Chapter 2

Multiply by 1-Digit Numbers

Show What You Know

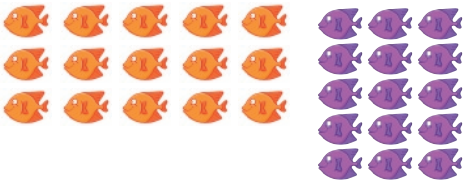
Check your understanding of important skills.

Name _____

Arrays Write a multiplication sentence for the array.

1. 

_____ _____

2. 

_____ _____

Multiplication Facts Find the product.

3. _____ = 9 × 6

4. _____ = 7 × 8

5. 8 × 4 = _____

Regroup Through Thousands

Regroup. Write the missing numbers.

6. 9 tens 10 ones = _____ hundred

7. 60 hundreds = _____ thousands

8. 25 tens = _____ hundreds 5 tens

9. 14 ones = _____ ten _____ ones

10. 3 tens 12 ones = _____ tens 2 ones

The Arctic Lion's Mane Jellyfish is one of the largest known animals. Its tentacles can be as long as 120 feet. Be a Math Detective to find how this length compares to your height. Round your height to the nearest foot.

120 feet is _____ times as long as _____ feet.

Vocabulary Builder

Review Words			Preview Words
✓ estimate	✓ place value	✓ rounding	Distributive Property
expanded form	product		partial product
factor	✓ regroup		

Visualize It

Complete the flow map, using the words with a ✓.

Multiplying

What can you do?		What can you use?		What are some examples?
_____ products.	→	Use _____ and mental math.	→	3 × 48 = ■ ↓ ↓ 3 × 50 = 150
_____ ones as tens.	→	Use _____.	→	12 ones = 1 ten 2 ones

Understand Vocabulary

Complete the sentences.

1. The _____ states that multiplying a sum by a number is the same as multiplying each addend by the number and then adding the products.

2. A number that is multiplied by another number to find a product is called a _____ .

3. A method of multiplying in which the ones, tens, hundreds, and so on are multiplied separately and then the products are added together is called the _____ method.

GO Online • eStudent Edition • Multimedia eGlossary

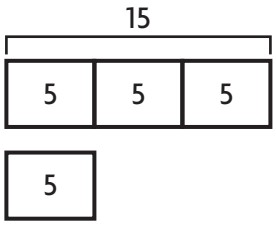
Name _____

Multiplication Comparisons

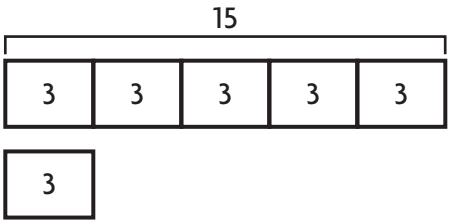
Essential Question How can you model multiplication comparisons?

You can use multiplication to compare amounts. For example, you can think of $15 = 3 \times 5$ as a comparison in two ways:

15 is 3 times as many as 5.



15 is 5 times as many as 3.



Remember

The Commutative Property states that you can multiply two factors in any order and get the same product.

UNLOCK the Problem REAL WORLD

Carly has 9 pennies. Jack has 4 times as many pennies as Carly. How many pennies does Jack have?

- What do you need to compare?

_____

_____

Draw a model and write an equation to solve.

MODEL

Carly

Jack

RECORD

Use the model to write an equation and solve.

$n =$ _____ $\times$ _____

$n =$ _____

The value of n is 36.

Think: *n* is how many pennies Jack has.

So, Jack has _____ pennies.

MATHEMATICAL PRACTICES

Math Talk **Describe** what is being compared and explain how the comparison model relates to the equation.

- H.O.T. **Explain** how the equation for *4 is 2 more than 2* is different from the equation for *4 is 2 times as many as 2.*

_____

_____

_____

Example Draw a model and write an equation to solve.

Miguel has 3 times as many rabbits as Sara. Miguel has 6 rabbits. How many rabbits does Sara have?

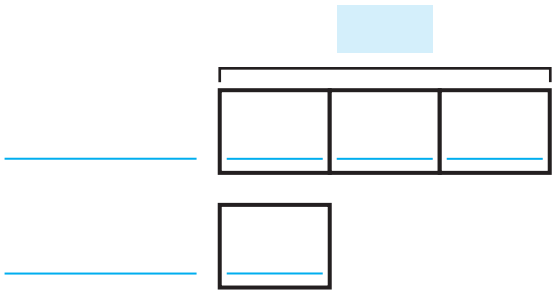
- How many rabbits does Miguel have? _____
- How many rabbits does Sara have?

_____

_____

MODEL

Think: You don't know how many rabbits Sara has. Use *n* for Sara's rabbits.



RECORD

Use the model to write an equation and solve.

6 = _____ × _____

6 = 3 × _____ **Think:** 3 times what number equals 6?

The value of *n* is 2.

Think: *n* is how many rabbits Sara has.

So, Sara has 2 rabbits.

Try This! Write an equation or a comparison sentence.

A Write an equation.

21 is 7 times as many as 3.

_____ = _____ × _____

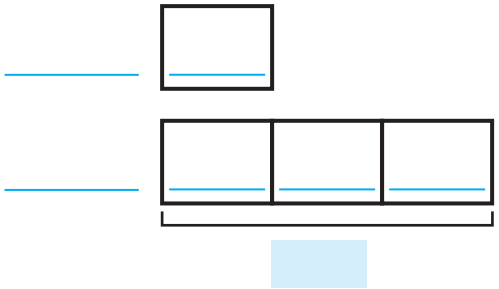
B Write a comparison sentence.

8 × 5 = 40

_____ times as many as _____ is _____.

Share and Show MATH BOARD

1. There are 8 students in the art club. There are 3 times as many students in chorus. How many students are in chorus?



Write an equation and solve.

n = _____ × _____

n = _____

The value of *n* is _____.

So, there are _____ students in chorus.

MATHEMATICAL PRACTICES

Math Talk Could you write the equation a different way? **Explain.**

Name _____

Draw a model and write an equation.

2. 6 times as many as 2 is 12.

3. 20 is 4 times as many as 5.

4. 3 times as many as 9 is 27.

5. 48 is 8 times as many as 6.

Write a comparison sentence.

6. $18 = 9 \times 2$

_____ is _____ times as many as _____.

7. $8 \times 4 = 32$

_____ times as many as _____ is _____.

On Your Own

Write a comparison sentence.

8. $5 \times 7 = 35$

_____ times as many as _____ is _____.

9. $54 = 6 \times 9$

_____ is _____ times as many as _____.

Write an equation.

10. 3 times as many as 7 is 21.

11. 40 is 5 times as many as 8.

UNLOCK the Problem REAL WORLD

12. Luca has 72 baseball cards. This is 8 times as many cards as Han has. How many baseball cards does Han have?

Ⓐ 7 Ⓑ 9 Ⓒ 10 Ⓓ 12

a. What do you need to find? _____

_____

b. How can you use a model to find the number of cards Han has?

_____

c. Draw the model.

d. Write an equation and solve.

_____ = _____ × _____

_____ = _____

So, Han has _____ baseball cards.

e. Fill in the bubble for the correct answer choice.

13. Which equation best represents the comparison sentence?

18 is 2 times as many as 9.

Ⓐ $18 \times 2 = 9$

Ⓑ $18 = 2 \times 9$

Ⓒ $18 = 9 + 2$

Ⓓ $2 + 9 = 18$

14. Which comparison sentence best represents the equation?

$8 \times 4 = 32$

Ⓐ 8 more than 4 is 32.

Ⓑ 4 is 8 times as many as 32.

Ⓒ 8 is 4 times as many as 32.

Ⓓ 32 is 8 times as many as 4.

FOR MORE PRACTICE:
Standards Practice Book, pp. P23–P24

Name _____

Comparison Problems

Essential Question How does a model help you solve a comparison problem?

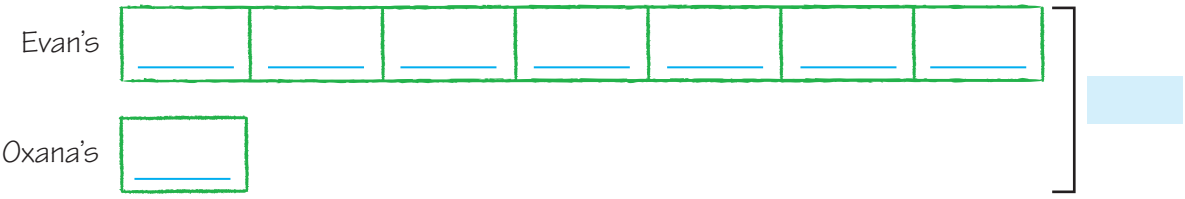
UNLOCK the Problem REAL WORLD

Evan's dog weighs 7 times as much as Oxana's dog. Together, the dogs weigh 72 pounds. How much does Evan's dog weigh?

Example 1 Use a multiplication model.

STEP 1 Draw a model. Let n represent the unknown.

Think: Let n represent how much Oxana's dog weighs. Together, the dogs weigh 72 pounds.



STEP 2 Use the model to write an equation. Find the value of n.

_____ × n = _____ **Think:** There are 8 parts. The parts together equal 72.

8 × _____ = 72 **Think:** What times 8 equals 72?

The value of n is 9.

n is how much _____ weighs.

STEP 3 Find how much Evan's dog weighs.

Think: Evan's dog weighs 7 times as much as Oxana's dog.

Evan's dog = _____ × _____ Multiply.

= _____

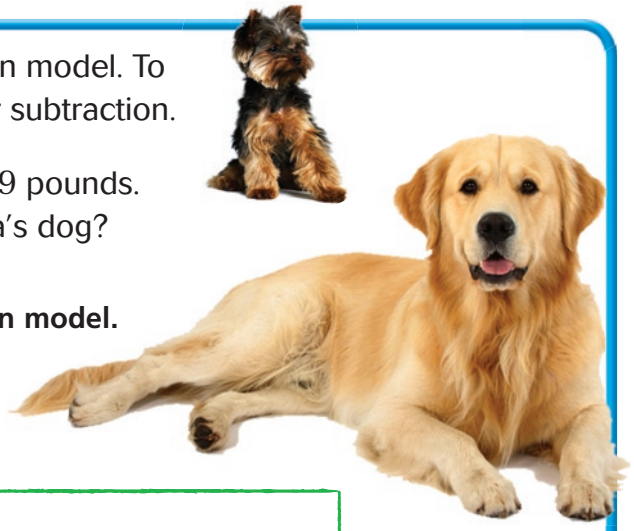
So, Evan's dog weighs 63 pounds.

MATHEMATICAL PRACTICES

Math Talk **Explain** how you know you have found the weight of Evan's dog.

To find how many times as much, use a multiplication model. To find how many more or fewer, model the addition or subtraction.

Evan's dog weighs 63 pounds. Oxana's dog weighs 9 pounds. How much more does Evan's dog weigh than Oxana's dog?



Example 2 Use an addition or subtraction model.

STEP 1 Draw a model. Let *n* represent the unknown.

Think: Let *n* represent the difference.

_____ [_____]

_____ [_____] [ ]

STEP 2 Use the model to write an equation. Find the value of *n*.

_____ − _____ = *n* **Think:** The model shows a difference.

63 − 9 = _____ Subtract.

The value of *n* is _____.

n is _____.

So, Evan's dog weighs 54 pounds more than Oxana's dog.

Share and Show

MATH BOARD

MATHEMATICAL PRACTICES

Math Talk **Explain** how you can choose a model to help solve a comparison problem.

1. Maria's dog weighs 6 times as much as her rabbit. Together the pets weigh 56 pounds. What does Maria's dog weigh?

Draw a model. Let *n* represent the unknown.

_____ [_____ | _____ | _____ | _____ | _____ | _____]

_____ [_____]

Write an equation to find the value of *n*. 7 × *n* = _____. *n* is _____ pounds.

Multiply to find how much Maria's dog weighs. 8 × 6 = _____

So, Maria's dog weighs _____ pounds.

Name _____

Draw a model. Write an equation and solve.

2. Last month Kim trained 3 times as many dogs as cats. If the total number of cats and dogs she trained last month is 28, how many cats did Kim train?

Draw a model.

Write an equation and solve.

3. How many more dogs than cats did Kim train?

Draw a model.

Write an equation and solve.

On Your Own

Practice: Copy and Solve **Draw a model.**

Write an equation and solve.

4. At the dog show, there are 4 times as many boxers as spaniels. If there are a total of 30 dogs, how many dogs are spaniels?

5. There are 5 times as many yellow labs as terriers in the dog park. If there are a total of 18 dogs, how many dogs are terriers?

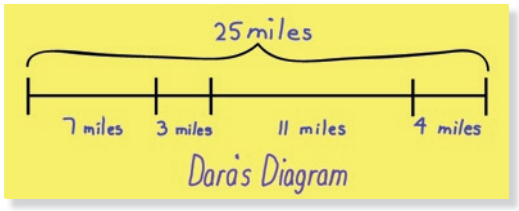
6. Ben has 3 times as many guppies as goldfish. If he has a total of 20 fish, how many guppies does he have?

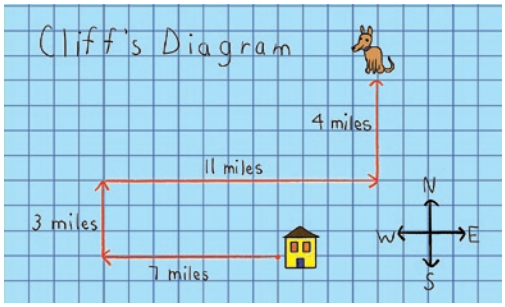
7. Carlita saw 5 times as many robins as cardinals while bird watching. She saw a total of 24 birds. How many more robins did she see than cardinals?

Problem Solving REAL WORLD

8. **Write Math** To get to a dog show, Mr. Luna first drives 7 miles west from his home and then 3 miles north. Next, he turns east and drives 11 miles. Finally, he turns north and drives 4 miles to the dog show. How far north of Mr. Luna's home is the dog show?

To solve the problem, Dara and Cliff drew diagrams. Which diagram is correct? **Explain**.





9. Valerie and Bret have a total of 24 dog show ribbons. Bret has twice as many ribbons as Valerie. How many ribbons does each have?

SHOW YOUR WORK

10. **H.O.T.** Noah built a fenced dog run that is 8 yards long and 6 yards wide. He placed posts at every corner and every yard along the length and width of the run. How many posts did he use?

11. **Test Prep** Brett and his mom paid $36 to attend a dog show. An adult ticket was 3 times the cost of a child's ticket. How much was an adult ticket?

Ⓐ $39

Ⓑ $36

Ⓒ $27

Ⓓ $9

FOR MORE PRACTICE:
Standards Practice Book, pp. P25–P26

Name _____

Multiply Tens, Hundreds, and Thousands

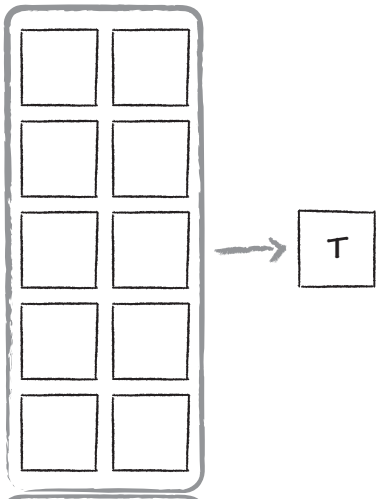
Essential Question How does understanding place value help you multiply tens, hundreds, and thousands?

UNLOCK the Problem REAL WORLD

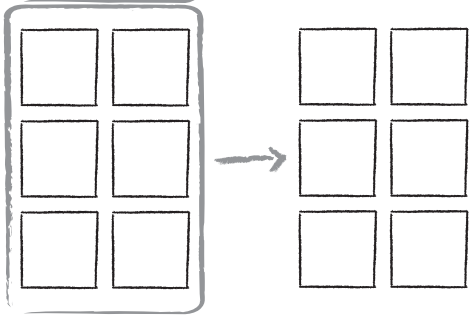
Each car on a train has 200 seats. How many seats are on a train with 8 cars?

Find 8×200.

One Way Draw a quick picture.



Think: 10 hundreds = 1,000



Think: 6 hundreds = 600

$1{,}000 + 600 =$ _____

Another Way Use place value.

$8 \times 200 = 8 \times$ _____ hundreds

$=$ _____ hundreds

$=$ _____ **Think:** 16 hundreds is 1 thousand, 6 hundreds.

So, there are _____ seats on a train with 8 cars.

MATHEMATICAL PRACTICES

Math Talk **Explain** how finding 8×2 can help you find 8×200.

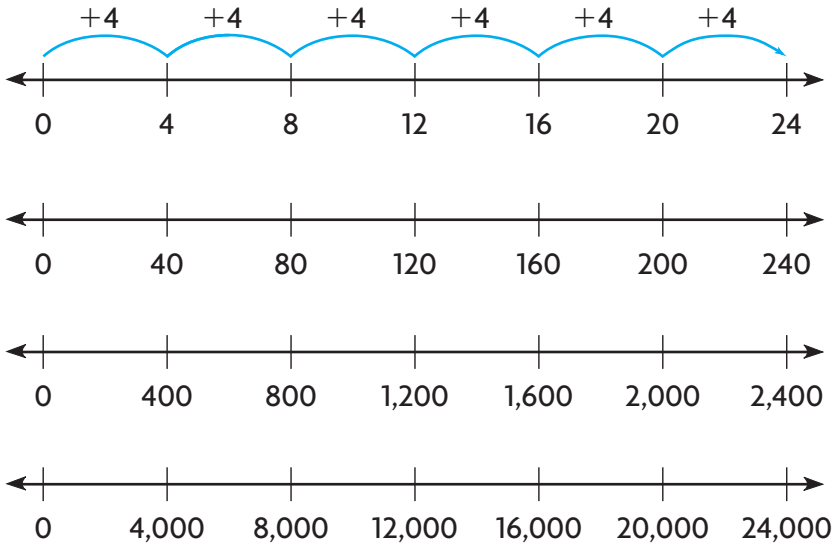
Other Ways

A **Use a number line.**

Bob's Sled Shop rents 4,000 sleds each month.
How many sleds does the store rent in 6 months?

Find 6 × 4,000.

Multiplication can be thought of as repeated addition.
Draw jumps to show the product.



$6 \times 4 = 24$ ← basic fact

$6 \times 40 = 240$

$6 \times 400 = 2{,}400$

$6 \times 4{,}000 = 24{,}000$

So, Bob's Sled Shop rents _____ sleds in 6 months.

B **Use patterns.**

Basic fact:

$3 \times 7 = 21$ ← basic fact

$3 \times 70 = 210$

$3 \times 700 =$ _____

$3 \times 7{,}000 =$ _____

Basic fact with a zero:

$8 \times 5 = 40$ ← basic fact

$8 \times 50 = 400$

$8 \times 500 =$ _____

$8 \times 5{,}000 =$ _____

- How does the number of zeros in the product of 8 and 5,000 compare to the number of zeros in the factors? **Explain.**

_____

_____

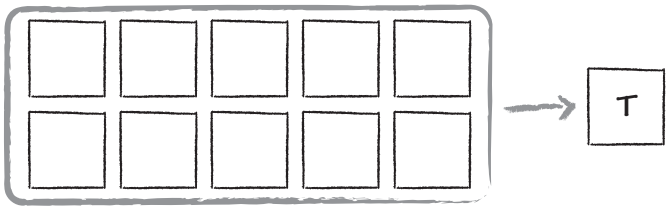
MATHEMATICAL PRACTICES

Math Talk **Describe** how the number of zeros in the factors and products changes in Example B.

Name _____

Share and Show

1. Use the drawing to find 2×500.



MATHEMATICAL PRACTICES

Math Talk **Explain** how to use place value to find 2×500.

$2 \times 500 =$ _____

Complete the pattern.

2. $3 \times 8 = 24$

$3 \times 80 =$ _____

$3 \times 800 =$ _____

$3 \times 8{,}000 =$ _____

3. $6 \times 2 = 12$

$6 \times 20 =$ _____

$6 \times 200 =$ _____

$6 \times 2{,}000 =$ _____

4. $4 \times 5 =$ _____

$4 \times 50 =$ _____

$4 \times 500 =$ _____

$4 \times 5{,}000 =$ _____

Find the product.

5. $6 \times 500 = 6 \times$ _____ hundreds

$=$ _____ hundreds

$=$ _____

6. $9 \times 5{,}000 = 9 \times$ _____ thousands

$=$ _____ thousands

$=$ _____

7. $9 \times 8{,}000 = 9 \times$ _____ thousands

$=$ _____ thousands

$=$ _____

8. $8 \times 7{,}000 = 8 \times$ _____ thousands

$=$ _____ thousands

$=$ _____

On Your Own

Find the product.

9. $7 \times 6{,}000 =$ _____

10. $4 \times 80 =$ _____

11. $6 \times 30 =$ _____

12. $9 \times 300 =$ _____

13. $5 \times 2{,}000 =$ _____

14. $3 \times 500 =$ _____

H.O.T. **Algebra** **Find the missing factor.**

15. _____ $\times 9{,}000 = 63{,}000$

16. $7 \times$ _____ $= 56{,}000$

17. $8 \times$ _____ $= 3{,}200$

UNLOCK the Problem REAL WORLD

18. Joe's Fun and Sun rents beach chairs. The store rented 300 beach chairs each month in April and in May. The store rented 600 beach chairs each month from June through September. How many beach chairs did the store rent during the 6 months?

Ⓐ 1,200 Ⓒ 3,000

Ⓑ 2,400 Ⓓ 5,400

a. What do you need to know? _____

_____

b. How will you find the number of beach chairs? _____

_____

c. Show the steps you use to solve the problem.

d. Complete the sentences.

For April and May, a total of _____ beach chairs were rented.

For June through September, a total of _____ beach chairs were rented.

Joe's Fun and Sun rented _____ beach chairs during the 6 months.

e. Fill in the bubble for the correct answer choice above.

19. Carmen has three $20 bills and five $10 bills. How much money does she have?

Ⓐ $110 Ⓒ $60

Ⓑ $100 Ⓓ $50

20. Dan has 7 rolls of pennies. Each roll has 50 pennies. How many pennies does he have?

Ⓐ 57 Ⓒ 350

Ⓑ 300 Ⓓ 400

FOR MORE PRACTICE:
Standards Practice Book, pp. P27–P28

Name _____

Estimate Products

Essential Question How can you estimate products by rounding and determine if exact answers are reasonable?

UNLOCK the Problem REAL WORLD

An elephant can reach as high as 23 feet with its trunk. It uses its trunk to pick up objects that weigh up to 3 times as much as a 165-pound person. About how much weight can an African elephant pick up with its trunk?

- Cross out the information you will not use.
- Circle the numbers you will use.
- How will you use the numbers to solve the problem?

_____

An African elephant is the largest living land mammal.

One Way Estimate by rounding.

STEP 1 Round the greater factor to the nearest hundred.

3×165

$\downarrow$

3×200

STEP 2 Use mental math.

Think: $3 \times 200 = 3 \times 2$ hundreds

$= 6$ hundreds

$=$ _____

So, an African elephant can pick up about 600 pounds with its trunk.

Another Way Estimate by finding two numbers the exact answer is between.

3×165

$\downarrow$

$3 \times 100 =$ _____

3×165

$\downarrow$

$3 \times 200 =$ _____

Think: 165 is between 100 and 200. Use those numbers to estimate.

So, the African elephant can pick up between 300 and 600 pounds.

1. Is 200 less than or greater than 165? _____
2. So, would the product of 3 and 165 be less than or greater than 600? _____

Math Talk MATHEMATICAL PRACTICES

Is the exact answer closer to 300 or 600? Why?

Describe Reasonableness You can estimate a product to find whether an exact answer is reasonable.

Tell whether an exact answer is reasonable.

Eva's horse eats 86 pounds each week. Eva solved the equation below to find how much feed she needs for 4 weeks.

$4 \times 86 = \square$

Eva says she needs 344 pounds of feed.
Is her answer reasonable?

One Way Estimate.

4×86

↓ **Think:** Round to the nearest ten.

_____ × _____ = _____

344 is close to 360.

Another Way Find two numbers the exact answer is between.

4×86

↓

_____ × _____ = _____

4×86

↓

_____ × _____ = _____

_____ is between _____ and _____.

So, 344 pounds of feed is reasonable.

Share and Show

MATH BOARD

MATHEMATICAL PRACTICES

Math Talk Is an exact answer of 11,065 reasonable? **Explain.**

1. Estimate the product by rounding.

$5 \times 2{,}213$

↓

_____ × _____ = _____

2. Estimate the product by finding two numbers the exact answer is between.

$5 \times 2{,}213$

_____ × _____ = _____

$5 \times 2{,}213$

_____ × _____ = _____

Name _____

Tell whether the exact answer is reasonable.

3. Kira needs to make color copies of a horse show flyer. The printer can make 24 copies in 1 minute. Kira says the printer makes 114 copies in 6 minutes.

4. Jones Elementary is having a car wash to raise money for a community horse trail. Each car wash ticket costs $8. Tiara says the school will receive $1,000 if 125 tickets are sold.

On Your Own

Tell whether the exact answer is reasonable.

5. Mrs. Hense sells a roll of coastal Bermuda horse hay for $58. She says she will make $174 if she sells 3 rolls.

6. Mr. Brown sells horse supplies. A pair of riding gloves sells for $16. He says he will make $144 if he sells 9 pairs.

7. A walking path for horses is 94 feet long. Carlos says that if a horse walks the length of the path 3 times, it will have walked 500 feet.

8. **Test Prep** Which shows the two estimates that the exact answer is between?

$$4 \times 389$$

Ⓐ 300 and 400

Ⓑ 700 and 1,200

Ⓒ 600 and 1,000

Ⓓ 1,200 and 1,600

Connect to Reading

Make Predictions

As you read a story, you make predictions about what might happen next or about how the story will end.

When you solve a math problem, you make predictions about what your answer might be.

An *estimate* is a prediction because it helps you to determine whether your answer is correct. For some problems, it is helpful to make two estimates—one that is less than the exact answer and one that is greater.

H.O.T. **Predict whether the exact answer will be *less than* or *greater than* the estimate. Explain your answer.**

9. The food stand at the zoo sold 2,514 pounds of hamburger last month. The average cost of a pound of hamburger is $2. Jeremy estimates that about $6,000 worth of hamburger was sold last month.

10. A zoo bought 2,240 pounds of fresh food for the bears this month. The average cost of a pound of food is $4. Jeremy estimates that about $8,000 was spent on fresh food for the bears this month.

FOR MORE PRACTICE:
Standards Practice Book, pp. P29–P30

Name _____

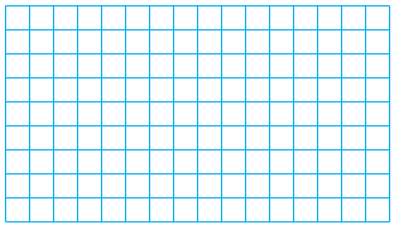
Multiply Using the Distributive Property

Essential Question How can you use the Distributive Property to multiply a 2-digit number by a 1-digit number?

Investigate

Materials ■ color pencils, grid paper

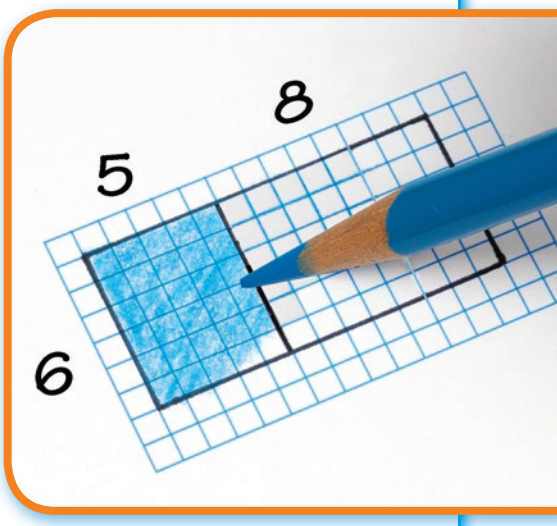
You can use the Distributive Property to break apart numbers to make them easier to multiply.



The **Distributive Property** states that multiplying a sum by a number is the same as multiplying each addend by the number and then adding the products.

A. Outline a rectangle on the grid to model 6×13.

B. Think of 13 as $5 + 8$. Break apart the model to show $6 \times (5 + 8)$. Label and shade the smaller rectangles. Use two different colors.



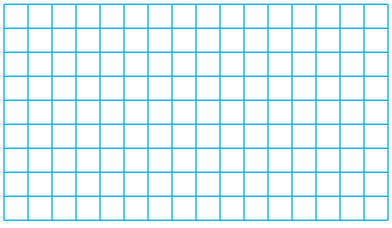
Use the Distributive Property. Find the product each smaller rectangle represents. Then find the sum of the products. Record your answers.

_____ × _____ = _____

_____ × _____ = _____

_____ + _____ = _____

C. Model 6×13 again. Think of 13 as a different sum. Break apart the model to show $6 \times$ (_____ + _____). Find the product each smaller rectangle represents. Then find the sum of the products. Record your answers.



_____ × _____ = _____

_____ × _____ = _____

_____ + _____ = _____

Draw Conclusions

1. **Explain** how you found the total number of squares in each model in Steps B and C.

2. **Compare** the sums of the products in Steps B and C with those of your classmates. What can you conclude?

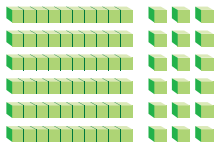
3. H.O.T. **Evaluate** To find 7×23, is it easier to break apart the factor, 23, as $20 + 3$ or $15 + 8$? Explain.

Make Connections

Another way to model the problem is to use base-ten blocks to show tens and ones.

STEP 1

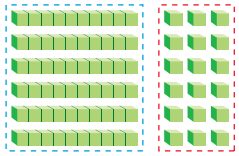
Use base-ten blocks to model 6×13.



6 rows of 1 ten 3 ones

STEP 2

Break the model into tens and ones.

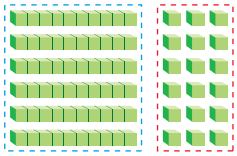


$(6 \times 1 \text{ ten})$ $(6 \times 3 \text{ ones})$

(6×10) (6×3)

STEP 3

Add the tens and the ones to find the product.



$(6 \times 10) + (6 \times 3)$

$60 + 18$

So, $6 \times 13 = 78$.

In Step 2, the model is broken into two parts. Each part shows a **partial product**. The partial products are 60 and 18.

MATHEMATICAL PRACTICES

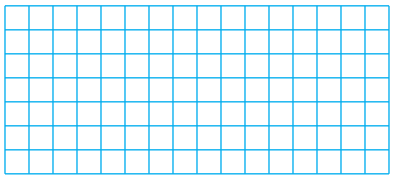
Math Talk How does breaking apart the model into tens and ones make finding the product easier?

Name _____

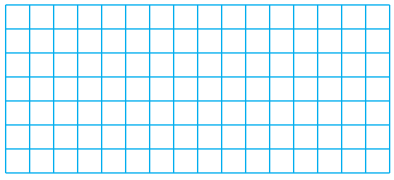
Share and Show MATH BOARD

Model the product on the grid. Record the product.

1. $3 \times 13 =$ _____

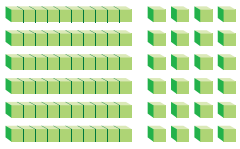


2. $5 \times 14 =$ _____

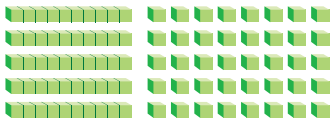


Find the product.

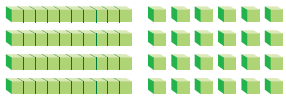
3. $6 \times 14 =$ _____



4. $5 \times 18 =$ _____



5. $4 \times 16 =$ _____



Use grid paper or base-ten blocks to model the product. Then record the product.

6. $7 \times 12 =$ _____

7. $5 \times 16 =$ _____

8. $9 \times 13 =$ _____

9. $8 \times 11 =$ _____

10. $3 \times 15 =$ _____

11. $4 \times 12 =$ _____

12. $8 \times 18 =$ _____

13. $2 \times 19 =$ _____

14. $6 \times 17 =$ _____

15. $3 \times 19 =$ _____

16. $7 \times 15 =$ _____

17. $9 \times 16 =$ _____

18. Write Math **Explain** how modeling partial products can be used to find the products of greater numbers.

_____

_____

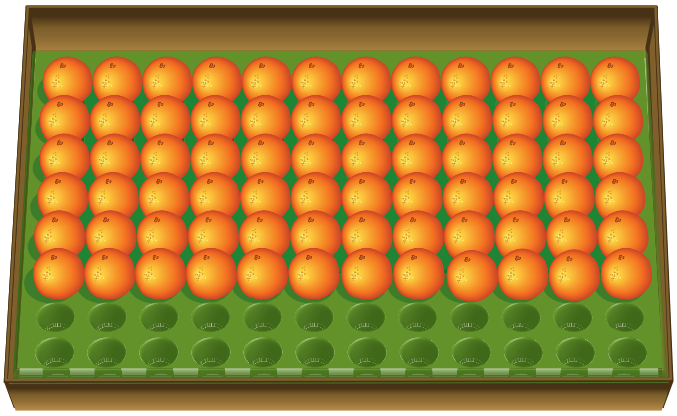
_____

Problem Solving REAL WORLD

Pose a Problem

19. Kyle went to a fruit market. The market sells a wide variety of fruits and vegetables. The picture at the right shows a display of oranges.

Write a problem that can be solved using the picture.



Pose a problem.

Solve your problem.

- Describe how you could change the problem by changing the number of rows of oranges and the number of empty spaces in the picture. Then solve the problem.

FOR MORE PRACTICE:
Standards Practice Book, pp. P31–P32

Name _____

Multiply Using Expanded Form

Essential Question How can you use expanded form to multiply a multidigit number by a 1-digit number?

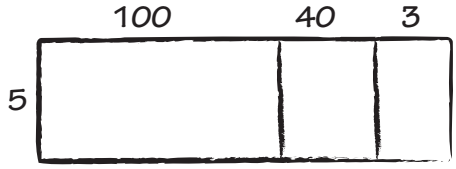
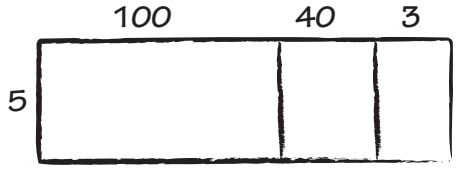
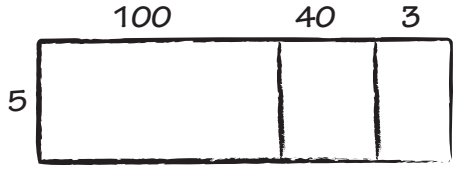
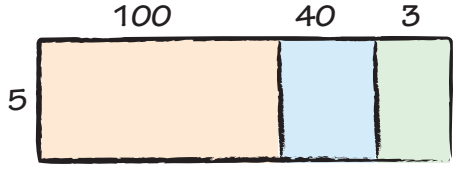
UNLOCK the Problem REAL WORLD

Example 1 Use expanded form.

Multiply. 5×143

$5 \times 143 = 5 \times (\_\_\_\_ + \_\_\_\_ + \_\_\_\_)$ Write 143 in expanded form.

$= (5 \times 100) + (\_\_\_\_ \times \_\_\_\_) + (\_\_\_\_ \times \_\_\_\_)$ Use the Distributive Property.

SHADE THE MODEL	THINK AND RECORD
STEP 1 	Multiply the hundreds. $(5 \times 100) + (5 \times 40) + (5 \times 3)$ $\_\_\_\_ + (5 \times 40) + (5 \times 3)$
STEP 2 	Multiply the tens. $(5 \times 100) + (5 \times 40) + (5 \times 3)$ $500 + \_\_\_\_ + (5 \times 3)$
STEP 3 	Multiply the ones. $(5 \times 100) + (5 \times 40) + (5 \times 3)$ $500 + 200 + \_\_\_\_$
STEP 4 	Add the partial products. 500 200 + 15

So, $5 \times 143 = \_\_\_\_$.

Math Talk MATHEMATICAL PRACTICES

Is your answer reasonable? **Explain.**

Example 2 Use expanded form.

The gift shop at the animal park orders 3 boxes of toy animals. Each box has 1,250 toy animals. How many toy animals does the shop order?

Multiply. $3 \times 1{,}250$

STEP 1

Write 1,250 in expanded form. Use the Distributive Property.

$3 \times 1{,}250 = 3 \times (\_\_\_\_ + \_\_\_\_ + \_\_\_\_)$

$= (3 \times 1{,}000) + (\_\_\_\_ \times \_\_\_\_) + (\_\_\_\_ \times \_\_\_\_)$

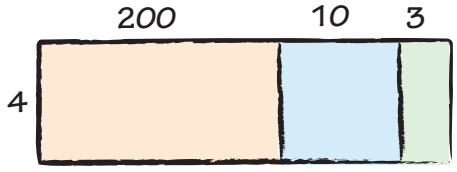
STEP 2

Add the partial products.

So, the shop ordered _____ animals.

Share and Show MATH BOARD

1. Find 4×213. Use expanded form.



$4 \times 213 = \_\_\_\_ \times (\_\_\_\_ + \_\_\_\_ + \_\_\_\_)$

$= (\_\_\_\_ \times \_\_\_\_) + (\_\_\_\_ \times \_\_\_\_) + (\_\_\_\_ \times \_\_\_\_)$ Use the Distributive Property.

$= \_\_\_\_ + \_\_\_\_ + \_\_\_\_$

$= \_\_\_\_$

Record the product. Use expanded form to help.

2. $4 \times 59 = \_\_\_\_$

3. $3 \times 288 = \_\_\_\_$

MATHEMATICAL PRACTICES

Math Talk **Explain** how using expanded form makes finding the product easier.

Name _____

On Your Own

Record the product. Use expanded form to help.

4. $4 \times 21 =$ _____

5. $6 \times 35 =$ _____

6. $5 \times 479 =$ _____

7. $8 \times 362 =$ _____

8. $7 \times 596 =$ _____

9. $2 \times 3{,}283 =$ _____

10. $4 \times 2{,}924 =$ _____

11. $6 \times 4{,}121 =$ _____

Problem Solving REAL WORLD

Use the table for 12–13.

Sacco Nursery Plant Sale

Tree	Regular Price	Discounted Price (4 or more)
Flowering Cherry	$59	$51
Italian Cypress	$79	$67
Muskogee Crape Myrtle	$39	$34
Royal Empress	$29	$25

12. What is the total cost of 3 Italian cypress trees?

13. H.O.T. **What's the Error?** Tanya says that the difference in the cost of 4 flowering cherry trees and 4 Muskogee crape myrtles is $80. Is she correct? **Explain.**

SHOW YOUR WORK

14. Write Math What is the greatest possible product of a 2-digit number and a 1-digit number? **Explain** how you know.

15. **Test Prep** Which expression shows how to multiply 5×381 by using place value and expanded form?

Ⓐ $(5 \times 3) + (5 \times 8) + (5 \times 1)$

Ⓑ $(5 \times 300) + (5 \times 800) + (5 \times 100)$

Ⓒ $(5 \times 300) + (5 \times 80) + (5 \times 1)$

Ⓓ $(5 \times 300) + (5 \times 80) + (5 \times 10)$

FOR MORE PRACTICE:
Standards Practice Book, pp. P33–P34

Name _____

Multiply Using Partial Products

Essential Question How can you use place value and partial products to multiply by a 1-digit number?

UNLOCK the Problem REAL WORLD

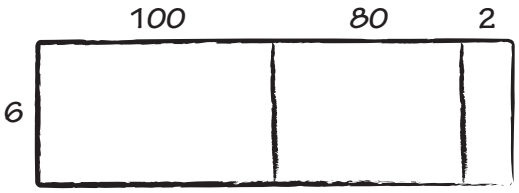
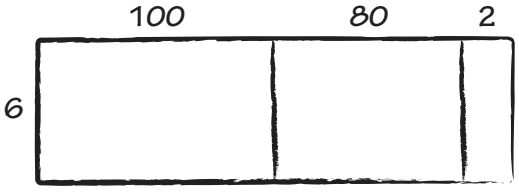
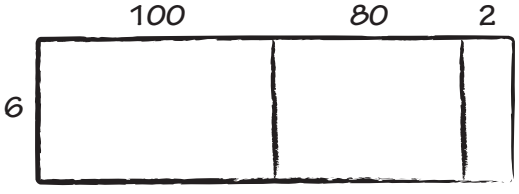
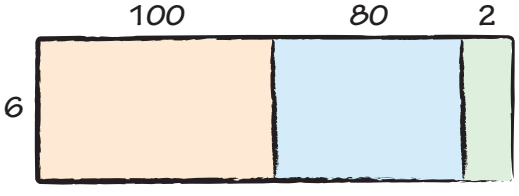
CONNECT How can you use what you know about the Distributive Property to break apart numbers to find products of 3-digit and 1-digit numbers?

- How can you write 182 as a sum of hundreds, tens, and ones?

_____

Use place value and partial products.

Multiply. 6×182 **Estimate.** $6 \times 200 =$ _____

	SHADE THE MODEL	THINK AND RECORD
STEP 1		182 × 6 _____ ← Multiply the hundreds. 6 × 1 hundred = 6 hundreds
STEP 2		182 × 6 600 _____ ← Multiply the tens. 6 × 8 tens = 48 tens
STEP 3		182 × 6 600 480 _____ ← Multiply the ones. 6 × 2 ones = 12 ones
STEP 4		182 × 6 600 480 + 12 ← Add the partial products.

So, $6 \times 182 = 1{,}092$. Since 1,092 is close to the estimate of 1,200, it is reasonable.

MATHEMATICAL PRACTICES

Math Talk How can you use the Distributive Property to find 4×257?

Example

Use place value and partial products.

Multiply. $2 \times 4{,}572$. **Estimate.** $2 \times 5{,}000 =$ _____

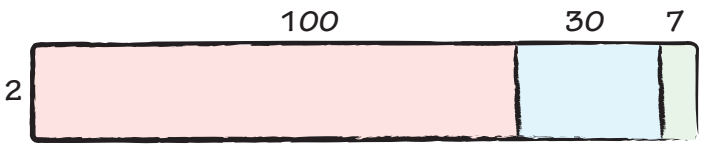
$$\begin{array}{r} 4{,}572 \\ \times \quad 2 \\ \hline \\ \\ \\ + \\ \hline \\ \end{array}$$

← 2×4 thousands $=$ 8 thousands
← 2×5 hundreds $=$ 1 thousand
← 2×7 tens $=$ 1 hundred, 4 tens
← 2×2 ones $=$ 4 ones
← Add the partial products.

Share and Show

MATH BOARD

1. Use the model to find 2×137.



$$\begin{array}{r} 137 \\ \times \quad 2 \\ \hline \\ \\ + \\ \hline \\ \end{array}$$

Estimate. Then record the product.

2. Estimate: _____

$$\begin{array}{r} 190 \\ \times \quad 3 \\ \hline \\ \\ + \\ \hline \\ \end{array}$$

3. Estimate: _____

$$\begin{array}{r} 471 \\ \times \quad 4 \\ \hline \\ \\ + \\ \hline \\ \end{array}$$

4. Estimate: _____

$$\begin{array}{r} \$3{,}439 \\ \times \quad 7 \\ \hline \\ \\ \\ + \\ \hline \\ \end{array}$$

MATHEMATICAL PRACTICES

Math Talk **Explain** how using place value and expanded form makes it easier to find products.

Name _____

On Your Own

Estimate. Then record the product.

5. Estimate: _____

$$\begin{array}{r} \$53 \\ \times \quad 4 \\ \hline \square \\ + \square \\ \hline \square \end{array}$$

6. Estimate: _____

$$\begin{array}{r} \$473 \\ \times \quad 9 \\ \hline \square \\ \square \\ + \square \\ \hline \square \end{array}$$

7. Estimate: _____

$$\begin{array}{r} 608 \\ \times \quad 6 \\ \hline \square \\ \square \\ + \square \\ \hline \square \end{array}$$

Estimate. Then record the product.

8. Estimate: _____

$$\begin{array}{r} 342 \\ \times \quad 8 \\ \hline \end{array}$$

9. Estimate: _____

$$\begin{array}{r} 738 \\ \times \quad 5 \\ \hline \end{array}$$

10. Estimate: _____

$$\begin{array}{r} 4{,}852 \\ \times \quad 3 \\ \hline \end{array}$$

Practice: Copy and Solve Estimate. Then record the product.

11. 2×78

12. $2 \times \$210$

13. $9 \times \$682$

14. $8 \times 8{,}145$

H.O.T. **Algebra** Find the missing digit.

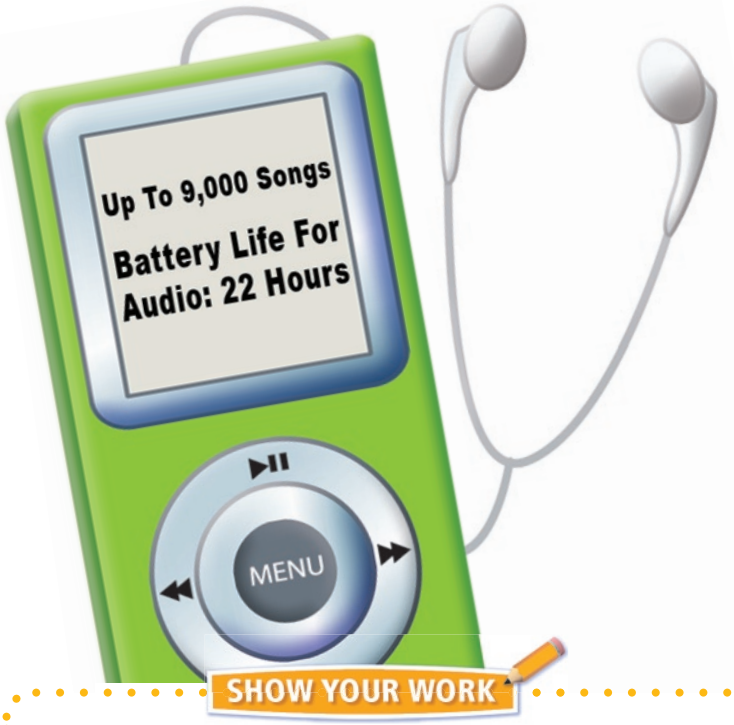
15.
$$\begin{array}{r} \square 5 \\ \times \quad 7 \\ \hline 455 \end{array}$$

16.
$$\begin{array}{r} 248 \\ \times \quad 3 \\ \hline \square 44 \end{array}$$

17.
$$\begin{array}{r} \$395 \\ \times \quad \square \\ \hline \$2{,}370 \end{array}$$

18.
$$\begin{array}{r} 3{,}748 \\ \times \quad 4 \\ \hline 1\,\square{,}992 \end{array}$$

Problem Solving REAL WORLD



19. Look at the picture. Kylie has 832 songs on her portable media player. Lance has 3 times as many songs. How many fewer songs can Lance add to his player than Kylie can add to hers?

20. H.O.T. The sum of a 3-digit number and a 1-digit number is 217. The product of the numbers is 642. If one number is between 200 and 225, what are the numbers?

21. H.O.T. **What's the Error?** Hal says that the greatest product of a 3-digit number and a 1-digit number is 8,891. Is he correct? **Explain**.

22. **Test Prep** Mrs. Jackson bought 6 gallons of juice for a party. Each gallon has 16 cups. If 3 cups of juice were left over, how many cups did people drink at the party?

Ⓐ 13 cups Ⓒ 78 cups

Ⓑ 48 cups Ⓓ 93 cups

FOR MORE PRACTICE:
Standards Practice Book, pp. P35–P36

Name _____

Mid-Chapter Checkpoint

Vocabulary

Choose the best term from the box to complete the sentence.

Vocabulary
Distributive Property
factor
partial products

1. To find the product of a two-digit number and a 1-digit number, you can multiply the tens, multiply the ones, and find the sum of each _____. (p.62)

2. The _____ states that multiplying a sum by a number is the same as multiplying each addend by the number and then adding the products. (p.61)

Concepts and Skills

Write a comparison sentence.

3. $5 \times 9 = 45$

_____ times as many as _____ is _____.

4. $24 = 6 \times 4$

_____ is _____ times as many as _____.

5. $54 = 6 \times 9$

_____ is _____ times as many as _____.

6. $8 \times 6 = 48$

_____ times as many as _____ is _____.

Estimate. Then record the product.

7. Estimate: _____

$$\begin{array}{r} 75 \\ \times\ 5 \\ \hline \end{array}$$

8. Estimate: _____

$$\begin{array}{r} 12 \\ \times\ 6 \\ \hline \end{array}$$

9. Estimate: _____

$$\begin{array}{r} 28 \\ \times\ 3 \\ \hline \end{array}$$

10. Estimate: _____

$$\begin{array}{r} \$43 \\ \times\ \ 6 \\ \hline \end{array}$$

Record the product. Use expanded form to help.

11. $5 \times 64 =$ _____

12. $3 \times 272 =$ _____

Fill in the bubble completely to show your answer.

13. There are 6 times as many dogs as cats. If the total number of dogs and cats is 21, how many dogs are there?

Ⓐ 3

Ⓑ 6

Ⓒ 15

Ⓓ 18

14. The table below shows the number of calories in 1 cup of different kinds of berries. How many calories are in 4 cups of blackberries?

Berry Nutrition

Berry	Number of Calories in 1 Cup
Blackberries	62
Blueberries	83
Raspberries	64
Strawberries	46

Ⓐ 62

Ⓑ 83

Ⓒ 248

Ⓓ 308

15. The skating rink rents 200 pairs of skates in a month. How many pairs of skates does the rink rent in 4 months?

Ⓐ 800

Ⓑ 600

Ⓒ 400

Ⓓ 200

Name _____

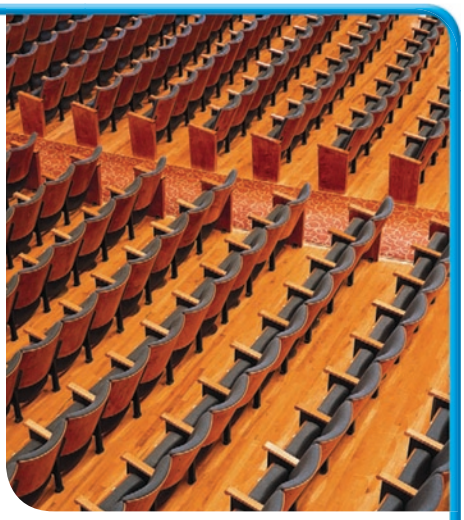
Multiply Using Mental Math

Essential Question How can you use mental math and properties to help you multiply numbers?

UNLOCK the Problem REAL WORLD

Properties of Multiplication can make multiplication easier.

There are 4 sections of seats in the Playhouse Theater. Each section has 7 groups of seats. Each group has 25 seats. How many seats are there in the theater?



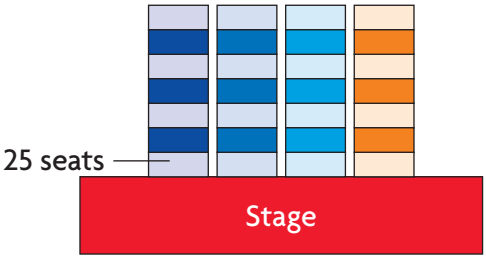
Find $4 \times 7 \times 25$.

$4 \times 7 \times 25 = 4 \times 25 \times 7$ Commutative Property

$= \_\_\_\_\_ \times 7$ **Think:** $4 \times 25 = 100$

$= \_\_\_\_\_$ **Think:** $100 \times 7 = 700$

So, there are 700 seats in the theater.



MATHEMATICAL PRACTICES

Math Talk How could knowing 4×25 help you find 6×25?

Try This! Use mental math and properties.

A **Find $(6 \times 10) \times 10$.**

$(6 \times 10) \times 10 = 6 \times (10 \times 10)$ Associative Property

$= 6 \times \_\_\_\_\_$

$= \_\_\_\_\_$

B **Find $(4 \times 9) \times 250$.**

$(4 \times 9) \times 250 = 250 \times (4 \times 9)$ Commutative Property

$= (250 \times 4) \times 9$ Associative Property

$= \_\_\_\_\_ \times 9$

$= \_\_\_\_\_$

Remember

The Associative Property states that you can group factors in different ways and get the same product. Use parentheses to group the factors you multiply first.

More Strategies Choose the strategy that works best with the numbers in the problems.

Examples

A **Use friendly numbers.**

Multiply. 24×250

Think: $24 = 6 \times 4$ and $4 \times 250 = 1{,}000$

$24 \times 250 = 6 \times 4 \times 250$

$= 6 \times$ _____

$=$ _____

B **Use halving and doubling.**

Multiply. 16×50

Think: 16 can be divided evenly by 2.

$16 \div 2 = 8$ Find half of 16.

$8 \times 50 =$ _____ Multiply.

$2 \times 400 =$ _____ Double 400.

C **Use addition.**

Multiply. 4×625

Think: 625 is 600 plus 25.

$4 \times 625 = 4 \times (600 + 25)$

$= (4 \times 600) + (4 \times 25)$

$=$ _____ $+$ _____

$=$ _____

D **Use subtraction.**

Multiply. 5×398

Think: 398 is 2 less than 400.

$5 \times 398 = 5 \times (400 - 2)$

$= (5 \times$ _____$) - (5 \times 2)$

$= 2{,}000 -$ _____

$=$ _____

- What property is being used in Examples C and D? _____

Share and Show

MATH BOARD

1. Break apart the factor 112 to find 7×112 by using mental math and addition.

$7 \times 112 = 7 \times ($_____ $+ 12)$

$=$ _____

$=$ _____

$=$ _____

Name _____

Find the product. Tell which strategy you used.

2. $4 \times 6 \times 50$

3. 5×420

4. 6×298

On Your Own

MATHEMATICAL PRACTICES

Math Talk **Explain** how using an addition strategy is related to using a subtraction strategy.

Find the product. Tell which strategy you used.

5. 14×50

6. 32×25

7. $14 \times 25 \times 4$

8. $4 \times 15 \times 25$

9. 5×198

10. 5×250

Practice: Copy and Solve Use a strategy to find the product.

11. 16×400

12. $3 \times 31 \times 10$

13. 3×199

14. $3 \times 1{,}021$

H.O.T. **Algebra** Use mental math to find the unknown number.

15. $21 \times 40 = 840$, so $21 \times 42 =$ _____.

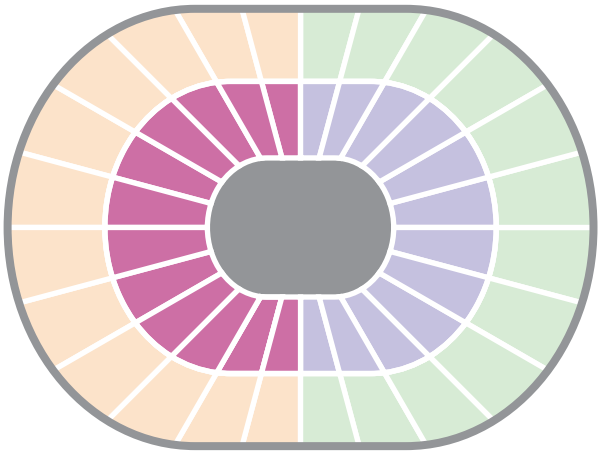
16. $9 \times 60 = 540$, so $18 \times 30 =$ _____.

Problem Solving REAL WORLD

Use the table for 17–18.

Arena Ticket Prices Per Game

Section	Full Season	15-Game Plan	Gate Price
K	$44	$46	$48
L	$30	$32	$35
M	$25	$27	$30
N	$20	$22	$25



SHOW YOUR WORK

17. Three thousand, forty-three people buy tickets at the gate for Section N. How much money is collected for Section N at the gate?

18. Tina and 3 of her friends buy the full season plan for Section M. If there are 45 games in the full season, how much money do they spend?

19. H.O.T. **What's the Error?** Louisa says that $40 \times 3{,}210$ is 12,840. **Describe** and correct her error.

20. **Test Prep** Which of the following shows a strategy to use to find 3×198?

Ⓐ $(3 \times 200) - (3 \times 2)$

Ⓑ $(3 \times 200) + (3 \times 2)$

Ⓒ $(3 \times 198) - 6$

Ⓓ $198 - 6$

FOR MORE PRACTICE:
Standards Practice Book, pp. P37–P38

Name _____

Problem Solving • Multistep Multiplication Problems

Essential Question When can you use the *draw a diagram* strategy to solve a multistep multiplication problem?

UNLOCK the Problem REAL WORLD

At the sea park, one section in the stadium has 9 rows with 18 seats in each row. In the center of each of the first 6 rows, 8 seats are in the splash zone. How many seats are not in the splash zone?

Use the graphic organizer to help you solve the problem.

Read the Problem

What do I need to find?

I need to find the number of seats that

_____ in the splash zone.

What information do I need to use?

There are 9 rows with _____ seats in each row of the section.

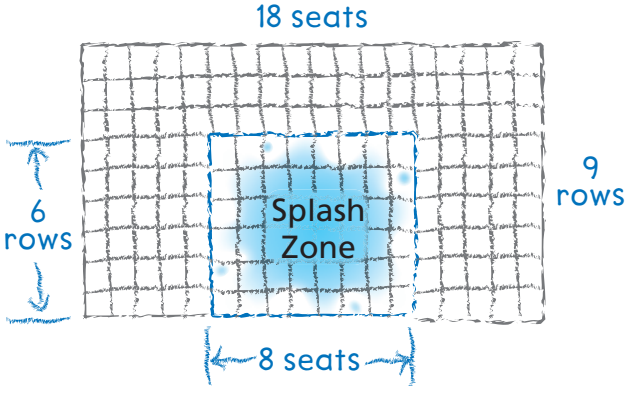
There are 6 rows with _____ seats in each row of the splash zone.

How will I use the information?

I can _____ to find both the number of seats in the section and the number of seats in the splash zone.

Solve the Problem

I drew a diagram of the section to show 9 rows of 18 seats. In the center, I outlined a section to show the 6 rows of 8 seats in the splash zone.



$$\begin{array}{r} 18 \\ \times\ 9 \\ \hline \end{array}$$ ← total number of seats in the section

$$\begin{array}{r} 8 \\ \times 6 \\ \hline \end{array}$$ ← seats in the splash zone

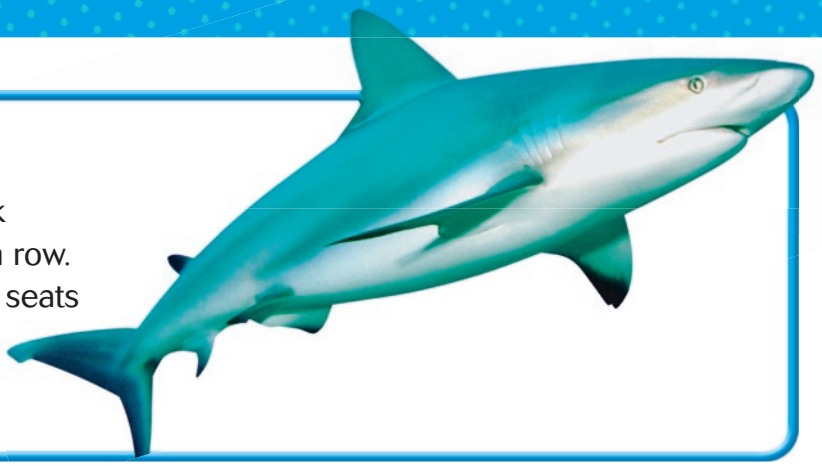
1. What else do you need to do to solve the problem?

_____

_____

Try Another Problem

At the sea park, one section of the shark theater has 8 rows with 14 seats in each row. In the middle of the section, 4 rows of 6 seats are reserved. How many seats are not reserved?



Read the Problem	Solve the Problem
What do I need to find?	
What information do I need to use?	
How will I use the information?	

2. How did your diagram help you solve the problem?

MATHEMATICAL PRACTICES

Math Talk **Explain** how you can check your answer.

Name _____

Share and Show

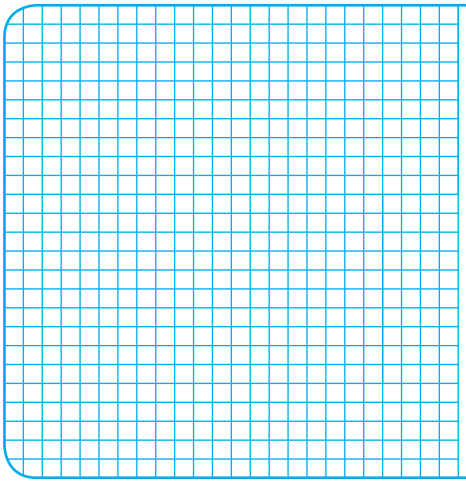
MATH BOARD

UNLOCK the Problem Tips

- Use the Problem Solving MathBoard.
- Underline important facts.
- Choose a strategy you know.

1. The seats in Sections A and B of the stadium are all taken for the last show. Section A has 8 rows of 14 seats each. Section B has 6 rows of 16 seats each. How many people are seated in Sections A and B for the last show?

First, draw and label a diagram. **Next**, find the number of seats in each section.



Section A **Section B**

Last, find the total number of seats. _____ + _____ = _____

There are _____ people seated in Sections A and B for the last show.

SHOW YOUR WORK

2. **What if** Sections A and B each had 7 rows? How many people would have been seated in Sections A and B?

_____

3. Carol, Ann, and Liz each bought a toy fish. Carol's fish is 10 inches longer than Ann's fish. Liz's fish is 2 inches longer than twice the length of Ann's fish. Ann's fish is 12 inches long. Find the length of each toy fish.

_____

4. There are 8 rows of 22 chairs set up for an awards ceremony at the school. In each row, the 2 chairs on each end are reserved for students receiving awards. The rest of the chairs are for guests. How many chairs are there for guests?

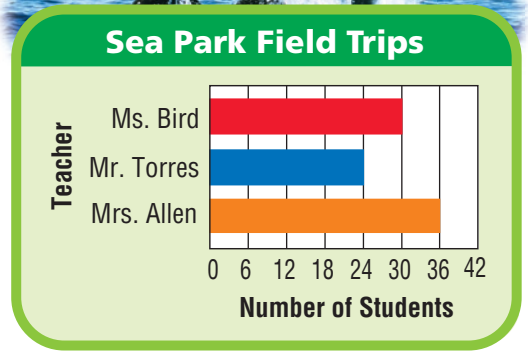
_____

On Your Own

Choose a STRATEGY

- Act It Out
- Draw a Diagram
- Find a Pattern
- Make a Table or List
- Solve a Simpler Problem

Use the graph for 5–6.



5. Mr. Torres took his students to the dolphin show. Each row in the stadium had 11 seats. One adult sat at each end of a row, and each group of 4 students was seated between 2 adults. Mr. Torres sat by himself. How many adults were there?

6. Write Math Another stadium section has 24 rows of 10 seats each. Describe at least two ways Mrs. Allen's class can sit if an equal number of students sits in each row.

SHOW YOUR WORK

7. Kari, Juan, Tami, and Brad are the first four people in line to see the Open Ocean exhibit. Kari is not first in line. Tami has at least two people ahead of her in line. Juan is third. Give the order of the first four people in line.

8. H.O.T. Nell made a secret code. Each code word has 2 letters. Each word begins with a consonant and ends with a vowel. How many code words can Nell make with 3 consonants and 2 vowels?

9. **Test Prep** A teacher has 29 students in her class. She gives each student 3 stickers and has no stickers left over. How many stickers did she have?

Ⓐ 67 Ⓑ 78 Ⓒ 87 Ⓓ 88

FOR MORE PRACTICE:
Standards Practice Book, pp. P39–P40

Name _____

Multiply 2-Digit Numbers with Regrouping

Essential Question How can you use regrouping to multiply a 2-digit number by a 1-digit number?

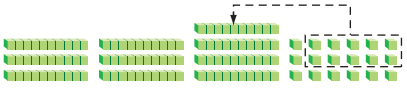
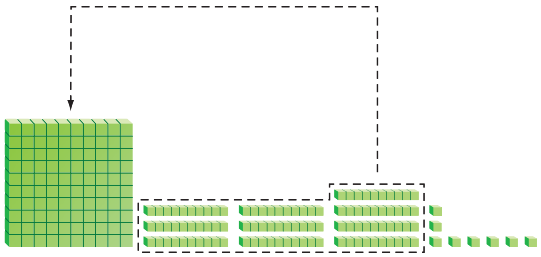
UNLOCK the Problem REAL WORLD

A Thoroughbred racehorse can run at speeds of up to 60 feet per second. During practice, Celia's horse runs at a speed of 36 feet per second. How far does her horse run in 3 seconds?

- Underline important information.
- Is there information you will not use? If so, cross out the information.

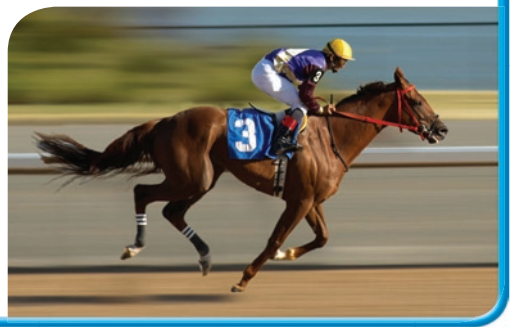
Example 1

Multiply. 3×36 **Estimate.** $3 \times 40 =$ _____

MODEL	THINK	RECORD
STEP 1 	Multiply the ones. 3×6 ones $= 18$ ones Regroup the 18 ones.	$\begin{array}{r} {\scriptstyle 1} \\ 36 \\ \times\ 3 \\ \hline 8 \end{array}$ Regroup 18 ones as 1 ten 8 ones.
STEP 2 	Multiply the tens. 3×3 tens $= 9$ tens Add the regrouped ten. 9 tens + 1 ten = 10 tens	$\begin{array}{r} {\scriptstyle 1} \\ 36 \\ \times\ 3 \\ \hline 108 \end{array}$ 10 tens is the same as 1 hundred 0 tens.

So, Celia's racehorse runs _____ feet in 3 seconds.

Since _____ is close to the estimate of _____, the answer is reasonable.

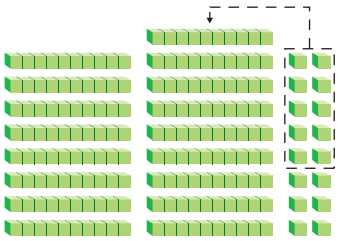
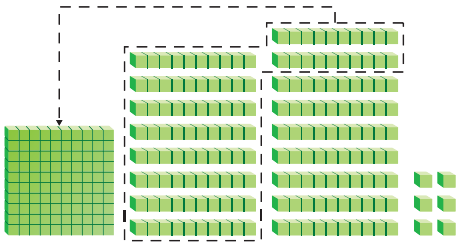


MATHEMATICAL PRACTICES

Math Talk Look at Step 1. **Explain** how the blocks show the regrouping of the 18 ones.

Example 2

Multiply. 8×22 **Estimate.** $8 \times 20 =$ _____

MODEL	THINK	RECORD
STEP 1 	Multiply the ones. 8×2 ones $= 16$ ones Regroup the 16 ones.	$\begin{array}{r} {\scriptstyle 1} \\ 22 \\ \times\ 8 \\ \hline 6 \end{array}$ Regroup 16 ones as 1 ten 6 ones.
STEP 2 	Multiply the tens. 8×2 tens $= 16$ tens Add the regrouped ten. 16 tens $+$ 1 ten $= 17$ tens	$\begin{array}{r} {\scriptstyle 1} \\ 22 \\ \times\ 8 \\ \hline 176 \end{array}$ 17 tens is the same as 1 hundred 7 tens.

So, $8 \times 22 =$ _____. Since _____ is close to the estimate of _____, it is reasonable.

Try This! **Multiply.** $7 \times \$68$

Estimate. $7 \times \$68$

Use partial products.

$$\begin{array}{r} \$68 \\ \times\ \ 7 \\ \hline \end{array}$$

Use regrouping.

$$\begin{array}{r} \$68 \\ \times\ \ 7 \\ \hline \end{array}$$

- Look at the partial products and regrouping methods above. How are the partial products 420 and 56 related to 476?

_____

Name _____

Share and Show

MATH BOARD

1. Use the model to find the product.

$2 \times 36 =$ _____

Estimate. Then record the product.

2. Estimate: _____

$$\begin{array}{r} 42 \\ \times\ 4 \\ \hline \end{array}$$

3. Estimate: _____

$$\begin{array}{r} 32 \\ \times\ 2 \\ \hline \end{array}$$

4. Estimate: _____

$$\begin{array}{r} 81 \\ \times\ 5 \\ \hline \end{array}$$

5. Estimate: _____

$$\begin{array}{r} \$63 \\ \times\ 7 \\ \hline \end{array}$$

MATHEMATICAL PRACTICES

Math Talk **Describe** the steps for using place value and regrouping to find 3×78.

On Your Own

Estimate. Then record the product.

6. Estimate: _____

$$\begin{array}{r} 33 \\ \times\ 2 \\ \hline \end{array}$$

7. Estimate: _____

$$\begin{array}{r} \$25 \\ \times\ 3 \\ \hline \end{array}$$

8. Estimate: _____

$$\begin{array}{r} 36 \\ \times\ 8 \\ \hline \end{array}$$

9. Estimate: _____

$$\begin{array}{r} \$94 \\ \times\ 5 \\ \hline \end{array}$$

Practice: Copy and Solve **Estimate. Then record the product.**

10. 3×82 **11.** 9×41 **12.** 6×75 **13.** $7 \times \$23$ **14.** $8 \times \$54$

15. 5×49 **16.** 8×97 **17.** 4×68 **18.** $9 \times \$68$ **19.** $6 \times \$73$

H.O.T. **Algebra** **Write a rule. Find the unknown numbers.**

20.

Carton	____	1	2	3	4	5
Eggs	____	12	24		48	

21.

Row	____	2	3	4	5	6
Seats	____	32	48	64		

_____ _____

Problem Solving REAL WORLD

Use the table for 22–23.

Running Speeds	
Animal	**Speed (feet per second)**
Black-tailed Jackrabbit	51
Desert Cottontail	22

▲ Desert Cottontail

22. At the speeds shown, how much farther could a black-tailed jackrabbit run than a desert cottontail in 7 seconds?

23. A black-tailed jackrabbit hops about 7 feet in a single hop. How far can it hop in 5 seconds?

24. Mr. Wright bought a 3-pound bag of cat food and a 5-pound bag of dog food. There are 16 ounces in each pound. How many ounces of pet food did Mr. Wright buy?

SHOW YOUR WORK

25. H.O.T. The sum of two numbers is 31. The product of the two numbers is 150. What are the numbers?

26. Write Math 6×87 is greater than 5×87. How much greater? **Explain** how you know without multiplying.

27. **Test Prep** Mrs. Sawyer bought a book for $25 and 3 toys for $13 each. How much change should she get back from a $100 bill?

Ⓐ $26 Ⓒ $46

Ⓑ $36 Ⓓ $56

FOR MORE PRACTICE:
Standards Practice Book, pp. P41–P42

Name _____

Multiply 3-Digit and 4-Digit Numbers with Regrouping

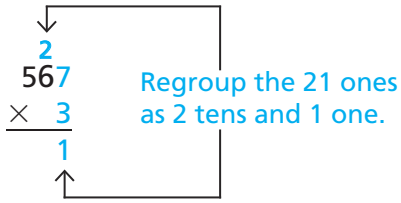
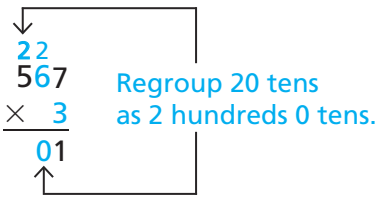
Essential Question How can you use regrouping to multiply?

UNLOCK the Problem REAL WORLD

Alley Spring, in Missouri, produces an average of 567 million gallons of water per week. How many gallons of water do the springs produce in 3 weeks?

Multiply. 3×567

Estimate. $3 \times$ _____ = _____

THINK	RECORD
STEP 1 Multiply the ones. 3×7 ones = _____ ones Regroup the 21 ones.	 2 567 × 3 1 Regroup the 21 ones as 2 tens and 1 one.
STEP 2 Multiply the tens. 3×6 tens = _____ tens Add the regrouped tens. 18 tens + 2 tens = 20 tens Regroup the 20 tens.	 22 567 × 3 01 Regroup 20 tens as 2 hundreds 0 tens.
STEP 3 Multiply the hundreds. 3×5 hundreds = _____ hundreds Add the regrouped hundreds. 15 hundreds + 2 hundreds = 17 hundreds	22 567 × 3 1,701 17 hundreds is the same as 1 thousand 7 hundreds.

So, Alley Spring produces _____ gallons of water in 3 weeks.

Example

Use an estimate or an exact answer.

The table shows the prices of three vacation packages. Jake, his parents, and his sister want to choose a package.

Lakefront Vacations

	Adult	Child
Package A	$1,299	$619
Package B	$849	$699
Package C	$699	$484

A About how much would Package C cost Jake's family?

STEP 1

Estimate the cost for 2 adults.

$2 \times \$699$

↓

$2 \times \$700 =$ _____

STEP 2

Estimate the cost for 2 children.

$2 \times \$484$

↓

$2 \times \$500 =$ _____

STEP 3

Add to estimate the total cost.

$$\begin{array}{r} \square \\ + \quad \square \\ \hline \square \end{array}$$

So, Package C would cost Jake's family about $2,400.

Math Talk MATHEMATICAL PRACTICES

Explain how you know you can use an estimate.

B Jake's family wants to compare the total costs of Packages A and C. Which plan costs more? How much more does it cost?

Package A

Adults	Children	Total Cost
$1,299	$619	
× 2	× 2	+

Package C

Adults	Children	Total Cost
$699	$484	
× 2	× 2	+

Subtract to compare the total costs of the packages.

$$\begin{array}{r} \$3{,}836 \\ -\ \$2{,}366 \\ \hline \square \end{array}$$

Math Talk MATHEMATICAL PRACTICES

Explain why you need an exact answer.

So, Package _____ would cost _____ more than Package _____.

Name _____

Share and Show

1. Tell what is happening in Step 1 of the problem.

_____

_____

STEP 1	STEP 2	STEP 3	STEP 4
$\overset{2}{1,274} \times 6 = 4$	$\overset{42}{1,274} \times 6 = 44$	$\overset{1\,42}{1,274} \times 6 = 644$	$\overset{1\,42}{1,274} \times 6 = 7,644$

Estimate. Then find the product.

2. Estimate: _____

$$603 \times 4$$

3. Estimate: _____

$$1,935 \times 7$$

4. Estimate: _____

$$\$8,326 \times 5$$

MATHEMATICAL PRACTICES

Math Talk **Explain** how you can use estimation to find how many digits the product $4 \times 1,861$ will have.

On Your Own

Estimate. Then find the product.

5. Estimate: _____

$$\$3,316 \times 8$$

6. Estimate: _____

$$\$2,900 \times 7$$

7. Estimate: _____

$$\$4,123 \times 6$$

8. Estimate: _____

$$\$1,893 \times 4$$

9. Estimate: _____

$$\$9,042 \times 8$$

10. Estimate: _____

$$3,286 \times 5$$

H.O.T. Practice: Copy and Solve Compare. Write <, >, or =.

11. $5 \times 352 \bigcirc 4 \times 440$

12. $6 \times 8,167 \bigcirc 9,834 \times 5$

13. $3,956 \times 4 \bigcirc 5 \times 7,692$

14. $740 \times 7 \bigcirc 8 \times 658$

15. $4 \times 3,645 \bigcirc 5 \times 2,834$

16. $6,573 \times 2 \bigcirc 4,365 \times 3$

Problem Solving REAL WORLD

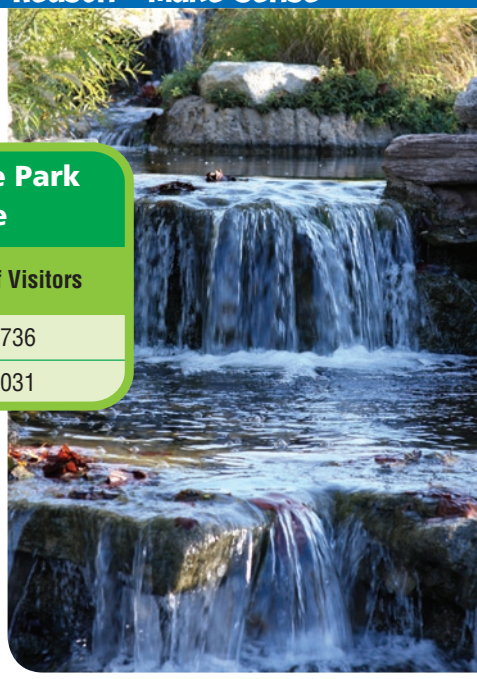


Table Rock State Park Attendance

Year	Number of Visitors
2000	869,736
2007	1,160,031

17. Look at the table. About how many more people visited the park in 2007 than in 2000?

18. Philadelphia, Pennsylvania, is 2,147 miles from Salt Lake City, Utah, and 2,868 miles from Portland, Oregon. What is the difference in the round-trip distances between Philadelphia and each of the other two cities? **Explain** whether you need an estimate or an exact answer.

SHOW YOUR WORK

19. H.O.T. **Sense or Nonsense?** Joe says that the product of a 4-digit number and a 1-digit number is always a 4-digit number. Does Joe's statement make sense? **Explain**.

20. **Test Prep** What number is 150 more than the product of 5 and 4,892?

Ⓐ 24,610

Ⓑ 24,160

Ⓒ 24,061

Ⓓ 25,610

FOR MORE PRACTICE:
Standards Practice Book, pp. P43–P44

Name _____

Solve Multistep Problems Using Equations

Essential Question How can you represent and solve multistep problems using equations?

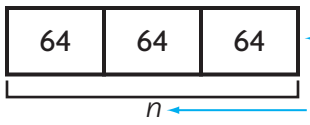
UNLOCK the Problem REAL WORLD

Crismari's computer has 3 memory cards with 64 gigabytes of space each and 2 memory cards with 16 gigabytes of space each. The files on her computer use 78 gigabytes of space. How much memory does her computer have left?

- Underline the important information.

One Way Use multiple single-step equations.

STEP 1 Find how much memory is on 3 memory cards with 64 gigabytes of space each.



3 cards with 64 gigabytes.

n ← Total memory on 3 cards with 64 gigabytes.

$3 \times 64 = n$

_____ $= n$

STEP 2 Find how much memory is on 2 memory cards with 16 gigabytes of space.

2 cards with 16 gigabytes.

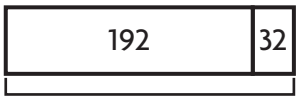
p ← Total memory on 2 cards with 16 gigabytes.

$2 \times 16 = p$

_____ $= p$

STEP 3 Find the total memory on the computer.

Total memory on 64-gigabyte cards. Total memory on 16-gigabyte cards.



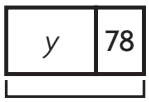
A ← Total memory on computer.

$192 + 32 = A$

_____ $= A$

STEP 4 The files use 78 gigabytes of space. Find how much memory the computer has left.

memory left memory used



224 ← Total memory on the computer.

$224 - 78 = y$

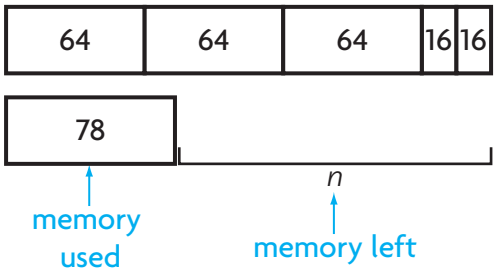
_____ $= y$

So, Crismari has _____ gigabytes of memory left on her computer.

Order of Operations The Order of Operations is a special set of rules that gives the order in which calculations are done in an expression. First, multiply and divide from left to right. Then, add and subtract from left to right.

Another Way

Use one multistep equation.



$3 \times 64 + 2 \times 16 - 78 = n$

_____ + _____ × _____ − _____ = n

_____ + _____ − _____ = n

_____ − _____ = n

_____ = n

Share and Show

MATH BOARD

1. Use the order of operations to find the value of n.

$5 \times 17 + 5 \times 20 - 32 = n$

_____ + _____ × _____ − _____ = n ← First, multiply 5×17.

_____ + _____ − _____ = n ← Next, multiply 5×20.

_____ − _____ = n ← Then, add the two products.

_____ = n ← Finally, subtract to find n.

Find the value of *n*.

2. $3 \times 22 + 7 \times 41 - 24 = n$

_____ = n

3. $4 \times 34 + 6 \times 40 - 66 = n$

_____ = n

4. $2 \times 62 + 8 \times 22 - 53 = n$

_____ = n

5. $6 \times 13 + 9 \times 34 - 22 = n$

_____ = n

Math Talk MATHEMATICAL PRACTICES

If you add before multiplying, will you get the same answer? **Explain**.

Name _____

On Your Own

Find the value of *n*.

6. $8 \times 42 + 3 \times 59 - 62 = n$

_____ $= n$

7. $6 \times 27 + 2 \times 47 - 83 = n$

_____ $= n$

Problem Solving

8. Maggie has 3 binders with 25 stamps in each binder. She has 5 binders with 24 baseball cards in each binder. If she gives 35 stamps to a friend, how many stamps and cards does she have left?

9. Maddox has 4 boxes with 32 marbles in each box. He has 7 boxes with 18 shells in each box. If he gets 20 marbles from a friend, how many marbles and shells does he have?

10. **Test Prep** Trina has 2 bags with 14 pinecones in each bag. She has 7 boxes with 15 acorns in each box. If she trades 5 pinecones for 10 acorns, how many pinecones and acorns does she have?

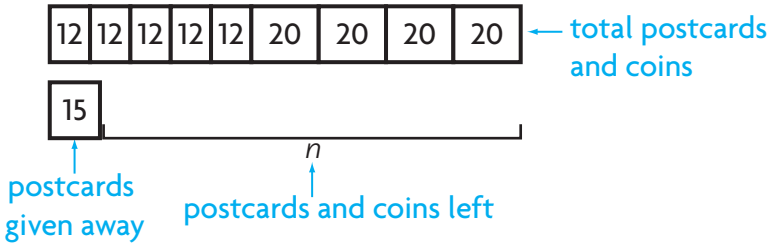
Ⓐ 28 Ⓒ 133

Ⓑ 105 Ⓓ 138

H.O.T. What's the Error?

11. Dominic has 5 books with 12 postcards in each book. He has 4 boxes with 20 coins in each box. If he gives 15 post cards to a friend, how many postcards and coins does he have?

Dominic drew this model.



Dominic used these steps to solve.

$5 \times 12 + 4 \times 20 - 15 = n$

$60 + 4 \times 20 - 15 = n$

$64 \times 20 - 15 = n$

$1{,}280 - 15 = n$

$1{,}265 = n$

Look at the steps Dominic used to solve this problem. Find and describe his error.

Use the correct steps to solve the problem.

So, there are _____ postcards and coins left.

FOR MORE PRACTICE:
Standards Practice Book, pp. P45–P46

Name _____

Chapter Review/Test

Vocabulary

Choose the best term from the box.

Vocabulary
Commutative Property
Distributive Property
partial product

1. To find the product of a 3-digit number and a 1-digit number, you can multiply the ones, multiply the tens, multiply the hundreds, and find the sum of each _____. (p. 62)

2. The _____ states that multiplying a sum by a number is the same as multiplying each addend by the number and then adding the products. (p. 61)

Concepts and Skills

Estimate. Then find the product.

3. Estimate: _____

$$\begin{array}{r} 55 \\ \times\ 2 \\ \hline \end{array}$$

4. Estimate: _____

$$\begin{array}{r} \$25 \\ \times\ 3 \\ \hline \end{array}$$

5. Estimate: _____

$$\begin{array}{r} 306 \\ \times\ 8 \\ \hline \end{array}$$

6. Estimate: _____

$$\begin{array}{r} \$924 \\ \times\ 5 \\ \hline \end{array}$$

7. Estimate: _____

$$\begin{array}{r} 3{,}563 \\ \times\ 9 \\ \hline \end{array}$$

8. Estimate: _____

$$\begin{array}{r} 7{,}048 \\ \times\ 7 \\ \hline \end{array}$$

9. Estimate: _____

$$\begin{array}{r} 6{,}203 \\ \times\ 3 \\ \hline \end{array}$$

10. Estimate: _____

$$\begin{array}{r} 8{,}798 \\ \times\ 6 \\ \hline \end{array}$$

GO Online Assessment Options Chapter Test

Fill in the bubble completely to show your answer.

11. Which number sentence shows the Distributive Property?

Ⓐ $2 \times 3 = 3 \times 2$

Ⓑ $5 \times 0 = 0$

Ⓒ $3 \times (5 + 2) = (3 \times 5) + (3 \times 2)$

Ⓓ $(3 \times 7) \times 4 = 3 \times (7 \times 4)$

12. Look at the pattern below. What is the missing number?

$$5 \times 6 = 30$$
$$5 \times 60 = 300$$
$$5 \times 600 = 3{,}000$$
$$5 \times \blacksquare = 30{,}000$$

Ⓐ 8,000

Ⓑ 6,000

Ⓒ 600

Ⓓ 60

13. Which comparison sentence represents the equation?

$$45 = 5 \times 9$$

Ⓐ 9 more than 5 is 45.

Ⓑ 9 is 5 times as many as 45.

Ⓒ 5 is 4 times as many as 45.

Ⓓ 45 is 5 times as many as 9.

14. There are 4 times as many alligators as crocodiles. If the total number of alligators and crocodiles is 40, how many alligators are there?

Ⓐ 40

Ⓑ 32

Ⓒ 24

Ⓓ 8

Name _____

Fill in the bubble completely to show your answer.

15. Gardeners at Seed Stop are planting seeds in 12-row seed trays. They plant 8 seeds in each row. How many plants will there be in each tray if all of the seeds germinate, or grow?

Ⓐ 84 Ⓒ 96

Ⓑ 86 Ⓓ 104

16. Which shows the product of $4 \times 15 \times 25$?

Ⓐ 150 Ⓒ 1,500

Ⓑ 1,200 Ⓓ 1,600

17. A Broadway musical group will have 9 performances. The theater can seat 2,518 people. If all of the seats at each performance are taken, how many people will see the show?

Ⓐ 18,592 Ⓒ 22,662

Ⓑ 22,652 Ⓓ 31,622

18. The table below shows the type of film sold and the number of rolls in one pack at a local gift shop.

Gift Shop Film

Type of Film (pack of 4 rolls)
36 exposures
24 exposures
12 exposures

Hannah buys 3 packs of 36 exposure film and 2 packs of 24 exposure film. She uses 8 rolls of film. How many rolls does she have left?

Ⓐ 8 Ⓒ 20

Ⓑ 12 Ⓓ 24

Constructed Response

19. John's grade has 3 classrooms. Each classroom has 14 tables. Two students sit at each table. About how many students are there in all?
Use pictures, words, or numbers to show how you know.

Performance Task

20. Justin has $450 to buy supplies for the school computer lab. He buys 8 boxes of printer paper that cost $49 each.

A About how much money does Justin spend on the printer paper? **Describe** how you made your estimate.

B Find the actual amount of money Justin spends on the printer paper. **Explain** whether your estimate is close to the actual price.

C Will Justin have enough money left over to buy 3 packages of blank DVDs that cost $17 each? **Explain** your answer.