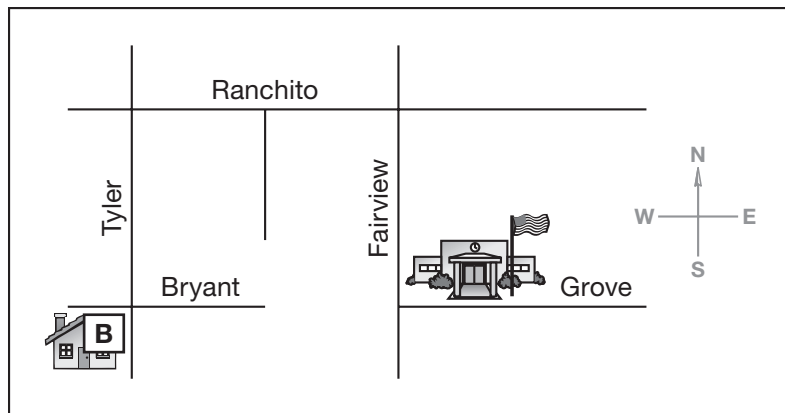
16.  $950 - 150$   
(19)

17.  $\$328 - \$258$   
(19)

18. Find the missing addend:  
(9)

$$100 = 50 + 25 + 10 + 5 + m$$

This map shows Braulio's house and school. Use this map as you answer problems **19** and **20**.



**19.** Write directions that describe how to get to Braulio's house from school.  
(31)

**20. a.** Name a street parallel to Tyler.  
(Inv. 4)

**b.** Name a street perpendicular to Bryant.


# • Equal Groups Stories, Part I


## Power Up


### facts

Power Up 60

### jump start

 Count up by 8s from 0 to 80.  
Count down by 25s from 200 to 0.

 Write two multiplication facts using the numbers 4, 5, and 20.

 Draw a  $5\frac{1}{4}$ -inch segment on your worksheet. Record the length next to the segment.

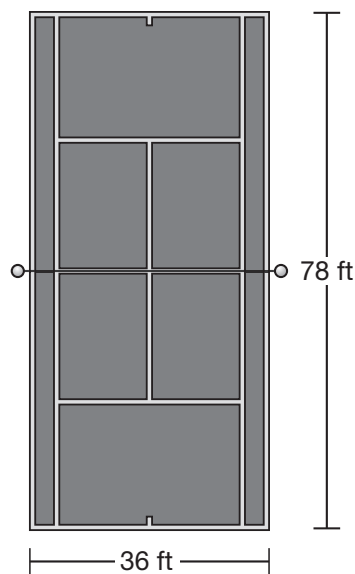
### mental math

- Time:** A decade is 10 years. How many years are in 5 decades?
- Number Sense:** What is another way to write  $10 + 10 + 10 + 10$ ? What is the total?
- Money:** Jamie took one dollar to the book fair. She bought a bookmark for 35¢. How much change did she receive?
- Patterns:** What number is missing from the pattern shown below?

56	50	44	38	_____
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## problem solving

The width of the rectangular tennis court is 36 feet, as shown in the diagram. The length of the court is 78 feet. What is the perimeter of the tennis court?



## New Concept

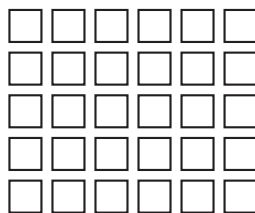


Visit [www.SaxonMath.com/Int3Activities](http://www.SaxonMath.com/Int3Activities) for a calculator activity.

Stories about equal groups have a multiplication pattern. Here is an example of an equal groups story.

*The teacher arranged the desks into 5 rows with 6 desks in each row. How many desks were there in all?*

In this story, 5 is the number of groups, and 6 is the number in each group. Multiplying the number of groups times the number in each group gives us the total.



number of groups  $\times$  number in each group = total

$$5 \times 6 = 30$$

There are 30 desks in all.

## Example

**There are 5 school days in each week. How many schools days are in 7 weeks?**

We often see the word “each” in equal groups stories. In this story, 5 is the number in each group, and 7 is the number of groups.

number of groups  $\times$  number in each group = total

$$7 \times 5 = 35$$

There are **35 school days** in 7 weeks without holidays.

**Generalize** Look at the factors in the example. What counting pattern would help you find the product?

### Lesson Practice

Write an equal groups number sentence for each story.

- There are 3 feet in each yard. How many feet long is a rope 5 yards long?
- There are 12 eggs in each dozen. How many eggs is 2 dozen?
- Cory earns \$9 each hour for helping a painter. How much money does Cory earn in 5 hours?

### Written Practice

*Distributed and Integrated*

**Formulate** Write an equal groups number sentence for problems 1–4 and then answer the questions.

- <sup>(60)</sup> Max is in class for 6 hours each day. How many hours is Max in class in 5 days?
- <sup>(60)</sup> Sherry saw 5 stop signs on the way to school. Each sign had 8 sides. How many sides were on all 5 stop signs?
- <sup>(60)</sup> The teacher arranged the desks in 7 rows with 5 desks in each row. How many desks were there in all?
- <sup>(60)</sup> Each movie ticket cost \$8. Danielle’s mom bought 5 tickets. What was the total price of the tickets?

5. Tamara arranged dimes in an array.

(57)



What multiplication fact is illustrated by the array?

6. What is the value of the coins shown in problem 4?

(25)

7. Find each product on a multiplication table.

(55)

a.  $8 \times 4$

b.  $4 \times 6$

c.  $8 \times 6$

8. Write this addition as a multiplication and find the total.

(54)

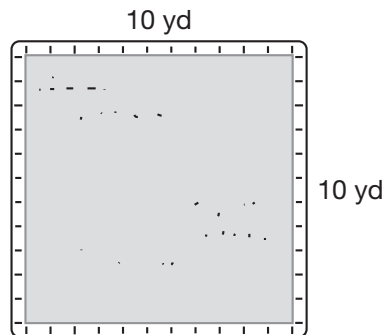
$$4 \text{ mi} + 4 \text{ mi} + 4 \text{ mi} + 4 \text{ mi} + 4 \text{ mi} + 4 \text{ mi}$$

9. **Analyze** What fraction of a dollar is \$0.10?

(29)

10. A square lawn that is 10 yards on each side has a narrow sidewalk around it. Cici walked around the lawn. What is the perimeter of the lawn?

(58)



11. Find each product.

(56)

a.  $9 \times 2$

b.  $9 \times 5$

c.  $9 \times 10$

12. Find each product using a multiplication table.

(55)

a.  $6 \times 6$

b.  $7 \times 7$

c.  $8 \times 8$

Add or subtract, as shown:

13.  $\$897 + \$75$

(16)

14.  $1 \text{ hour} - 1 \text{ minute}$

(3)

15.  $56\text{¢} + 48\text{¢} + 79\text{¢}$

(21, 24)

16.  $\$6.50 - \$5.75$

(26)



17. **Conclude** Find the next three numbers in this sequence:  
(2, 35)

$1, 1\frac{1}{2}, 2, 2\frac{1}{2}, 3, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}, \underline{\hspace{1cm}}, \dots$

18. Find the missing addend:  $1 + 2 + 3 + 4 + m = 10$   
(9)

19. How much money is 5 quarters, 6 dimes, 3 nickels, and 4 pennies?  
(25)

20. Use your ruler to find the length and width of this rectangle.  
(52)



**Early Finishers**

*Real-World Connection*

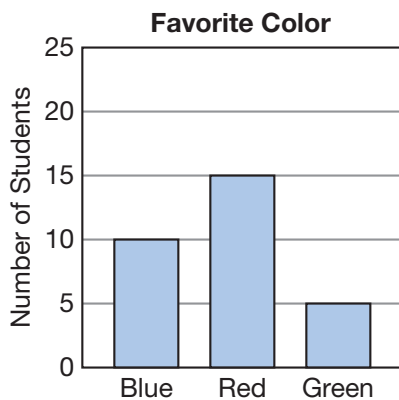
The Crosbys are driving to the North Carolina coast for a long weekend vacation. The distance from their house to the coast is 562 miles. The Crosbys drove 248 miles before lunch. After lunch they drove 197 miles and then stopped for an afternoon break. How many more miles do they need to travel to reach the North Carolina coast? Write number sentences to show your answer.

Focus on

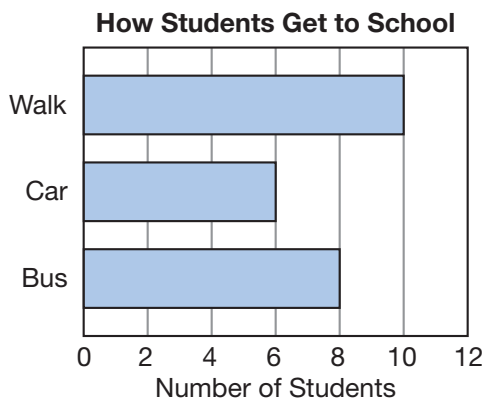
• Bar Graphs

Recall from Investigation 1 that a bar graph uses bars to match data. The bars may be vertical or horizontal. **Vertical** bars go up and down like columns. **Horizontal** bars go from side to side like rows.

*Vertical bar graph*



*Horizontal bar graph*



The title at the top tells what the graph is about. Labels along the bottom and the side tell what data is measured. The bottom or the side also has a scale. We compare the length of a bar to the scale to find how many or how much.

Look at the bar graphs above to answer problems 1–4.

1. What is the title of the vertical bar graph?
2. How many students chose red as their favorite color?
3. What is the title of the horizontal bar graph?
4. How many more students ride the bus than ride in a car?

Before someone makes a bar graph, he or she gathers data. One way to gather data is to ask a lot of people the same question. This is called a **survey**. Some survey questions are multiple choice, such as, “Which of these three colors do you like best: blue, red, or green?” Other survey questions are open-ended, such as, “How do you get to school?”

In this investigation we will collect some data from the students in your class. Then you will choose two sets of data to make bar graphs.

Here are some survey questions you can ask. You may make up other survey questions. Record the results of the surveys on your paper. Then use the data from two surveys to make bar graphs on **Lesson Activity 22**. Choose numbers for the scales so that the data will fit on the graphs.

### **Survey Questions**

- Which of these colors do you like best: blue, red, or green?
- How do you get to school most days?
- Which of these fruits do you like best: apples, oranges, or bananas?
- Siblings are brothers and sisters. How many siblings do you have?