

## • Making a Multiplication Table

### Power Up

#### facts

Power Up B

#### count aloud

Count up and down by 50s between 0 and 500.

#### mental math

- a. **Addition:**  $50 + 50 + 50$
- b. **Addition:**  $500 + 500 + 500$
- c. **Addition:**  $24 + 26$
- d. **Addition:**  $240 + 260$
- e. **Subtraction:**  $480 - 200$
- f. **Addition:**  $270 + 280$
- g. **Money:** Mike had \$4.50. He purchased a magazine for \$1.25. How much money did Mike have left over?
- h. **Number Sense:**  $10 + 6 - 1 + 5 + 10$

#### problem solving

Choose an appropriate problem-solving strategy to solve this problem. Billy, Ricardo, and Shakia finished first, second, and third in the race, though not necessarily in that order. List the different orders in which they could have finished.

### New Concept

Below we list several sequences of numbers. Together, these sequences form an important pattern.

Zeros	0	0	0	0	0	0
Ones	1	2	3	4	5	6
Twos	2	4	6	8	10	12
Threes	3	6	9	12	15	18
Fours	4	8	12	16	20	24
Fives	5	10	15	20	25	30
Sixes	6	12	18	24	30	36

### Math Language

A *multiple* is a product of a given number and a counting number.

This pattern is sometimes called a **multiplication table**. A multiplication table usually lists the first ten or more **multiples** of the first ten or more whole numbers. On a multiplication table, we can find the answer to questions such as, “How much is three 4s?” We do this by using the rows and columns on the table. (Rows run left to right, and columns run top to bottom.)

To find how much three 4s equals, we locate the row that begins with 3 and the column that begins with 4. Then we look across the row and down the column for the number where the row and column meet.

### Thinking Skills

#### Connect

Describe the relationships between the numbers in the table.

Column  
↓

	0	1	2	3	4	5	6
0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6
2	0	2	4	6	8	10	12
3	0	3	6	9	12	15	18
4	0	4	8	12	16	20	24
5	0	5	10	15	20	25	30
6	0	6	12	18	24	30	36

Row →

We find that three 4s equals 12.

Numbers that are multiplied together are called **factors**. The factors in the problem above are 3 and 4. The answer to a multiplication problem is called a **product**. From the table we see that the product of 3 and 4 is 12. The table shows us that 12 is also the product of 4 and 3. (Find the number where row 4 and column 3 meet.) Thus, the **Commutative Property** applies to multiplication as well as to addition. We may choose the order of factors when we multiply.

### Thinking Skills

#### Represent

Give another example of each property.

Notice the row and column of zeros. When we multiply by zero, the product is zero. This fact is called the **Property of Zero for Multiplication**. We may think of  $2 \times 0$  or  $10 \times 0$  or  $100 \times 0$  as two 0s or ten 0s or one hundred 0s added together. In each case the product is zero.

Notice also that 1 times any number is that number. For example, one 5 is 5 and five 1s is 5. This fact is called the **Identity Property of Multiplication**.



## Activity

### Multiplication Table

Material needed:

- Lesson Activity 22

The multiplication table in this lesson has 7 columns and 7 rows. Using **Lesson Activity 22**, make a multiplication table with 11 columns and 11 rows. Make sure to line up the numbers carefully. Use your multiplication table to answer the problems below.

### Lesson Practice

In your multiplication table, find where the indicated row and column meet. Write that number as your answer.

- a.  $\begin{array}{c} 4 \\ \downarrow \\ 5 \longrightarrow ? \end{array}$     b.  $\begin{array}{c} 2 \\ \downarrow \\ 6 \longrightarrow ? \end{array}$     c.  $\begin{array}{c} 6 \\ \downarrow \\ 3 \longrightarrow ? \end{array}$     d.  $\begin{array}{c} 10 \\ \downarrow \\ 8 \longrightarrow ? \end{array}$

Find each product:

e.  $6 \times 7$

f.  $8 \times 9$

g.  $8 \times 4$

h.  $3 \times 10$

i.  $50 \times 0$

j.  $25 \times 1$

- k. **Connect** The answer to a multiplication problem is called the *product*. What do we call the numbers that are multiplied together?

## Written Practice

*Distributed and Integrated*

- 1. Represent** Draw a number line marked with integers from  $-3$  to  $10$ .  
(12) How many unit segments are there from  $3$  to  $8$ ?
- \*2. Analyze** Kwame was the ninth person in line. How many people were  
(7) in front of him?
- 3. Represent** M'Kea used tally marks to count the number of trucks,  
(12) cars, and motorcycles that drove by her house. Thirteen cars drove by her house. Use tally marks to show the number  $13$ .

4. **Connect** Write two addition facts and two subtraction facts for the fact family 1, 9, and 10.

**Formulate** For problems 5 and 6, write an equation and find the answer. (Hint: Problem 6 has three addends.)

- \*5. Season tickets to an amusement park are on sale for \$100 each. On the first day of sale, the amusement park sold one hundred and sixty four tickets. After three days, the amusement park sold a total of 239 tickets. How many tickets did the amusement park sell on the second day?

6. The lengths of three bridges are shown in this table:

Bridge Name	Location	Length (ft)
Lincoln Memorial	Illinois	619
Perrine	Idaho	993
Rip Van Winkle	New York	800

What is the sum of the lengths of the bridges?

7.  $3 \times 6$

8.  $4 \times 8$

9.  $7 \times 9$

\*10.  $9 \times 10$

11. 
$$\begin{array}{r} a \\ - 819 \\ \hline 100 \end{array}$$

12. 
$$\begin{array}{r} \$6.00 \\ - \$5.43 \\ \hline \end{array}$$

13. 
$$\begin{array}{r} \$501 \\ - \$256 \\ \hline \end{array}$$

14. 
$$\begin{array}{r} 510 \\ - q \\ \hline 256 \end{array}$$

15. 
$$\begin{array}{r} \$564 \\ \$796 \\ + \$287 \\ \hline \end{array}$$

16. 
$$\begin{array}{r} n \\ + 96 \\ \hline 432 \end{array}$$

17. 
$$\begin{array}{r} 608 \\ 930 \\ + 762 \\ \hline \end{array}$$

18. 
$$\begin{array}{r} \$4.36 \\ \$2.18 \\ + \$3.94 \\ \hline \end{array}$$

19.  $360 + 47 + b = 518$

20.  $\$10 - \$9.18$

21. **Analyze** Write the smallest three-digit even number that has the digits 1, 2 and 3.

22. **Explain** Compare. How can you answer the comparison without adding or multiplying?

$$5 + 5 + 5 \bigcirc 3 \times 5$$

23. **Represent** Use digits and symbols to write “twelve equals ten plus two.”  
(4, 6)

24. **Connect** What term is missing in this counting sequence?  
(1)

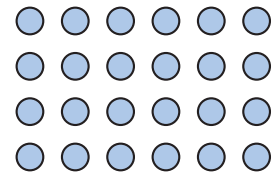
..., 32, 40, 48, \_\_\_\_\_, 64, ...

25. **Represent** Use digits to write eight hundred eighty dollars and eight cents.  
(5)

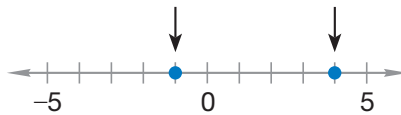
26. Compare: 346,129 ○ 346,132  
(7)

\*27. **Analyze** A dozen is 12. How many is half of half a dozen?  
(2)

28. Write a multiplication problem that shows how to find the total number of circles.  
(13)



29. **Represent** Two integers are indicated by arrows on this number line. Write the two integers using a comparison symbol to show which number is greater and which is less.  
(4, 12)



30. The relationship between yards and feet is shown in this table:  
(1)

<b>Number of Yards</b>	1	2	3	4
<b>Number of Feet</b>	3	6	9	12

a. **Generalize** Write a rule that describes how to find the number of feet for any number of yards.

b. **Predict** How many feet is 20 yards?