The **BIG Idea**

How will I multiply multi-digit whole numbers by two-digit numbers?

Make this Foldable to help you organize information about multiplying by two-digit numbers. Begin with 3 sheets of 8 1/2” x 11” paper.

### Review Vocabulary

- **estimate** / **estimación**: A number close to an exact value.

There are **about** 150 marbles.

### Key Vocabulary

<table>
<thead>
<tr>
<th>English</th>
<th>Español</th>
</tr>
</thead>
<tbody>
<tr>
<td>multiple</td>
<td>múltipo</td>
</tr>
<tr>
<td>factor</td>
<td>factor</td>
</tr>
<tr>
<td>product</td>
<td>producto</td>
</tr>
</tbody>
</table>
Carmen and Ashley in *Basketball Brainteaser*

We only have a few seconds left to break the tie.

You can do it, Carmen!

It’s the last game of the season. I’m going for it!

Sweet, 2 points!

We win!

Boy, Carmen really played well this year. Right, Miss Wilson?

She sure did, Ashley.

In fact, Carmen has scored about 12 points per game this season.

Way to go, Carmen!

We win!

So we win! Thanks, Coach!

You’ll probably get the trophy for high score this year.

How many points have you scored all season?

Well, Miss Wilson said I scored about 12 points per game.

How many points does that equal?

*Your Turn!*

You will solve this problem in the chapter.
You have two options for checking Prerequisite Skills for this chapter.

Text Option  Take the Quick Check below.

### QUICK Check

#### Round to the given place.
1. 604; nearest hundred  
2. 2,188; nearest thousand  
3. 85,888; nearest ten thousand  
4. 681,002; nearest hundred thousand  
5. The students raised $6,784 for a new playground. To the nearest thousand, about how much money did the students raise?

#### Add.
6. 759  
   + 307  
7. 5,138  
   + 507  
8. 9,290  
   + 812  
9. 6,005  
   + 8,204  
10. 34,068  
    + 6,055  
11. 242,607  
     + 480,196

#### Write the multiplication expression for each model. Then multiply.
12.  
13.  

#### Multiply.
14. 36 \times 7  
15. 40 \times 9  
16. 86 \times 5  

Online Option  Take the Online Readiness Quiz.
**Main Idea**
I will multiply a whole number by a multiple of ten.

**Real-World Example**

**PHOTOGRAPHS** Rita took 20 pictures at her family reunion. She printed the pictures so that each of her 25 family members could have them. How many pictures did Rita print?

You need to find \(25 \times 20\).

**One Way: Use Properties**

\[
25 \times 20 \quad \text{Write the problem.}
\]
\[
25 \times (10 \times 2) \quad \text{Think of 20 as } 10 \times 2.
\]
\[
25 \times (2 \times 10) \quad \text{Commutative Property of Multiplication}
\]
\[
(25 \times 2) \times 10 \quad \text{Associative Property of Multiplication}
\]
\[
50 \times 10 \quad \text{Multiply. } 25 \times 2 = 50
\]
\[
500 \quad \text{Mental Math}
\]

**Another Way: Use Paper and Pencil**

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Multiply the ones.</th>
<th>Step 2</th>
<th>Multiply the tens.</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 \times 20</td>
<td>0 ones \times 25 = 0</td>
<td>25 \times 20</td>
<td>2 tens \times 25 = 50 tens</td>
</tr>
</tbody>
</table>

So, Rita printed 500 pictures.
Multiply by Tens

MUSIC An electronics store has 30 digital music players in stock that cost $125 each. How much do the digital music players cost altogether?

Step 1 Multiply the ones.

\[
\begin{array}{c}
\$125 \\
\times 30
\end{array}
\]

\[0 \quad \text{ones} \times 125 = 0\]

Step 2 Multiply the tens.

\[
\begin{array}{c}
\$125 \\
\times 30
\end{array}
\]

\[3 \text{ tens} \times 125 = 375 \text{ tens}\]

So, the music players cost a total of $3,750.

Check Think of \(30 \times 125\) as \(3 \times 10 \times 125\).

\[
\begin{align*}
30 \times \$125 &= 3 \times 10 \times 125 \\
&= (3 \times 10) \times \$125 \\
&= (10 \times 3) \times \$125 \\
&= 10 \times (3 \times \$125) \\
&= 10 \times \$375 \\
&= \$3,750
\end{align*}
\]

So, the answer is correct.

Remember

When you multiply a number by a multiple of ten, the digit in the ones place is always zero.

CHECK What You Know

Multiply. See Examples 1 and 2

1. \[
\begin{array}{c}
36 \\
\times 10
\end{array}
\]

2. \[
\begin{array}{c}
53 \\
\times 30
\end{array}
\]

3. \[
\begin{array}{c}
79 \\
\times 80
\end{array}
\]

4. \(255 \times 20\)

5. \(389 \times 40\)

6. \(518 \times 70\)

7. **Measurement** Latasha bikes 20 miles every week. There are 52 weeks in a year. How many miles does she bike in a year?

8. **TALK MATH** Joey is finding \(40 \times 67\). Explain why he can think of \(40 \times 67\) as \(4 \times 10 \times 67\).
Multiply. See Examples 1 and 2

9. \(15 \times 20\)
10. \(27 \times 30\)
11. \(46 \times 40\)
12. \(53 \times 60\)
13. \(80 \times 80\)
14. \(94 \times 90\)
15. \($275 \times 10\)
16. \($312 \times 30\)
17. \($381 \times 50\)
18. \($457 \times 50\)

21. If \(7 \times 29 = 203\), then what is \(70 \times 29\)?

22. If \(3 \times 52 = 156\), then what is \(30 \times 52\)?

23. Baby robins eat 14 feet of earthworms each day. How many feet of worms does a baby robin eat in 20 days?

24. Mozart could learn a piece of music in 30 minutes. How long would it take him to learn 15 pieces of music?

REAL-WORLD PROBLEM SOLVING

**Birds** Hummingbirds feed every 10 minutes. They fly about 25 miles per hour and flap their wings 60 to 80 times each second.

25. What is the least number of times a hummingbird will flap its wings in 15 seconds?

26. What is the greatest number of times it will flap its wings in 15 seconds?

27. How many minutes have passed if a hummingbird has eaten 45 times?

28. If a hummingbird flies a total of 20 hours, about how far did it fly?

H.O.T. Problems

29. **OPEN ENDED** Create a number sentence with two 2-digit factors whose product has three zeros.

30. **WHICH ONE DOESN'T BELONG?** Identify the multiplication problem that does not belong with the other three. Explain.

   \[15 \times 30\]  \[28 \times 20\]  \[41 \times 21\]  \[67 \times 40\]

31. **WRITE MATH** How many zeros would be in the product of 50 and 60? Explain.
Estimate Products

The word *about* tells you to estimate. When you estimate the product of two 2-digit factors, it is helpful to round them both.

**REAL-WORLD EXAMPLE**

**ANIMALS** A hamster sleeps 14 hours each day. About how many hours does a hamster sleep in 3 weeks?

There are 21 days in 3 weeks. So, estimate $21 \times 14$.

**Step 1** Round each factor to the nearest ten.

\[
\begin{array}{c}
21 \rightarrow 20 \\
\times 14 \rightarrow \times 10
\end{array}
\]

21 rounds to 20. 14 rounds to 10.

**Step 2** Multiply.

\[
\begin{array}{c}
20 \rightarrow 20 \\
\times 10 \rightarrow 0 \text{ ones } \\
200 \rightarrow 1 \text{ ten } \times 20 = 20 \text{ tens}
\end{array}
\]

So, a hamster sleeps about 200 hours in 21 days, or 3 weeks.

Since both factors were rounded down, the estimate is less than the actual product.
MEASUREMENT Tonya spends 35 minutes playing at the park each day. About how many minutes does she play at the park in a year?

There are approximately 365 days in a year. So, you need to estimate $365 \times 35$.

**Step 1** Round each factor to its greatest place.

\[
\begin{array}{c}
365 \\
\times 35 \\
\end{array} \quad \rightarrow \quad \begin{array}{c}
400 \\
\times 40 \\
\end{array}
\]

365 rounded to the nearest 100 is 400.
35 rounded to the nearest 10 is 40.

**Step 2** Multiply.

\[
\begin{array}{c}
400 \\
\times 40 \\
\end{array}
\]

\[
\begin{array}{c}
16,000 \\
\end{array}
\]

So, Tonya spends about 16,000 minutes playing at the park in a year. Since both factors were rounded up, the estimate is greater than the actual product.

**Remember**

If one factor is rounded up and one factor is rounded down, it will not be obvious whether the estimate is greater or less than the actual product.

---

**CHECK What You Know**

Estimate. Tell whether the estimate is greater than or less than the actual product. See Examples 1 and 2

1. \(34 \times 12\)  
2. \(57 \times 25\)  
3. \(376 \times 17\)  
4. \(525 \times 43\)  
5. The average person makes about 22 phone calls each week. About how many phone calls is this each year?  
6. **Talk Math** Explain how you know if an estimated product is greater than or less than the actual product.
Estimate. Tell whether the estimate is greater than or less than the actual product. See Examples 1 and 2

7. \(28 \times 25\)
8. \(43 \times 14\)
9. \(56 \times 37\)
10. \(58 \times 29\)
11. \(64 \times 41\)
12. \(79 \times 55\)
13. \(91 \times 64\)
14. \(94 \times 82\)
15. \(234 \times 11\)
16. \(352 \times 37\)
17. \(489 \times 86\)
18. \(535 \times 42\)
19. \(678 \times 56\)
20. \(739 \times 84\)
21. \(891 \times 78\)
22. \(919 \times 92\)

23. An antelope can run 55 miles per hour. About how many miles would it travel if it ran a total of 12 hours?

24. Gabe averages 16 points in a card game. About how many points will he score in 14 games?

25. A certain type of millipede has 750 legs. About how many legs would 12 of these millipedes have?

26. Measurement About how many pounds of fruit would the average American eat in 11 years?

<table>
<thead>
<tr>
<th>Type of Food</th>
<th>Amount (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh fruit</td>
<td>127</td>
</tr>
<tr>
<td>Fresh vegetables</td>
<td>148</td>
</tr>
<tr>
<td>Milk and cream</td>
<td>205</td>
</tr>
</tbody>
</table>

27. Suppose 18 nymph dragonflies of maximum length were laid end to end. About how long would they span?

28. If 32 average adult dragonflies were laid end to end, about how long would they span?
29. **OPEN ENDED** Identify two factors that have an estimated product of 2,000.

30. **NUMBER SENSE** Estimate $51 \times 39$ and $84 \times 45$. Which is closer to its actual product? Explain your reasoning.

31. **WRITE MATH** Write a real-world problem that involves estimating the product of two 2-digit numbers.

### Test Practice

32. The length of an anaconda is shown below.

![Image of an anaconda with a length of 20 ft]

What is the total length of 35 anacondas? *(Lesson 1A)*

- A. 600 feet
- B. 700 feet
- C. 800 feet
- D. 900 feet

33. There are 365 days in a year. Which is the best estimate of the number of days in 12 years? *(Lesson 1B)*

- F. 7,000
- G. 6,000
- H. 5,000
- I. 4,000

34. A kangaroo can travel 30 feet per jump. How far could a kangaroo travel if it jumps 14 times? *(Lesson 1A)*

- A. 400 feet
- B. 420 feet
- C. 430 feet
- D. 440 feet

35. Ms. Arthur drives a total of 42 miles each day to and from work. About how many miles does Ms. Arthur drive in 18 workdays? *(Lesson 1B)*

- F. 400 miles
- G. 700 miles
- H. 800 miles
- I. 1,000 miles

### Spiral Review

36. **Multiply** *(Lesson 1A)*

- $27 \times 10$
- $43 \times 50$
- $96 \times 70$

37. Jenna collected 20 bags of cans to recycle last year. There were 58 cans in each bag. How many cans did Jenna collect last year? *(Lesson 1A)*
Problem-Solving Strategy: Make a Table

Main Idea: I will make a table to solve a problem.

The Twisted Zipper roller coaster cars each hold 18 passengers. Every minute, a new car is filled. Make a table to find how many people can ride the Twisted Zipper in 60 minutes.

Understand What facts do you know?
- There are 18 passengers per car.
- Every minute a new car is filled.

What do you need to find?
- the number of people who can ride the roller coaster in 60 minutes

Plan There are 18 new passengers each minute. So, make a table to find the number of passengers who can ride in 60 minutes.

Solve You can start by finding the product of 18 and 10.
\[18 \times 10 = 180\]

<table>
<thead>
<tr>
<th>Minutes</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passengers</td>
<td>180</td>
<td>360</td>
<td>540</td>
<td>720</td>
<td>900</td>
<td>1,080</td>
</tr>
</tbody>
</table>

So, 1,080 people can ride the roller coaster in 60 minutes.

Check Multiply. Find \(18 \times 60\) another way to see if you get the same answer. You can multiply.

\[
60 \times 18 = (60 \times 10) + (60 \times 8) \\
= 600 + 480 \\
= 1,080
\]

Since \(60 \times 18 = 1,080\), the answer is correct.

GLE 0406.2.6 Solve problems involving whole numbers, fractions, and/or decimals using all four arithmetic operations. SPi 0406.2.11 Solve problems using whole number multi-digit multiplication. Also addresses GLE 0406.1.5.
Refer to the problem on the previous page.

1. Explain why you multiplied 60 and 18 to check the answer.

2. What operation can be used to check the answer?

3. If 20 people can ride each minute, how many people could ride in 60 minutes?

4. Refer to Exercise 3. How do you know the answer is correct?

Make a table to solve each problem.

5. Evita completed 28 problems for her math homework each night. About how many problems did she complete during five nights?

6. There are 20 jugglers in a circus. Each juggler can juggle 5 balls at a time. How many balls will the jugglers need for their act if they all perform at the same time?

7. A page from Dana’s album is shown. Dana puts the same number of stickers on each page. She has 30 pages of stickers. How many stickers does she have in all?

8. West Glenn School has about 23 students in each class. There are 6 fourth grade classes. About how many fourth grade students are there in all?

9. Measurement The graph shows how long some animals sleep. How many total hours of sleep do a lemur and a sloth get during two days?

10. Use the graph above. How many hours does a sloth sleep during 5 days?

11. Corey and his 2 friends earn $12 each for doing yard work. How much money will they get paid altogether if they work on 5 yards?

12. A lizard eats 6 crickets each day. How many crickets does it eat in 13 weeks?

13. Write Math Explain how you used a table for Exercise 12.
**Main Idea**
I will explore multiplying by two-digit numbers.

**Materials**
colored pencils
graph paper

---

**Explore**

**Multiply Two-Digit Numbers**

You have used the Distributive Property of Multiplication to find a product. You can use the Distributive Property to multiply two-digit numbers.

**Key Concept**

Distributive Property

To multiply a sum by a number, multiply each addend by the number and add the products.

\[
3 \times 11 = 3 \times (10 + 1) \\
= (3 \times 10) + (3 \times 1) \\
= 30 + 3 \\
= 33
\]

---

**ACTIVITY**

Find \(12 \times 15\).

**Step 1** Draw a rectangle.
   Draw a rectangle on graph paper.
   Use 12 and 15 as the dimensions.

**Step 2** Separate the tens and ones.
   First, write 15 as 10 and 5.
   Next, write 12 as 10 and 2.
**Step 3** Find each product. Then add.

\[
\begin{align*}
10 \times 10 &= 100 \\
10 \times 5 &= 50 \\
2 \times 10 &= 20 \\
2 \times 5 &= +10
\end{align*}
\]

\[= +180\]

**Step 4** Make the connection.

Distributive Property

\[
12 \times 15 = (10 \times 15) + (2 \times 15)
\]

\[
= (10 \times 10) + (10 \times 5) + (2 \times 10) + (2 \times 5)
\]

\[
= 100 + 50 + 20 + 10
\]

\[
= 180
\]

Partial Products

\[
\begin{array}{c|c}
15 & \times 12 \\
10 & 2 \times 5 \\
20 & 2 \times 10 \\
50 & 10 \times 5 \\
+100 & 10 \times 10 \\
180 & \text{Add partial products.}
\end{array}
\]

**Think About It**

1. How would you use the Distributive Property to find \(12 \times 18\)?

**Practice and Apply It**

Write the multiplication sentence for each area model. Multiply.

2.

3.

Multiply. Use an area model and the Distributive Property.

4. \(12 \times 10\)  
5. \(14 \times 18\)  
6. \(25 \times 28\)

7. **WRITE MATH** Explain how to find \(16 \times 19\).
### Main Idea

I will multiply two-digit numbers.

### Two-Digit Multiplication

#### Multiply Two-Digit Numbers

There is more than one way to multiply two-digit numbers.

#### REAL-WORLD EXAMPLE

**MEASUREMENT** A coyote travels 27 miles each hour. How far can a coyote travel in 12 hours?

Find $27 \times 12$.

---

**One Way: Partial Products**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>27</strong></td>
<td></td>
</tr>
<tr>
<td><strong>× 12</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>1</strong></td>
</tr>
<tr>
<td><strong>14</strong></td>
<td><strong>27</strong></td>
</tr>
<tr>
<td><strong>40</strong></td>
<td><strong>54</strong></td>
</tr>
<tr>
<td><strong>70</strong></td>
<td><strong>270</strong></td>
</tr>
<tr>
<td><strong>+ 200</strong></td>
<td><strong>324</strong></td>
</tr>
</tbody>
</table>

**Step 1** Multiply the ones.

**Step 2** Multiply the tens.

**Step 3** Add the products.

---

**Another Way: Paper and Pencil**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>1</strong></td>
</tr>
<tr>
<td><strong>27</strong></td>
<td><strong>54</strong></td>
</tr>
<tr>
<td><strong>× 12</strong></td>
<td><strong>270</strong></td>
</tr>
</tbody>
</table>

**Step 2** Multiply the tens.

**Step 3** Add the products.

---

So, a coyote can travel 324 miles in 12 hours.
**EXPENSES** Heidi’s monthly bills are shown. How much does she spend on her cell phone service in 2 years?

Heidi’s cell phone bill is $38 each month. There are 24 months in 2 years. So multiply $38 by 24 to find how much she spends in 2 years.

**Estimate** 40 × 20 = 800

**Step 1** Multiply the ones.  
\[\begin{array}{c}
38 \\
\times 24 \\
\hline
152
\end{array}\]

**Step 2** Multiply the tens.  
\[\begin{array}{c}
1 \times 38 \\
\times 24 \\
\hline
152 \\
+ 760
\end{array}\]

**Step 3** Add the products.  
\[\begin{array}{c}
38 \\
\times 24 \\
\hline
152 \\
+ 760 \\
\hline
912
\end{array}\]

So, the cost of cell phone service for 2 years is $912.

**Check for Reasonableness**

912 is close to the estimate of 800. The answer is reasonable. ✓

---

**Multiply.** See Examples 1 and 2

1. \[35 \times 24\]

2. \[57 \times 42\]

3. \[92 \times 81\]

4. A farmer plants 35 rows of tomatoes. There are 25 plants in each row. How many plants are there altogether?

5. **TALK MATH** Explain the steps needed to find the product of 23 and 56.
Multiply.  See Examples 1 and 2

6.  \[19 \times 15\]
7.  \[36 \times 24\]
8.  \[42 \times 38\]
9.  \[52 \times 47\]
10.  \[\$54 \times 51\]
11.  \[\$68 \times 46\]
12.  \[\$74 \times 63\]
13.  \[\$82 \times 49\]
14.  \[47 \times 24\]
15.  \[64 \times 46\]
16.  \[83 \times 67\]
17.  \[91 \times 78\]

18. **Measurement** A greyhound dog can jump a distance of 27 feet. How many feet will a greyhound travel if it jumps 12 times?

19. **Measurement** Each day, enough paper is recycled in the United States to fill 15 miles of train boxcars. How many miles of boxcars could be filled over 25 days?

Use the information to solve the problem.

**Basketball Brainteaser**

Remember, Carmen scored about 12 points per basketball game and is trying to figure out her total points for the season.

To find my total number of points, I need to find how many games we played.

20. How many points has Carmen scored during the 14-game basketball season?

**H.O.T. Problems**

21. **WHICH ONE DOESN’T BELONG?** Identify the multiplication problem that does not belong with the other three. Explain.

   \[
   \begin{align*}
   22 \times 15 \\
   \$45 \times 28 \\
   37 \times 18 \\
   \$66 \times 25
   \end{align*}
   \]

22. **WRITE MATH** Explain why the product of two 2-digit numbers can never be two digits.
Mid-Chapter Check

Multiply. (Lesson 1A)

1. $38 \times 30$
2. $52 \times 20$

3. Measurement John jogs 30 miles every week. There are 52 weeks in a year. How many miles does John jog in a year? (Lesson 1A)

4. MULTIPLE CHOICE What is the total length of 30 newborn alligators? (Lesson 1A)

5. $24 \times 14$
6. $37 \times 21$

7. MULTIPLE CHOICE There are 365 days in a year. Which is the best estimate of the number of days in 19 years? (Lesson 1B)

8. The average person sends about 25 E-mails a month. About how many E-mails is this each year? (Lesson 1B)

Use the make a table strategy to solve. (Lesson 1C)

9. Talia’s mother is 40 years old. This is 4 times as old as Talia’s age. How old is Talia?

10. Otis invited 27 guests to his party. He wants to put 15 treats in a bag for each of his guests. How many treats does Otis need to buy?

Multiply. (Lesson 2B)

11. $27 \times 13$
12. $45 \times 14$
13. $67 \times 42$
14. $77 \times 53$

15. Measurement A person breathes 95 gallons of air every hour. How many gallons of air does a person breathe in one day? (Lesson 2B)

16. WRITE MATH Mae is finding the product to the multiplication expression below. How many zeros will be in the product? Explain. (Lesson 1A)
Multiply Three-Digit Numbers

Area models can help you multiply by three-digit numbers. Break up the area model according to its place value.

Find $15 \times 327$.

**Step 1** Draw a model.
Draw a rectangle.
Use 15 and 327 as the dimensions.

**Step 2** Separate each place value.
First, write 327 as $300 + 20 + 7$.
Next, write the 15 as $10 + 5$.

**Step 3** Find each area. Then add.

- $10 \times 300 = 3000$
- $10 \times 20 = 200$
- $10 \times 7 = 70$
- $5 \times 300 = 1500$
- $5 \times 20 = 100$
- $5 \times 7 = 35$

So, $15 \times 327 = 4905$. 
Find $32 \times 596$.

**Step 1** Draw a model.
Draw a rectangle.
Use 32 and 596 as the dimensions.

**Step 2** Separate each place value.
First, use expanded form to write 596 as $500 + 90 + 6$.
Next, write 32 as $30 + 2$.

**Step 3** Find each area. Then add.

- $30 \times 500 = 15,000$
- $30 \times 90 = 2,700$
- $30 \times 6 = 180$
- $2 \times 500 = 1,000$
- $2 \times 90 = 180$
- $2 \times 6 = 12$

So, $32 \times 596 = 19,072$.

**Think About It**

1. In Activity 2, why is 32 broken into 30 and 2?

2. How does place value help you separate the parts?
Multiply Three-Digit Numbers by Two-Digit Numbers

You can multiply 3-digit numbers by 2-digit numbers.

**REAL-WORLD EXAMPLE**

**PHONES** Rose uses about 275 minutes on her cell phone each month. How many minutes does Rose use in a year?

There are 12 months in 1 year. So, multiply the number of minutes each month by 12. Find $275 \times 12$.

**Estimate** $300 \times 10 = 3,000$

**Step 1** Multiply 275 by 2.

```
11
275
× 12
550
```

**Step 2** Multiply 275 by 1 ten.

```
11
275
× 12
550

10 \times 275
2,750
```

**Step 3** Add the products.

```
11
275
× 12
550

10 \times 275
2,750

Add.

3,300
```

So, Rose uses 3,300 minutes in a year.

**Check for Reasonableness**

Since 3,300 is close to the estimate of 3,000, the answer is reasonable. ✓
Multiply Money

A school bought 25 of the computers shown. What was the total cost?

You need to multiply $749 by 25.

Estimate $700 \times 30 = 21,000$

Step 1 Multiply $749$ by 5.

\[
\begin{array}{c}
& 24 \\
+ & \underline{749} \\
\times & \underline{25} \\
\hline
3,745
\end{array}
\]

Step 2 Multiply $749$ by 20.

\[
\begin{array}{c}
1 \\
24 \\
\underline{749} \\
\times & \underline{25} \\
\hline
3,745 \\
14,980
\end{array}
\]

Step 3 Add the partial products.

\[
\begin{array}{c}
1 \\
24 \\
\underline{749} \\
\times & \underline{25} \\
\hline
3,745 \\
+14,980 \\
\hline
18,725
\end{array}
\]

So, the product of $749$ and 25 is $18,725.$

Check for Reasonableness

Since $18,725$ is close to the estimate of 21,000, the answer is reasonable.

Remember

You may need to regroup when multiplying the ones, tens, and hundreds.

Check What You Know

Multiply. See Examples 1 and 2

1. 135
   \[\times 18\]

2. 340
   \[\times 32\]

3. $703 \times 89$

4. A herd of elephants can travel 50 miles a day. At this rate, how far could a herd travel in a year?

5. **TALK MATH** Explain how to find the product of 56 and 945.
Multiply. See Examples 1 and 2

6. 106 × 12
7. 248 × 24
8. 283 × 33
9. 362 × 35
10. 467 × 41
11. 489 × 53
12. $508 × 59
13. $632 × 66
14. $770 × 71
15. $862 × 87

16. $901 × 96
17. $934 × 97

18. Every second, 630 steel cans are recycled. How many cans are recycled in 1 minute?

19. Measurement If a city receives 451 millimeters of rainfall each year, how much rainfall will the city receive in 35 years?

20. Measurement Aiden’s pet cat is 13 years old. How many days old is Aiden’s cat?

21. Suppose a city has 206 days of fog each year. How many days of fog will occur in 12 years?

**REAL-WORLD PROBLEM SOLVING**

**Sports** The table shows facts about balls used in sports.

<table>
<thead>
<tr>
<th>Sports Ball Facts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ball</td>
</tr>
<tr>
<td>Golf ball</td>
</tr>
<tr>
<td>Baseball</td>
</tr>
<tr>
<td>Soccer ball</td>
</tr>
</tbody>
</table>

22. How many dimples are on a dozen golf balls?

23. How many stitches do 75 baseballs have?

24. Find the difference in the number of dimples on 25 golf balls and the number of stitches on 25 baseballs.

25. **FIND THE ERROR** Tai is finding 351 × 26. Find and correct his mistake.

26. **WRITE MATH** Write a real-world problem that involves multiplying a 3-digit number by a 2-digit number.
27. The bananas shown are used to make one loaf of banana bread. They have a total of 315 Calories.

How many Calories are in the bananas needed for 54 loaves? (Lesson 3B)

A. 630
B. 15,000
C. 17,010
D. 18,020

28. While on a trip, Denzel counted 17 blue cars on a highway in 1 minute. At this rate, how many blue cars will Denzel see in 45 minutes? (Lesson 2B)

F. 360  H. 765
G. 400  I. 775

29. There are 24 hours in a day.

How many hours are in a year? (Lesson 3B)

A. 2,190
B. 7,440
C. 8,000
D. 8,760

Multiply. (Lesson 2B)

30. \(34 \times 10\)

31. \(55 \times 49\)

32. \(\$72 \times 66\)

33. For every 4 magazines Avery sells, his school receives $2. Use the table to find how much money he will raise if he sells 20 magazines. (Lesson 1C)

<table>
<thead>
<tr>
<th>Magazines Sold</th>
<th>4</th>
<th>8</th>
<th>12</th>
<th>16</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Money</td>
<td>$2</td>
<td>$4</td>
<td>$6</td>
<td>$8</td>
<td>$10</td>
</tr>
</tbody>
</table>

Estimate. Tell whether the estimate is greater than or less than the actual product. (Lesson 1B)

34. \(93 \times 31\)

35. \(\$418 \times 27\)

36. \(655 \times 45\)
Yellowstone National Park is located in Montana, Wyoming, and Idaho. It is home to hot springs, bubbling mud holes, and fountains of steaming water. These fountains shoot water more than 100 feet into the air.

Yellowstone is also home to 290 species of birds, 50 species of mammals, 6 species of reptiles, and 18 species of fish. What a place to visit! A seven-day visitor’s pass to the park costs $10 for one person to hike, or $20 for a carload of people.
Real-World Math

Use the information and map on the previous page to solve each problem.

1. Ryan’s family lives 29 miles from the South entrance of Yellowstone National Park. Santiago’s family lives 63 times as far. How far does Santiago’s family live from the South entrance?

2. A park ranger traveled between Canyon and Fishing Bridge 85 times in a year. How many miles did she travel?

3. A tour guide traveled from Madison to Mammoth, by way of Norris, 34 times in a year. How many miles did she travel?

4. A bird has flown by Old Faithful 35 times. He has stopped at Fishing Bridge 204 times that number. How many times has he stopped at Fishing Bridge?

5. How much will it cost 18 people to buy a seven-day pass if they are paying individually?

6. On Tuesday, three carloads of people bought a seven-day pass. Each car had 5 people. How much money did they save by paying by the carload?

7. A tour bus makes 13 trips from West Thumb to Old Faithful and back each week. How many miles are traveled in all?
Multiply Greater Numbers

You can multiply multi-digit numbers by two-digit numbers.

**Real-World Example**

**Zoos** Suppose 7,275 visitors go to a zoo every week. How many visitors go to the zoo in a year?

Find $7,275 \times 52$.

**Estimate** $7,000 \times 50 = 350,000$

**Step 1** Multiply the ones. Regroup if necessary.

11
7,275
$\times$ 52
14,550 $7,275 \times 2$

**Step 2** Multiply the tens.

132
7,275
$\times$ 52
14,550
363,750 $7,275 \times 50$

**Step 3** Add the partial products.

132
7,275
$\times$ 52
14,550
$+$ 363,750
378,300

So, 378,300 visitors go to the zoo in a year.

**Check for Reasonableness**

Since 378,300 is close to the estimate of 350,000, the answer is reasonable. ✓
**REAL-WORLD EXAMPLE**

**SPORTS** Suppose a stadium can seat 45,050 fans. There are 81 home games in a season. What is the greatest number of fans who can attend the home games in one season?

You need to find $45,050 \times 81$.

**Estimate** $50,000 \times 80 = 4,000,000$

**Step 1** Multiply the ones.

$45,050 \times 81$

**Step 2** Multiply the tens.

$45,050 \times 81$

**Step 3** Add the partial products.

$45,050 \times 1 = 45,050$

$45,050 \times 80 = 3,604,000$

$3,649,050$

So, 3,649,050 fans can attend the home games.

**Check for Reasonableness**

Since 3,649,050 is close to the estimate of 4,000,000, the answer is reasonable. ✓

**Multiply.** See Examples 1 and 2

1. $1,360 \times 29$
2. $7,251 \times 58$
3. $23,973 \times 41$

4. An average professional baseball player earns $15,750 per game. How much money does a player earn in a month in which 23 games are played?

5. **TALK MATH** How is multiplying a 3-digit number by a 2-digit number like multiplying a 5-digit number by a 2-digit number?
**Multiply.** See Examples 1 and 2

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>6.</strong></td>
<td>1,418</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>x</td>
<td>12</td>
</tr>
<tr>
<td><strong>7.</strong></td>
<td>2,983</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>x</td>
<td>24</td>
</tr>
<tr>
<td><strong>8.</strong></td>
<td>4,166</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>x</td>
<td>35</td>
</tr>
<tr>
<td><strong>9.</strong></td>
<td>6,873</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>x</td>
<td>39</td>
</tr>
<tr>
<td><strong>10.</strong></td>
<td>8,316</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>x</td>
<td>14</td>
</tr>
<tr>
<td><strong>11.</strong></td>
<td>9,809</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>x</td>
<td>67</td>
</tr>
<tr>
<td><strong>12.</strong></td>
<td>$13,820</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>x</td>
<td>21</td>
</tr>
<tr>
<td><strong>13.</strong></td>
<td>$17,846</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>x</td>
<td>26</td>
</tr>
<tr>
<td><strong>14.</strong></td>
<td>$25,067</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>x</td>
<td>30</td>
</tr>
<tr>
<td><strong>15.</strong></td>
<td>$29,452</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>x</td>
<td>38</td>
</tr>
<tr>
<td><strong>16.</strong></td>
<td>$30,824</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>x</td>
<td>43</td>
</tr>
<tr>
<td><strong>17.</strong></td>
<td>$37,525</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>x</td>
<td>48</td>
</tr>
</tbody>
</table>

18. **Measurement** Gabrielle rides her bike 2 miles a day. One mile has 5,280 feet. How many feet does she ride her bike in 2 weeks?

19. **Measurement** If a cow produces 2,305 gallons of milk each year, how many gallons of milk do 75 cows produce in a year?

---

**REAL-WORLD PROBLEM SOLVING**

**Measurement** The map shows distances between some cities in the United States.

20. Meliah traveled round trip from Sacramento to Boston 6 times during the summer months. How many miles did she travel altogether?

21. Marcos traveled round trip from Miami to Seattle 8 times. How many miles did he travel altogether?

---

**H.O.T. Problems**

22. **OPEN ENDED** Create a multiplication problem that has a product greater than 1,000,000.

23. **NUMBER SENSE** Is the product of 11 and 1,000 greater or less than 10,000? How can you tell without multiplying?

24. **WRITE MATH** What is the greatest number of digits a product could have if a 2-digit factor is multiplied by a 5-digit number? Explain.
You will need: 6 number cubes labeled 0–5, paper and pencil

**Get Ready!**
Players: 2

**Get Set!**
Each player should have a sheet of notebook paper.

**Go!**
- Player 1 rolls all 6 number cubes.
- Player 1 uses the number cubes to create a problem that involves multiplying a 4-digit number by a 2-digit number.
- Player 1 can arrange the digits in any place value and then find the product of the 2 factors.
- Player 2 takes a turn.
- The player who creates the greater product earns 1 point.
- The first player to earn 5 points wins.
Problem-Solving Investigation

Main Idea I will choose the best strategy to solve a problem.

KASA: I go to ballet lessons every week. I dance a total of 14 hours every 2 weeks.

YOUR MISSION: Find how many hours of ballet lessons Kasa has in one year, or 52 weeks.

Understand

Kasa dances a total of 14 hours every 2 weeks. Find how many hours of ballet lessons she has in 52 weeks.

Plan

Divide the number of hours Kasa practices every 2 weeks by 2 to find the number of hours she practices each week. Then multiply by 52, the number of weeks in one year.

Solve

\[
\begin{align*}
\text{hours per 2 weeks} & : 14 \\
\text{weeks} & : 2 \\
\text{hours per week} & : 7 \\
\text{hours per week} & : 7 \\
\text{weeks} & : 52 \\
\text{hours in 52 weeks} & : 364
\end{align*}
\]

So, Kasa has 364 hours of ballet lessons in one year.

Check

Check your answer by dividing the number of weeks by 2: 
\[52 \div 2 = 26\]. Then, multiply the number of hours per 2 weeks by 26 weeks: 
\[26 \times 14 = 364\]. So, the answer is correct. ✔️

GLE 0406.1.2 Apply and adapt a variety of appropriate strategies to problem solving, including estimation, and reasonableness of the solution. Also addresses SPI 0406.2.11.
To assess partial mastery of SPI 0406.2.11, see your Tennessee Assessment Book.

Use any strategy to solve each problem.

1. A stunt person falls from the roof of a 54-foot building. A skydiver jumps from a plane that is 186 times as high. How far does the skydiver fall?

2. **BAR DIAGRAM** Each fourth grade class reads a total of 495 minutes each week. Suppose there are 4 fourth grade classes. How many minutes are read each week?

3. Ling exercises for 30 minutes 2 times a day. If she keeps up this schedule for 30 days, how many minutes will she exercise in all?

4. Each day, Sparky eats the treats shown. How many treats does Sparky eat in a year? *(Hint: There are 365 days in a year.)*

5. Pete spends 30 minutes a night reading. About how many hours does he spend reading each month?

6. Mario wants to download 12 songs on his digital music player. He has only 5 minutes to download the songs. If it takes 30 seconds for Mario to download one song, will he have enough time to download all of the songs? Explain.

7. Robin sold 153 purses at a craft fair. How much money did she earn?

8. In one hour, Frank earns the money shown below. How much does he earn in 7 weeks if he works 3 hours each week?

9. **BAR DIAGRAM** Each class at Tannon Elementary School wants to raise $475 for a local charity. There are 34 classes. What is their overall goal?

10. **WRITE MATH** Suppose a book costs $37. Is it reasonable to say that it would cost about $12,800 to buy 321 copies of the book? Explain.
Key Vocabulary

- **estimate**
- **factor**
- **multiple**
- **product**

**Vocabulary Check**

1. A number that is close to an exact value is a(n) ____?

2. The numbers 6, 9, 12, and 15 are ____?____ of the number 3.

3. In the equation below, the number 28 is a(n) ____?____.
   \[481 \times 28 = 13,468\]

4. A(n) ____?____ of a number is the product of that number and any whole number.

5. A(n) ____?____ of 34 \(\times\) 82 is 2,400.

6. In the equation below, the number 37,654 is the ____?____.
   \[562 \times 67 = 37,654\]

7. The numbers 30, 40, and 60 are ____?____ of 120.
Multi-Part Lesson Review

Lesson 1

Multiplication with Tens

Multiply by Tens (Lesson 1A)

Multiply.

8. \[ 90 \times 90 \]

9. \[ 34 \times 80 \]

10. \[ $28 \times 40 \]

11. \[ $45 \times 30 \]

12. Jeremy reads the number of books shown in a month. How many books will he read in 2 years?

13. There are 30 students in each class. There are 27 classrooms. How many students are there altogether?

14. \[ 90 \times 90 \]

15. \[ 34 \times 80 \]

16. \[ $244 \times 31 \]

17. \[ 482 \times 49 \]

18. \[ 371 \times 66 \]

19. \[ 527 \times 84 \]

20. Tamara makes $12 an hour. She worked 28 hours this week. About how much money will she make?

Estimate Products (Lesson 1B)

Estimate. Tell whether the estimate is greater than or less than the actual product.

Step 1 Round each factor to the nearest ten.

Step 2 Multiply.

EXAMPLE 1

A football coach orders 30 jerseys for his football team. The jerseys cost $29 each. What is the total cost of the jerseys?

\[ \begin{align*}
\text{Step 1} & \quad \text{Multiply the ones.} \\
& \quad \begin{array}{c}
$29 \\
\times 30 \\
\hline
0 \times 29 = 0
\end{array}
\end{align*} \]

\[ \begin{align*}
\text{Step 2} & \quad \text{Multiply the tens.} \\
& \quad \begin{array}{c}
$29 \\
\times 30 \\
\hline
870 \quad 3 \times 29 = 87 \text{ tens}
\end{array}
\end{align*} \]

So, the total cost is $870.

EXAMPLE 2

Estimate \[ 33 \times 18. \]

\[ \begin{align*}
\text{Step 1} & \quad \text{Round each factor to the nearest ten.} \\
& \quad \begin{array}{c}
33 \\
\times 30 \\
\hline
\text{Round 33 to 30.}
\end{array}
\end{align*} \]

\[ \begin{align*}
\text{Step 2} & \quad \text{Multiply.} \\
& \quad \begin{array}{c}
30 \\
\times 20 \\
\hline
0 \times 30 = 0 \\
2 \times 30 = 60 \text{ tens}
\end{array}
\end{align*} \]

So, \[ 33 \times 18 \] is about 600.
Problem-Solving Strategy: Make a Table  (Lesson 1C)

Make a table to solve each problem.

21. **Measurement**  A cruise ship travels at 19 miles per hour. How far does the ship travel in a day, or 24 hours?

22. The soccer coach buys 27 soccer balls for the team. Each ball costs $15. How much do the soccer balls cost in all?

A jumbo can of vegetables has 36 servings. How many servings of vegetables are in 18 cans?

Make a table to solve.

<table>
<thead>
<tr>
<th>Cans</th>
<th>Servings</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>360</td>
</tr>
<tr>
<td>15</td>
<td>540</td>
</tr>
<tr>
<td>18</td>
<td>648</td>
</tr>
</tbody>
</table>

So, there are 648 servings in 18 cans.

**EXAMPLE 3**

**Problem-Solving Strategy: Make a Table**  (Lesson 1C)

Multiply.

23.  63  
    × 46
    
24.  26  
    × 34
    
25.  $72  
    × 49
    
26.  $55  
    × 41
    
27.  37  × 68
28.  89  × 53
29.  $19  × 72
30.  95  × 94

**Algebra**  Compare. Use <, >, or =.

31.  16  × 42  ○  21  × 36
32.  73  × 46  ○  46  × 73

Julio scores 18 points in each basketball game. If there are 14 games in a season, how many points will Julio score?

Multiply the number of games by the number of points scored in each game.

**Estimate**  20  × 10  =  200

Multiply the ones. Multiply the tens. Add the products.

\[
\begin{align*}
3 & \times 14 \\
\underline{+ 180} & \\
252 & \\
\end{align*}
\]

So, Julio will score 252 points.

**Check for Reasonableness**

200 is close to 252. So, the answer is correct. 

Lesson 2  Two-Digit Multiplication  (Lessons 2A and 2B)

Multiply Two-Digit Numbers  (Lessons 2A and 2B)

Multiply.

23.  63  
    × 46
    
24.  26  
    × 34
    
25.  $72  
    × 49
    
26.  $55  
    × 41
    
27.  37  × 68
28.  89  × 53
29.  $19  × 72
30.  95  × 94

Julio scores 18 points in each basketball game. If there are 14 games in a season, how many points will Julio score?

Multiply the number of games by the number of points scored in each game.

**Estimate**  20  × 10  =  200

Multiply the ones. Multiply the tens. Add the products.

\[
\begin{align*}
3 & \times 14 \\
\underline{+ 180} & \\
252 & \\
\end{align*}
\]

So, Julio will score 252 points.

**Check for Reasonableness**

200 is close to 252. So, the answer is correct. 

272  Multiply Multi-Digit Numbers
Lesson 3

Three-Digit Multiplication

Multiply Three-Digit Numbers by Two-Digit Numbers (Lessons 3A and 3B)

Multiply.

33. \(712 \times 87\)  
34. \(841 \times 96\)

35. \(367 \times 71\)  
36. \(670 \times 87\)

37. \(705 \times 88\)  
38. \(234 \times 45\)

39. \(103 \times 33\)  
40. \(632 \times 35\)

41. A school bought 25 microscopes for the science lab at $125 each. What was the total cost?

42. If a person makes $625 each week, how much will that person have made after one year?  
Hint: 52 weeks = 1 year.

43. Measurement A bag of dog food weighs 18 pounds. How much would 152 bags of dog food weigh?

44. Algebra Copy and complete the table.

<table>
<thead>
<tr>
<th>Rule: Multiply by 66</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Input</td>
<td>Output</td>
</tr>
<tr>
<td>123</td>
<td></td>
</tr>
<tr>
<td>223</td>
<td></td>
</tr>
<tr>
<td>323</td>
<td></td>
</tr>
<tr>
<td>423</td>
<td></td>
</tr>
<tr>
<td>523</td>
<td></td>
</tr>
</tbody>
</table>

45. Suppose a family spends $461 on groceries each month. How much would they spend in one year?

EXAMPLE 5

Find \(359 \times 62\).

Use the Distributive Property to draw a model.

\[
\begin{array}{ccc}
300 & 50 & 9 \\
60 & & \\
2 & &
\end{array}
\]

\[
\begin{array}{r}
60 	imes 300 = 18,000 \\
60 	imes 50 = 3,000 \\
60 	imes 9 = 540 \\
2 	imes 300 = 600 \\
2 	imes 50 = 100 \\
2 	imes 9 = + 18 \\
\end{array}
\]

So, \(359 \times 62 = 22,258\).

EXAMPLE 6

Find \(803 \times 42\).

\[
\begin{array}{r}
1606 + 32120 = 33726
\end{array}
\]

Multiply the ones. Multiply the tens. Add.
Lesson 4

Multi-Digit Multiplication

Multiply Greater Numbers (Lesson 4A)

Multiply.

46. \[ 1,418 \times 14 \]
47. \[ 2,983 \times 21 \]
48. \[ 13,720 \times 71 \]
49. \[ 17,946 \times 25 \]

50. \[ $24,017 \times 30 \]
51. \[ $39,402 \times 48 \]

52. **Measurement** Jena’s grandparents live 35 miles away. There are 5,280 feet in one mile. How many feet away do Jena’s grandparents live?

One of the fastest planes in the world can fly up to 5,329 miles per hour. At this rate, how far would this plane fly in 24 hours?

\[
\begin{align*}
\text{Multiply the ones.} & \\
1 \times 24 & = 21,316 \\
\text{Multiply the tens.} & \\
113 \times 24 & = 2,699,200 \\
\text{Add.} & \\
21,316 & + 2,699,200 \\
\hline
127,896 & \\
\end{align*}
\]

So, this plane would fly 127,896 miles in 24 hours.

Problem-Solving Investigation: Choose a Strategy (Lesson 4B)

Use any strategy to solve each problem.

53. A recipe calls for 13 ounces of white sugar and 13 ounces of brown sugar. How many total ounces of sugar are needed for 32 batches of the recipe?

54. **Measurement** There are 12 inches in a foot. How many inches long is a 825-foot long race track?

55. Each skateboard has 17 stickers. There are 10 boxes that each have 52 skateboards. How many stickers are there altogether?

A box of cereal has 1,500 Calories. How many Calories are in 22 boxes of cereal?

Find \[ 1,500 \times 22. \]

Estimate \[ 1,500 \times 20 = 30,000 \]

\[
\begin{align*}
1,500 \times 22 & = 33,000 \\
\text{Check} & \\
33,000 & \text{is close to 30,000. So, the answer is correct.} \\
\end{align*}
\]
Multiply.

1. \(26 \times 10\)  
2. \(43 \times 30\)  
3. \(89 \times 33\)  
4. \(82 \times 91\)

5. **Measurement** Elio jogs for 30 minutes each time he exercises. If he exercises 18 times in a month, how many minutes will he jog?

Estimate.

6. \(152 \times 47\)  
7. \(439 \times 81\)

8. Lina buys groceries for $14 at the store. She gives the cashier the bill below.

List two combinations of bills she could receive as change.

9. **MULTIPLE CHOICE** A school needs to buy 475 math books like the one below.

What will be the total cost?

A. $40,000  
B. $40,375  
C. $45,000  
D. $53,150

10. Roxana brought 6 dozen snacks for her birthday party at school. Each person got 3 snacks. How many people are in her class? Explain your answer.

Multiply.

11. \(107 \times 12\)  
12. \(258 \times 24\)  
13. \(1,324 \times 12\)  
14. \(2,831 \times 24\)

15. **Measurement** The table shows how many miles Roman biked each week of a month. If Roman bikes the same number of miles each month, how many miles will he bike in a year?

<table>
<thead>
<tr>
<th>Distance Biked</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Week</strong></td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
</tbody>
</table>

16. A store has 275 boxes of oranges. Each box costs $12. Find the total cost.

17. **MULTIPLE CHOICE** There are 24 hours in a day. There are 365 days in a year. How many hours are there in a year?

   F. 9,560  
   G. 8,760  
   H. 8,670  
   I. 8,000

18. **WRITE MATH** What is the greatest number of digits a product could have if a 4-digit number is multiplied by a 3-digit number? Explain.
Miguela mowed 54 lawns over the summer. How much money did she earn over the summer?

A. $1,242  
B. $1,232  
C. $1,132  
D. $1,240

Read the Question
You need to multiply 54 by $23 to find the amount of money earned.

Solve the Question

Step 1  Multiply the ones.

\[
\begin{array}{c}
54 \\
\times 23 \\
\hline
162 \\
3 \times 54
\end{array}
\]

Step 2  Multiply the tens.

Then add the partial products.

\[
\begin{array}{c}
54 \\
\times 23 \\
\hline
162 \\
1,080 \\
\hline
1,242
\end{array}
\]

Add.

So, Miguela earned $1,242.
The answer is A.

1. In one town, about 690 E-mails are sent every second. How many E-mails are sent every minute?

A. 4,140  
B. 36,400  
C. 41,400  
D. 42,000

2. Jonathan lived in the same house for exactly 12 years. How many days did he live in the house?

A. 3,650 days  
B. 4,380 days  
C. 4,400 days  
D. 4,480 days
3. If Sean buys 12 balls, about how much will he spend?

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>mitt</td>
<td>$39.99</td>
</tr>
<tr>
<td>bat</td>
<td>$34.99</td>
</tr>
<tr>
<td>ball</td>
<td>$19.99</td>
</tr>
<tr>
<td>T-shirt</td>
<td>$12.95</td>
</tr>
</tbody>
</table>

A. $200  C. $400  
B. $300  D. $500

4. Samir earns $22 each day he helps at the library. If his schedule stays the same, how much will he earn in 2 weeks?

Sun Mon Tues Wed Thurs Fri Sat
L L

F. $75  H. $88  
G. $80  I. $125

5. A jet travels 1,357 miles per hour. If it travels for 2 full days, how many miles will the jet fly?

1 day = 24 hours

A. 12,486 miles  C. 32,568 miles  
B. 17,084 miles  D. 65,136 miles

6. **GRIDDED RESPONSE** Kamilah read 48 pages in a book for each day circled on the calendar. About how many pages did she read in August?

7. Mr. Cook has 32 students in his homeroom. He organizes the students into equal groups to sit at the tables shown below. How many students are in each group?

F. 8  H. 11  
G. 10  I. 12

8. **GRIDDED RESPONSE** Fran baked 15 trays of muffins for a bake sale. How many muffins did Fran bake in all if she used the tray shown below?