Launch Activity 1

Launch Activity
Multiplication and Division

Fascinating Farming

Corn is the most grown crop in the United States. But there are also many other types of crops grown on U.S. farms, such as cotton, soybeans, fruits and vegetables, and wheat. These crops are harvested for use in the U.S. and for export around the world.

Being a farmer is not easy! Extreme weather, pests, and disease can wipe out entire crops. A crop failure in one state is a problem for people around the world who rely on those crop harvests.

The next time you choose a piece of fruit or a vegetable, consider the farmer or farm family who might have grown it. Then consider—would you like to work on a farm?

Farm Facts

- There are about 2 million farms in operation in the United States.
- The average farm size is 444 acres.
- 96% of all U.S. farms are family farms.

Three Reads

First, read the story to understand the situation.

Next, read to understand the math.

Then, read to ask what mathematical questions could be asked about the situation.

A small family farm grows corn, cucumbers, strawberries, and tomatoes in an area that is a square. The sides of the square are 10 yards each. The square will be divided by 2 lines into 4 rectangles. Each crop will be grown in its own rectangle.

Go Online

For the interactive lesson

Read the final question. Make a plan to solve the problem.

A small family farm grows corn, cucumbers, strawberries, and tomatoes in an area that is a square. The sides of the square are 10 yards each. The square will be divided by 2 lines into 4 rectangles. Each crop will be grown in its own rectangle.

Divide the area into 4 rectangles so that the space for growing strawberries is 48 square yards.

Write, model, or draw to solve the problem.

Discuss with a partner or in a group.

Math Talk

Using information from the rectangles you made, what equation can you write that equals 100?

Chapter 3

Name _____

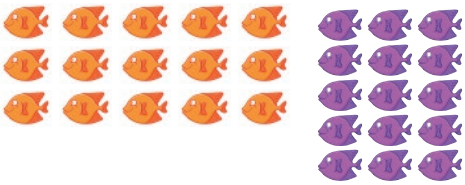
Multiply by 1-Digit Numbers

Show What You Know

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

MATH in the Real World

The Arctic Lion's Mane Jellyfish is one of the largest known animals. Its tentacles can be as long as 120 feet. 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

Go Online For more help

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.

Connect to Vocabulary

Review Words
- ✓ estimate
- expanded form
- factor
- ✓ place value
- product
- ✓ regroup
- ✓ rounding

Preview Words
Distributive Property
partial product

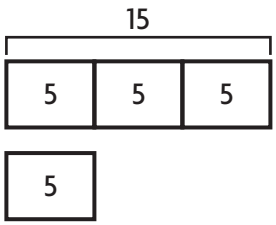
Name _____

Multiplication Comparisons

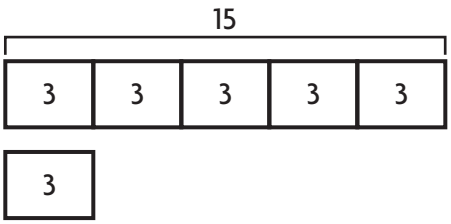
I Can use models and equations to solve multiplication comparisons.

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

Draw a model and write an equation to solve.

- What do you need to compare?

_____

_____

MODEL

Carly ☐

Jean ☐ ☐ ☐ ☐

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 Jean has.

So, Jean has _____ pennies.

Math Talk

- 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*.

_____

_____

_____

MP Construct arguments and critique reasoning of others.

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

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?

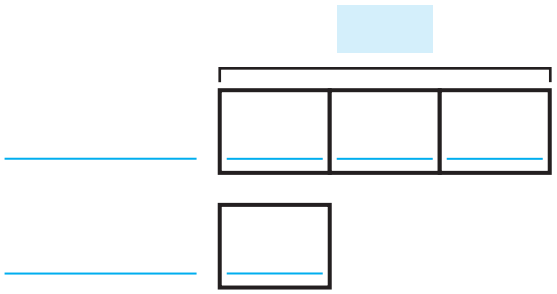
- How many rabbits does Miguel have? _____
- How many rabbits does Sara have?

_____

_____

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 to solve.

Rabbit food costs $4 and dog food costs $16. How many times as much does the dog food cost as the rabbit food?

How much does the rabbit food cost? _____

How much does the dog food cost? _____

How many times as much does the dog food cost as the rabbit food?

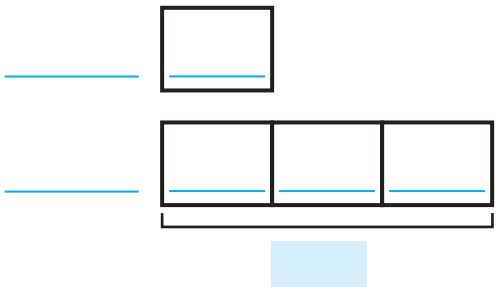
_____ = *n* × _____

The value of n 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?



So, there are _____ students in chorus.

Write an equation and solve.

24 = _____ × _____

n = _____

The value of *n* is _____.

Math Talk MP Attend to precision.

Explain how you could write the equation a different way.

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.

Write a comparison sentence.

4. $108 = 9 \times 12$

_____ is _____ times as many as _____.

5. $8 \times 4 = 32$

_____ times as many as _____ is _____.

On Your Own

Write a comparison sentence.

6. $5 \times 7 = 35$

_____ times as many as _____ is _____.

7. $99 = 11 \times 9$

_____ is _____ times as many as _____.

8. One week, Alexi and Silvia collected canned goods for a food drive. On Monday, Alexi collected 4 boxes and Silvia collected 2 boxes. At the end of the week, Alexi had 3 times as many boxes as he had on Monday. Silvia had 4 times as many boxes as she had on Monday. Together, how many boxes of canned goods did they have at the end of the week?

9. Cooper has 14 goldfish. Nando has 7 goldfish. Write an equation to show how many times as many goldfish Cooper has than Nando.

10. MP Write a comparison sentence about pet food that could be represented using the equation $12 = 4 \times 3$.

UNLOCK the Problem Real World

11. Luca has 72 baseball cards. Han has 9 baseball cards. How many times as many baseball cards does Luca have as Han has?

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.

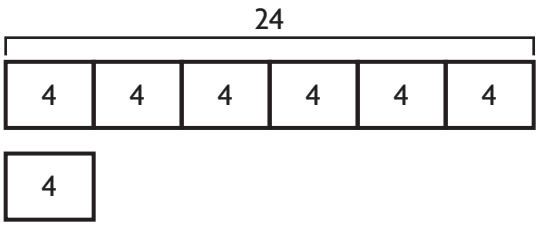
d. Write an equation and solve.

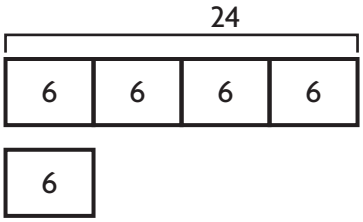
_____ = _____ × _____

_____ = _____

So, Luca has _____ times as many baseball cards as Han has.

12. Complete the statements to describe each model.





24 is ☐ times as many as ☐.

24 is ☐ times as many as ☐.

Name _____

Multiplication Comparisons

Write a comparison sentence.

1. $6 \times 3 = 18$

   6 times as many as 3 is 18.

2. $63 = 7 \times 9$

   _____ is _____ times as many as _____.

3. $5 \times 11 = 55$

   _____ times as many as _____ is _____.

4. $48 = 8 \times 6$

   _____ is _____ times as many as _____.

Write an equation.

5. 2 times as many as 8 is 16.

   _____

6. 42 is 6 times as many as 7.

   _____

7. 3 times as many as 5 is 15.

   _____

8. 36 is 12 times as many as 3.

   _____

Problem Solving Real World

9. Metin is 14 years old. Zeki is 7 years old. How many times as old as Zeki is Metin?

   _____

10. There are 27 campers. This is nine times as many as the number of counselors. How many counselors are there?

    _____

11. **Write Math** Draw a model, and write an equation to represent "4 times as many as 3 is 12." Explain your work.

    _____

    _____

Lesson Check

12. Write an equation that represents this comparison sentence.

24 is 4 times as many as 6.

13. Write a comparison sentence that represents this equation.

$5 \times 9 = 45$

Spiral Review

14. Which symbol makes the following statement true?

547,098 ◯ 574,908

15. What is the standard form for 200,000 + 80,000 + 700 + 6?

16. Sean and Leona are playing a computer game. Sean scored 72,491 points. Leona scored 19,326 points more than Sean. How many points did Leona score?

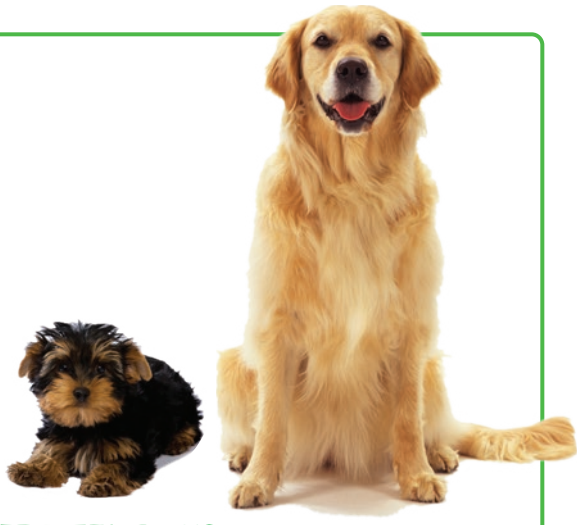
17. Rochelle ran 13 miles in one week. She ran 4 more miles than that the following week. How many miles did she run in all?

Name _____

Comparison Problems

I Can draw models and write equations to help solve comparison problems.

UNLOCK the Problem Real World

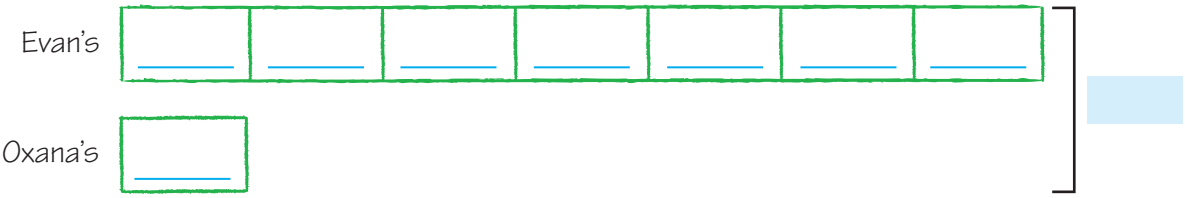


Evan's dog weighs 7 times as much as Oxana's dog. Together, the dogs weigh 72 pounds. How much does Evan's dog weigh?

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:** 8 times what number 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.

Math Talk MP Construct arguments and critique reasoning of others.

How can you tell if you found the correct weight of Evan's dog?

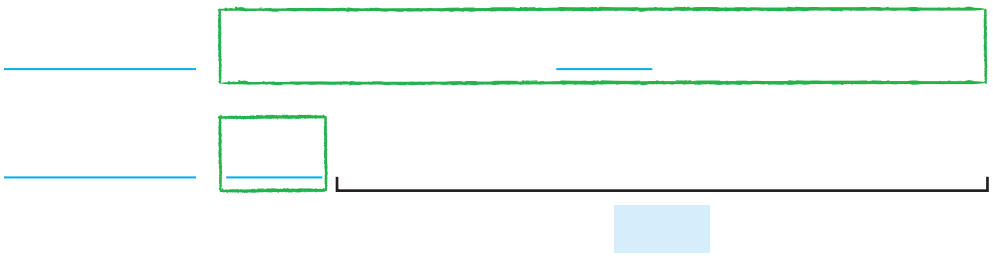
To find how many times as much, use a multiplication model. To find how many more or fewer, model the addition or subtraction.

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

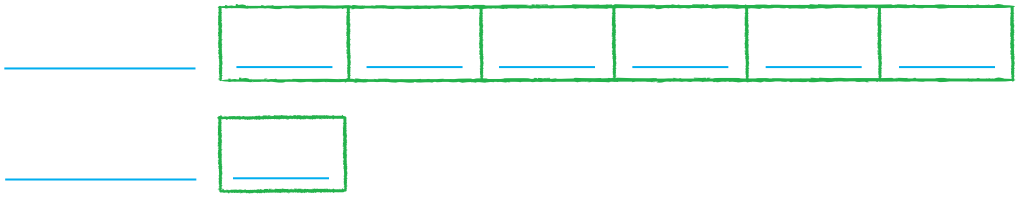
Math Talk

MP Reason abstractly and quantitatively.

How do you know which model to use to 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 Nikita 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 Nikita train?

Draw a model.

Write an equation and solve.

3. How many more dogs than cats did Nikita 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 18 dogs at the dog park, how many yellow labs are there?

6. Vadim has 3 times as many guppies as goldfish. If he has 28 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 · Applications

8. Cienna and Sven are solving math problems using equations. Tell whether each person's equation is *true* or *false*. Explain your answer.

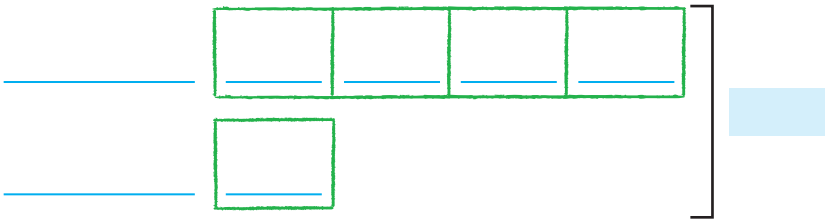
Cienna	Sven
$5 \times 8 = 8 + 8 + 8 + 8 + 8$	$56 \div 7 = 15 - 6$

9. Is the equation true or false? Explain.

$$5 \times 11 = 5 + 5 + 5 + 5 + 5$$

10. Noah built a fenced dog run that is 4 times as long as it is wide. The width is 3 yards. He placed posts at every corner and every yard along the length and width of the run. How many posts did he use?

11. Last weekend, Mandy collected 4 times as many shells as Cameron. Together, they collected 60 shells. How many shells did Mandy collect? Complete the bar model. Then, write an equation and solve.



Show the Math

Demonstrate Your Thinking

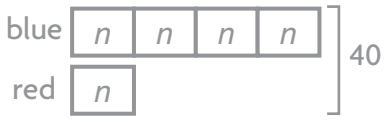
Name _____

Comparison Problems

Draw a model. Write an equation and solve.

1. Sarita made a necklace using 4 times as many blue beads as red beads. She used a total of 40 beads. How many blue beads did Sarita use?

Think: Sarita used a total of 40 beads. Let *n* represent the number of red beads.



$5 \times n = 40$; $5 \times 8 = 40$;

$4 \times 8 = 32$ blue beads

2. At the zoo, there were 3 times as many monkeys as lions. Tom counted a total of 11 lions. How many monkeys were there?

Problem Solving Real World

3. Rafael counted a total of 40 white cars and yellow cars. There were 9 times as many white cars as yellow cars. How many white cars did Rafael count?

4. Is the equation true or false? Explain.

$6 \times 12 = 12 + 12 + 12 + 12 + 12 + 12$

5. Write Math Write a problem involving *how much more than* and solve it. Explain how drawing a diagram helped you solve the problem.

Lesson Check

6. Sari has 3 times as many pencil erasers as Sam. Together, they have 28 erasers. How many erasers does Sari have?

7. Is the equation true or false? Explain.

$3 \times 8 = 8 + 8 + 8 + 8 + 8 + 8 + 8 + 8$

Spiral Review

8. Barbara has 9 stuffed animals. Trish has 3 times as many stuffed animals as Barbara. How many stuffed animals does Trish have?

9. There are 104 students in the fourth grade at Suvi's school. One day, 15 fourth-graders were absent. How many fourth-graders were at school that day?

10. Joshua has 112 rocks. Jose has 98 rocks. Albert has 107 rocks. Write the boy's names in order from the least to the greatest number of rocks owned.

11. Alicia has 32 stickers. This is 4 times as many stickers as Benita has. How many stickers does Benita have?

Name _____

Multiply Tens, Hundreds, and Thousands

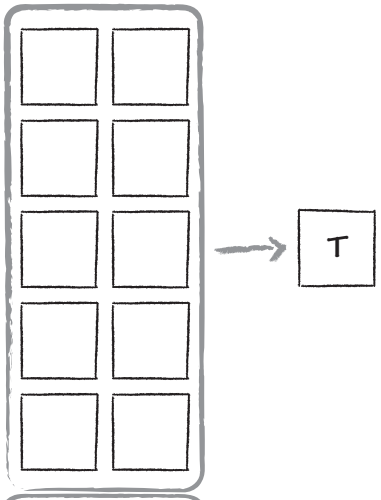
I Can use place value and other strategies to multiply tens, hundreds, and thousands.

UNLOCK the Problem Real World

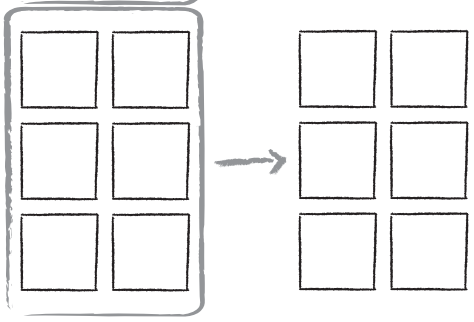
Each car on a train has 200 seats. How many seats are on a train with 8 cars?

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.

Math Talk

MP Attend to precision.

How can finding 8×2 help you find 8×200?

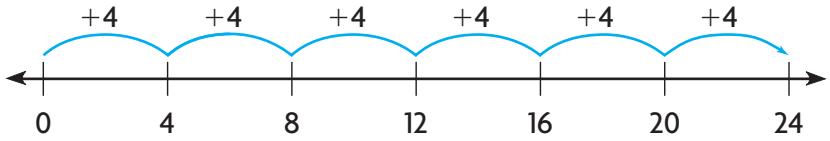
Other Ways

A **Use a number line.**

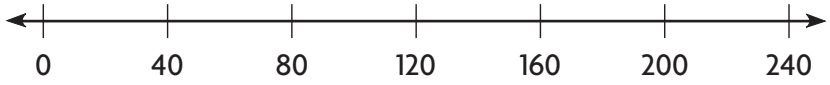
Li's Sled Shop rents 4,000 sleds each month.
How many sleds does the store rent in 6 months?

Find 6 × 4,000.

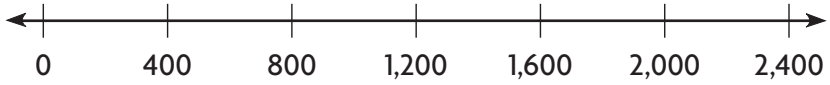
Multiplication can be thought of as repeated addition.
Draw jumps to show the product.



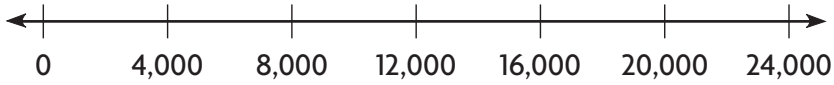
$6 \times 4 = 24$ ← basic fact



$6 \times 40 = 240$



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



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

So, Li'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.

_____

_____

Math Talk

MP **Construct arguments and critique reasoning of others.**

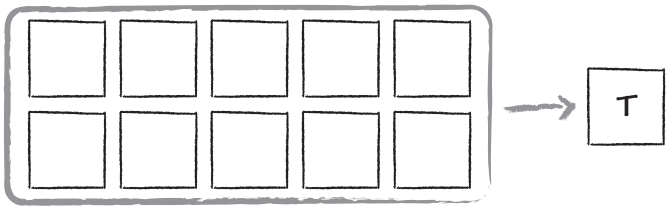
Explain how the number of zeros in the factors and products changes in Example B.

Name _____

Share and Show

Math Board

1. Use the drawing to find 2×500.



$2 \times 500 =$ _____

Math Talk

MP Reason abstractly and quantitatively.

Tell how you would use place value to find 2×500.

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

$=$ _____

On Your Own

Find the product.

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

8. $4 \times 80 =$ _____

9. $3 \times 500 =$ _____

MP **Find the unknown factor.**

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

11. $7 \times$ _____ $= 56{,}000$

12. $8 \times$ _____ $= 3{,}200$

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

_____

_____

UNLOCK the Problem Real World

14. 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?

MATH on the Spot

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.

15. Sveta makes bead necklaces. Beads are packaged in bags of 50 and bags of 200. Sveta bought 4 bags of 50 beads and 3 bags of 200 beads. How many beads did Sveta buy? _____

16. Hyori has 3 books of 20 stamps and 5 books of 10 stamps. How many stamps does Hyori have? Complete the steps using the numbers on the tiles. Numbers can be used more than once.

_____ × 20 = _____

_____ × 10 = _____

_____ + _____ = _____

3	5
110	50
60	100

Name _____

Multiply Tens, Hundreds, and Thousands

Find the product.

1. $4 \times 7{,}000 =$ 28,000

Think: $4 \times 7 = 28$
So, $4 \times 7{,}000 = 28{,}000$.

2. $9 \times 60 =$ _____

3. $8 \times 200 =$ _____

4. $5 \times 6{,}000 =$ _____

5. $7 \times 800 =$ _____

6. $8 \times 90 =$ _____

7. $6 \times 3{,}000 =$ _____

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

9. $5 \times 500 =$ _____

10. $9 \times 4{,}000 =$ _____

Problem Solving Real World

11. A bank teller has 7 rolls of coins. Each roll has 40 coins. How many coins does the bank teller have?

_____

12. Theo buys 5 packages of paper. There are 500 sheets of paper in each package. How many sheets of paper does Theo buy?

_____

13. Explain how finding 7×20 is similar to finding $7 \times 2{,}000$. Then find each product.

_____

_____

Lesson Check

14. A plane is traveling at a speed of 400 miles per hour. How far will the plane travel in 5 hours?

15. One week, a clothing factory made 2,000 shirts in each of 6 different colors. How many shirts did the factory make in all?

Spiral Review

16. Write a comparison sentence to represent this equation.

$$6 \times 7 = 42$$

17. The population of Middleton is six thousand, fifty-four people. Write this number in standard form.

18. There are 240 students at a school. That is eight times as many as the number of people on the staff at the school. How many people are on the staff at the school?

19. Freya picked 4 times as many green peppers as red peppers. If she picked a total of 20 peppers, how many green peppers did she pick?

Name _____

Estimate Products by 1-Digit Numbers

I Can 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?

_____

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

An African elephant is the largest living land mammal.

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 MP Construct arguments and critique reasoning of others.

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

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

Tell whether an exact answer is reasonable.

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

$4 \times 86 = \square$

Aril 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

1. Estimate the product by rounding.

$5 \times 2{,}213$

↓

_____ × _____ = _____

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

$5 \times 2{,}213$

_____ × _____ = _____

$5 \times 2{,}213$

_____ × _____ = _____

Math Talk MP **Reason abstractly and quantitatively.**

How do you know that an exact answer of 11,065 is reasonable?

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

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

7. Path A and Path B are walking paths used for horses. Path A is 118 feet long. Path B is 180 feet long. Carlos walks his horse down each path 3 times. Which path did Carlos use to walk his horse about 500 feet? Explain.

8. Students in the third grade sell 265 tickets to the school play. Students in the fourth grade sell 3 times as many tickets as the third grade students. Estimate the number of tickets the fourth grade students sold by finding the two numbers the exact answer is between.

The students sold between

0		300	
300	and	600	tickets.
600		900	
800		1,200	

Cross-Curricular: 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.

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

MATH on the Spot

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.

Name _____

Estimate Products by 1-Digit Numbers

Estimate the product by rounding.

1. 4×472

4×472

↓

4×500

2,000

2. $2 \times 6{,}254$ _____

3. 9×54 _____

4. $5 \times 5{,}503$ _____

Find two numbers the exact answer is between.

5. 3×567 _____

6. $6 \times 7{,}381$ _____

7. 4×94 _____

8. 8×684 _____

Problem Solving Real World

9. Cato drinks 8 glasses of water each day. He says he will drink 2,920 glasses of water in a year that has 365 days. Is the exact answer reasonable? **Explain.**

_____

_____

_____

10. Most Americans throw away about 1,365 pounds of trash each year. Is it reasonable to estimate that Americans throw away over 10,000 pounds of trash in 5 years? **Explain.**

_____

_____

_____

11. Write Math Describe a real-life multiplication situation for which an estimate makes sense.

_____

_____

Lesson Check

12. A theater has 4,650 seats. If the theater sells all the tickets for each of its 5 shows, about how many tickets will the theater sell?

13. Washington Elementary has 4,358 students. Jefferson High School has 3 times as many students as Washington Elementary. About how many students does Jefferson High School have?

Spiral Review

14. Tell whether each equation is true or false.

a. $6 \times 3 = 6 + 6 + 6$

b. $2 \times 5 = 5 + 5 + 5 + 5 + 5$

c. $7 \times 4 = 4 + 4 + 4 + 4 + 4 + 4$

d. $8 + 8 + 8 + 8 = 4 \times 8$

15. Mr. Turkowski bought 4 boxes of envelopes at the office supply store. Each box has 500 envelopes. How many envelopes did Mr. Turkowski buy?

16. Pennsylvania has a land area of 44,816 square miles. What is the land area of Pennsylvania rounded to the nearest hundred?

17. The table shows the types of movies people downloaded last month.

Movie Downloads	
Type	Number Downloaded
Comedy	6,720
Drama	4,032
Action	5,540

How many comedy and action movies were downloaded last year?

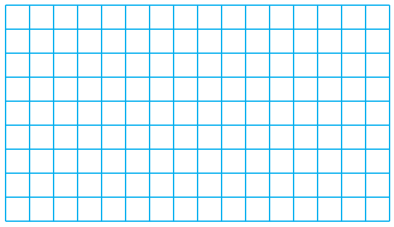
Name _____

Multiply Using the Distributive Property

I Can use models, equations, and the Distributive Property to solve 2-digit by 1-digit multiplication problems.

Investigate

Materials ■ color pencils, grid paper

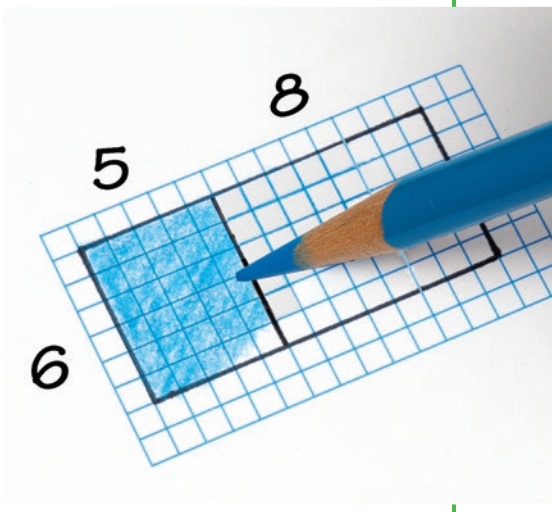


You can use the Distributive Property to break apart numbers to make them easier to multiply.

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.

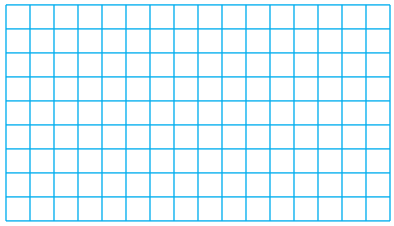


Use the Distributive Property. Find the product each smaller rectangle represents. Then find the sum of the products. Record your answers.

_____ × _____ = _____

_____ × _____ = _____

_____ + _____ = _____



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.

_____ × _____ = _____

_____ × _____ = _____

_____ + _____ = _____

Remember

An **area model** uses place value and side lengths to multiply numbers using the Distributive Property.

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?

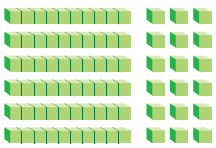
3. To find 7×23, is it easier to break apart the factor, 23, as $20 + 3$ or $15 + 8$? Explain.

Make Connections

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

STEP 1

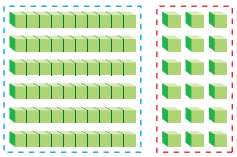
Use base-ten blocks to model 6×13.



6 rows of 1 ten 3 ones

STEP 2

Break the model into tens and ones.

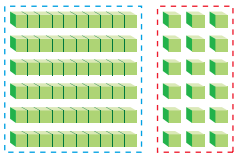


$(6 \times 1 \text{ ten})$ $(6 \times 3 \text{ ones})$

(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.

Math Talk

MP Attend to precision.

Why is this a good model for the problem?

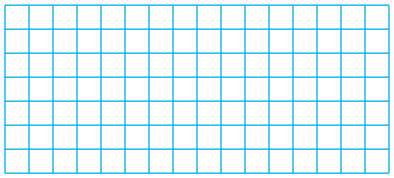
Name _____

Share and Show

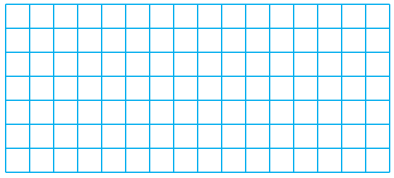
Math Board

Model the product on the grid. Record the product.

1. $3 \times 13 =$ _____

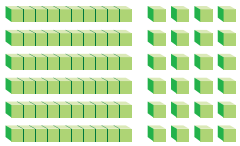


2. $5 \times 14 =$ _____

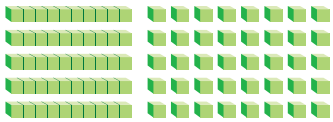


Find the product.

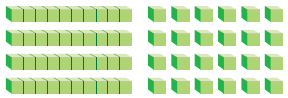
3. $6 \times 14 =$ _____



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. $9 \times 13 =$ _____

On Your Own

9. MP Explain how modeling partial products can be used to find the products of greater numbers.

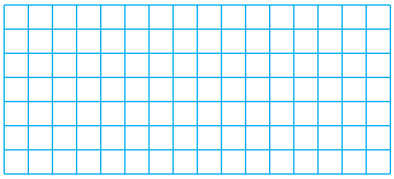
_____

_____

_____

10. Use the Distributive Property to model the product on the grid. Record the product.

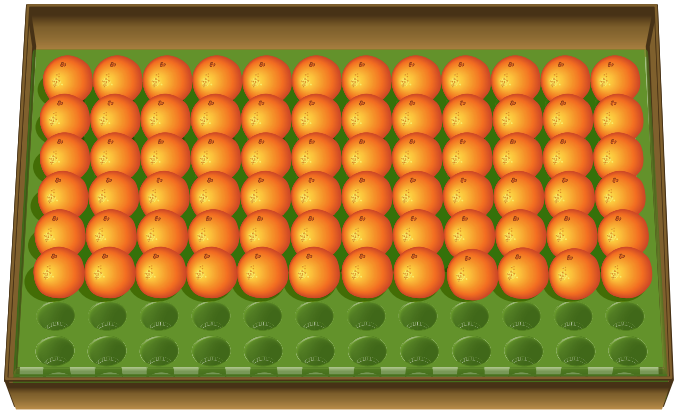
$4 \times 14 =$ _____



11. 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.

MATH on the Spot



Pose a problem.

Solve your problem.

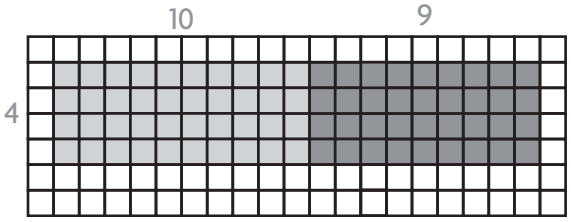
- Describe how you could change the problem by changing the number of rows of oranges and the number of empty spaces in the picture. Then solve the problem.

Name _____

Multiply Using the Distributive Property

Model the product on the grid. Record the product.

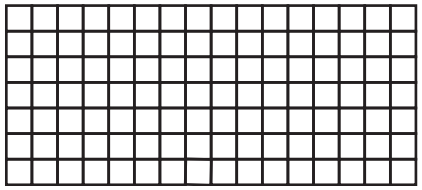
1. $4 \times 19 =$ 76



$4 \times 10 = 40$ and $4 \times 9 = 36$

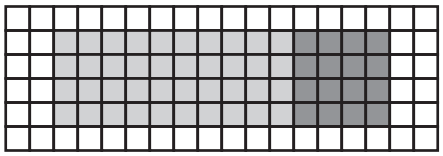
$40 + 36 = 76$

2. $5 \times 13 =$ _____

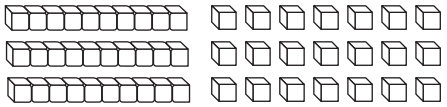


Find the product.

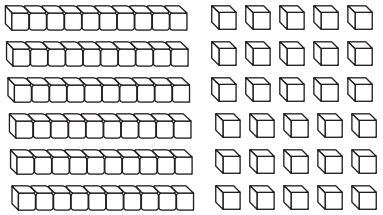
3. $4 \times 14 =$ _____



4. $3 \times 17 =$ _____

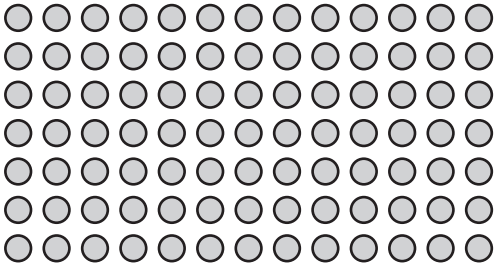


5. $6 \times 15 =$ _____



Problem Solving Real World

6. Michael arranged his pennies in the following display.



How many pennies does Michael have in all?

_____

7. Write Math Explain how you can use a model to find 6×17.

_____

_____

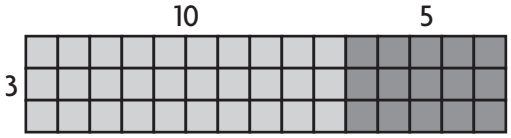
_____

_____

_____

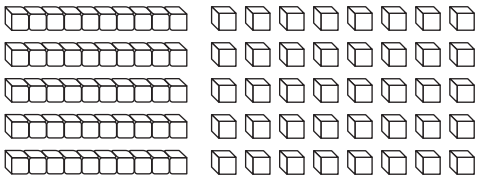
Lesson Check

8. The model shows how Gig planted flowers in his garden.



How many flowers did Gig plant?

9. The model below represents the expression 5×18.



How many tens will there be in the final product?

Spiral Review

10. Center City has a population of twenty-one thousand, seventy people. Write the population in standard form.

11. Is the equation true or false? Explain.

$5 \times 7 = 7 + 7 + 7 + 7 + 7 + 7 + 7$

12. Imelda has 5 times as many baseball cards as football cards. In all, she has 120 baseball and football cards. How many baseball cards does Imelda have?

13. A ruby-throated hummingbird beats its wings about 53 times each second. About how many times does a ruby-throated hummingbird beat its wings in 5 seconds?

Name _____

Multiply Using Expanded Form

I Can use expanded form to multiply a multi-digit number by a 1 digit number.

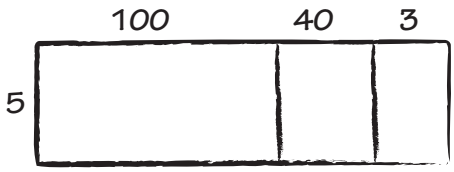
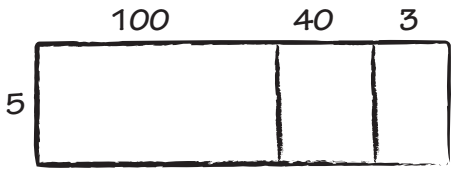
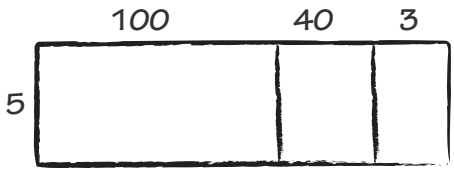
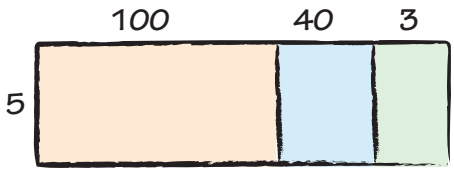
UNLOCK the Problem Real World

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 MP Construct arguments and critique reasoning of others.

How do you know your answer is reasonable?

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

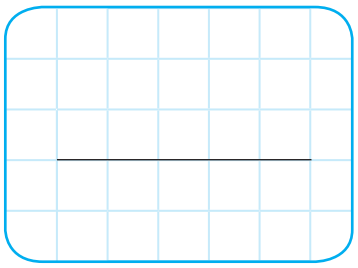
Write 1,250 in expanded form. Use the Distributive Property.

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

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

STEP 2

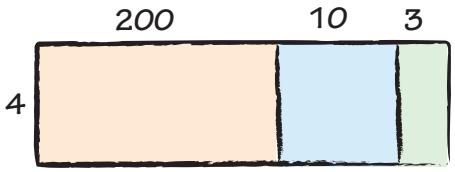
Add the partial products.

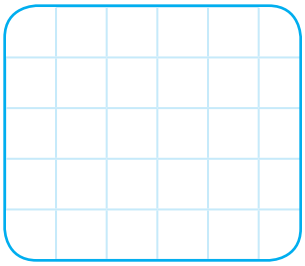


So, the shop ordered _____ animals.

Share and Show Math Board

1. Find 4×213. Use expanded form.





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

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

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

$= \_\_\_\_$

Math Talk

MP Attend to precision.

How did using the Distributive Property make finding the product easier?

Record the product. Use expanded form to help.

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

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

Name _____

On Your Own

Record the product. Use expanded form to help.

4. $4 \times 21 =$ _____

5. $6 \times 35 =$ _____

6. A hotel has 128 rooms on each floor. There are 4 floors in all. If 334 of the rooms in the hotel have been cleaned, how many rooms still need to be cleaned?

_____

7. Ben wants to buy 2 blue sweaters for $19 each and 3 brown sweaters for $44 each. How much will Ben spend on the five sweaters?

_____

8. A jeweler has 36 inches of silver chain. She needs 5 times that much to make some necklaces and 3 times that amount to make some bracelets. How much silver chain does the jeweler need to make her necklaces and bracelets?

_____

9. Naveena walks her dog 3 times a day. Each time she walks her dog, she walks 1,760 yards. How many yards does she walk her dog in 3 days?

_____

10. (MP) What expression could you write to show how to multiply 9×856 using place value and expanded form?

_____

11. Lupita bought 4 packages of tacks. There are 48 tacks in a package. She used 160 of the tacks to put up posters. How many tacks does she have left? Explain.

_____

_____

_____

_____

Show the Math

Demonstrate Your Thinking

Problem Solving · Applications

Use the table for 12–13.

Sacco Nursery Plant Sale Prices per Tree		
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. Tanya says that the difference in the cost of 4 flowering cherry trees and 4 Muskogee crape myrtles is $80. Is she correct? Explain.

MATH on the Spot

Show the Math

Demonstrate Your Thinking

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

15. Multiply 5×381 using place value and expanded form. Select a number from each box to complete the expression.

$(5 \times \boxed{\begin{matrix}30\\300\end{matrix}}) + (5 \times \boxed{\begin{matrix}8\\80\end{matrix}}) + (5 \times \boxed{\begin{matrix}1\\10\end{matrix}})$

Name _____

Multiply Using Expanded Form

Record the product. Use expanded form to help.

1. $7 \times 14 =$ 98

$7 \times 14 = 7 \times (10 + 4)$

$= (7 \times 10) + (7 \times 4)$

$= 70 + 28$

$= 98$

2. $8 \times 43 =$ _____

3. $6 \times 532 =$ _____

4. $5 \times 923 =$ _____

Problem Solving Real World

5. The fourth-grade students at Riverside School are going on a field trip. There are 68 students on each of the 4 buses. How many students are going on the field trip?

6. There are 5,280 feet in one mile. Fatima likes to walk 5 miles each week for exercise. How many feet does Fatima walk each week?

7. **Write Math** Explain how you can find 3×584 using expanded form.

Lesson Check

8. Write an expression that shows how to multiply 7×256 using expanded form and the Distributive Property.

9. Sue uses the expression $(8 \times 3{,}000) + (8 \times 200) + (8 \times 9)$ to help solve a multiplication problem. What is Sue's multiplication problem?

Spiral Review

10. What is another way to write 9×200?

11. What is the value of the digit 4 in 46,000?

12. Zaide bought 6 packages of napkins for his restaurant. There were 200 napkins in each package. How many napkins did Zaide buy?

13. List these numbers in order from **least** to **greatest**.

8,251; 8,125; 8,512

Name _____

Multiply Using Partial Products

I Can use different strategies such as place value and partial products to multiply by a 1-digit number.

UNLOCK the Problem Real World

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?

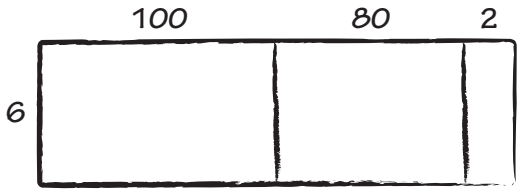
_____

Use place value and partial products.

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

SHADE THE MODEL | **THINK AND RECORD**

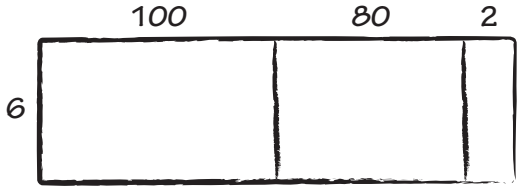
STEP 1



182
× 6
_____

→ Multiply the hundreds.
6 × 1 hundred = 6 hundreds

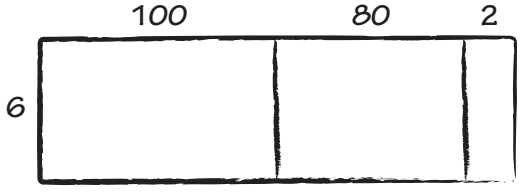
STEP 2



182
× 6
600
_____

← Multiply the tens.
6 × 8 tens = 48 tens

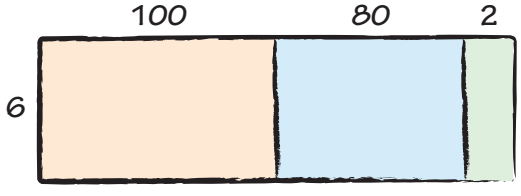
STEP 3



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.

Math Talk MP Attend to precision.

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

Example

Use place value and partial products.

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

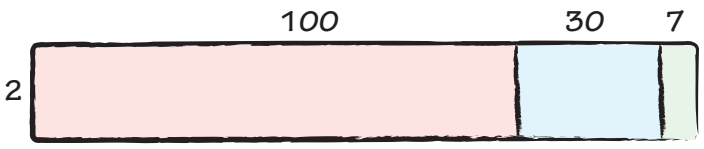
$$\begin{array}{r} 4{,}572 \\ \times \quad 2 \\ \hline \\ \\ \\ + \\ \hline \\ \end{array}$$

← 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.



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

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: _____

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

Math Talk MP **Construct arguments and critique reasoning of others.**

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: _____

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

6. Estimate: _____

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

7. Estimate: _____

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

Practice: Copy and Solve

Estimate. Then record the product.

8. 2×78

9. $2 \times \$210$

10. $9 \times \$682$

11. $8 \times 8{,}145$

Find the missing digit.

12.
$$\begin{array}{r} \square 5 \\ \times \quad 7 \\ \hline 455 \end{array}$$

13.
$$\begin{array}{r} 248 \\ \times \quad 3 \\ \hline \square 44 \end{array}$$

14.
$$\begin{array}{r} \$395 \\ \times \quad \square \\ \hline \$2{,}370 \end{array}$$

15.
$$\begin{array}{r} 3{,}748 \\ \times \quad 4 \\ \hline 1\,\square{,}992 \end{array}$$

16. A store bought 9 cases of light bulbs in May and 8 cases in June. There are 48 light bulbs in a case. How many light bulbs did the store buy in May and June?

_____

17. Mr. Yilmaz saved $2,500 to buy airline tickets for his family. He bought 6 airline tickets for $372 each. How much of the money he saved does Mr. Yilmaz have after he buys the tickets?

_____

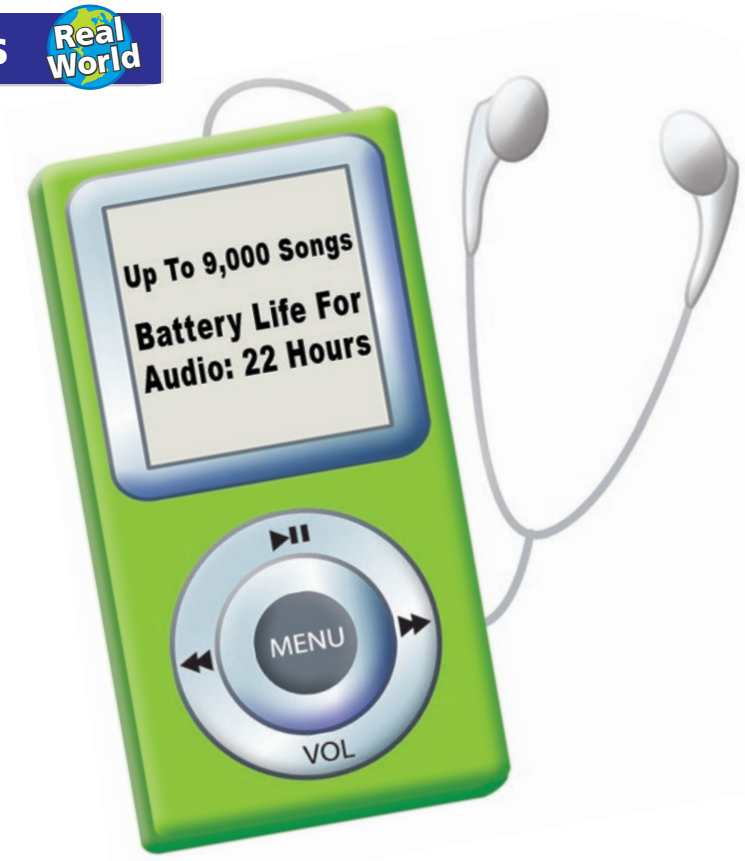
18. Coach Ramirez bought 8 cases of bottled water for a road race. There are 24 bottles in each case. After the race, 34 bottles of water were left. How many bottles were used at the race? Explain.

_____

_____

_____

Problem Solving · Applications



19. MP 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. Denzel wants to buy the new portable media player shown. He has 5 times as many songs as Merlyn. Merlyn has 1,146 songs. Will all of his songs fit on the portable media player? How many songs does Denzel have?

21. 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?

MATH on the Spot

22. Mrs. Mohammed bought 6 gallons of juice for a party. Each gallon has 16 cups. After the party, 3 cups of juice were left over. At the party, how many cups did people drink? Show your work and explain how you found your answer.

Show the Math

Demonstrate Your Thinking

Name _____

Multiply Using Partial Products

Estimate. Then record the product.

1. Estimate: 1,200

$$\begin{array}{r} 243 \\ \times \quad 6 \\ \hline 1{,}200 \\ 240 \\ + \quad 18 \\ \hline 1{,}458 \end{array}$$

2. Estimate: _____

$$\begin{array}{r} 640 \\ \times \quad 3 \\ \hline \end{array}$$

3. Estimate: _____

$$\begin{array}{r} \$149 \\ \times \quad 5 \\ \hline \end{array}$$

4. Estimate: _____

$$\begin{array}{r} 721 \\ \times \quad 8 \\ \hline \end{array}$$

5. Estimate: _____

$$\begin{array}{r} 293 \\ \times \quad 4 \\ \hline \end{array}$$

6. Estimate: _____

$$\begin{array}{r} \$416 \\ \times \quad 6 \\ \hline \end{array}$$

7. Estimate: _____

$$\begin{array}{r} 961 \\ \times \quad 2 \\ \hline \end{array}$$

8. Estimate: _____

$$\begin{array}{r} 837 \\ \times \quad 9 \\ \hline \end{array}$$

Problem Solving Real World

9. A maze at a county fair is made from 275 bales of hay. The maze at the state fair is made from 4 times as many bales of hay. How many bales of hay are used for the maze at the state fair?

_____

10. Pedro gets 8 hours of sleep each night. How many hours does Pedro sleep in a year with 365 days?

_____

11. Write Math Explain how you can find 4×754 using two different methods.

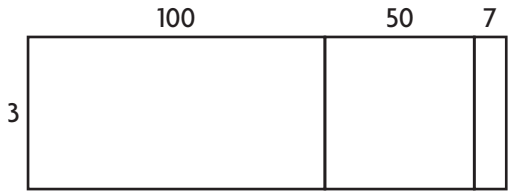
_____

_____

Lesson Check

12. A passenger jet flies at an average speed of 548 miles per hour. At that speed, how many miles does the plane travel in 4 hours?

13. Use the model to find 3×157.



Spiral Review

14. The school fun fair made $1,768 on games and $978 on food sales. How much money did the fun fair make on games and food sales?

15. Use the table below.

State	Population
North Dakota	646,844
Alaska	698,473
Vermont	621,760

List the states from least to greatest population.

16. A National Park covers 218,375 acres. What is this number written in expanded form?

17. Last year a business had profits of $8,000. This year its profits are 5 times as great. What are this year's profits?

Name _____

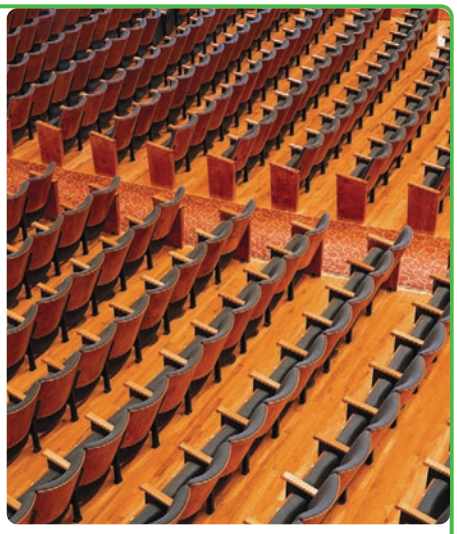
Multiply Using Mental Math

I Can multiply numbers using mental math and properties of operations.

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?



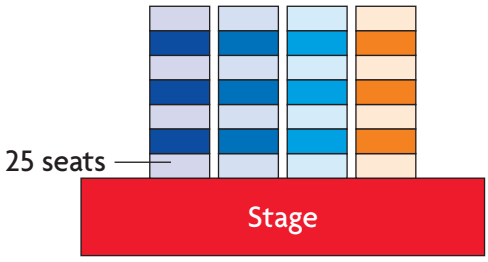
Find $4 \times 7 \times 25$.

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

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

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

So, there are 700 seats in the theater.



Math Talk MP Look for and make use of structure.

What do you know about 4×25 that will 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 of Multiplication 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.

Example

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

Math Talk

MP Construct arguments and critique reasoning of others.

How is using an addition strategy related to using a subtraction strategy?

On Your Own

Find the product. Tell which strategy you used.

5. 14×50

6. 32×25

7. $8 \times 25 \times 23$

Use a strategy to find the product.

8. 16×400

9. $3 \times 31 \times 10$

10. 3×199

11. $3 \times 1{,}021$

MP **Use mental math to find the unknown number.**

12. $21 \times 40 = 840$, so $21 \times 42 =$ _____.

13. $9 \times 60 = 540$, so $18 \times 30 =$ _____.

14. The science museum sells dinosaur models to schools and libraries for $107 each. The town library buys 3 models. The town elementary school buys 5 models. What is the total cost of the models the town buys?

15. Russell and Farrah each buy 6 books of ride tickets at the fair. Each book has 15 tickets. How many tickets do they buy altogether?

Problem Solving · Applications

Use the table for 16–18.

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

16. Three thousand, forty-three people buy tickets at the gate for Section N and one hundred people buy tickets at the gate for Section L. How much money is collected for Section N and Section L at the gate?

17. MP 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?

18. When the full season tickets first went on sale, 2,000 full season tickets sold for Section N. Two weeks after the tickets first went on sale, another 1,500 full season tickets were sold for Section N. How much money was spent on full season tickets for Section N in total? How much more money was spent when the tickets first went on sale than after the first two weeks?

MATH on the Spot

19. Jose and Daru are given an equation.

$6 \times 407 = 2{,}442$

Jose says the equation is false.
Daru says the equation is true.
Who is correct? Explain.

Show the Math

Demonstrate Your Thinking

Name _____

Multiply Using Mental Math

Find the product. Tell which strategy you used.

1. 6×297

Think: $297 = 300 - 3$

$6 \times 297 = 6 \times (300 - 3)$

$= (6 \times 300) - (6 \times 3)$

$= 1{,}800 - 18$

$= 1{,}782$

1,782;

use subtraction

2. $14 \times 25 \times 4$

3. 8×604

4. 50×28

Problem Solving Real World

5. Section J in an arena has 20 rows. Each row has 15 seats. All tickets cost $18 each. If all the seats are sold, how much money will the arena collect for Section J?

6. At a high-school gym, the bleachers are divided into 6 equal sections. Each section can seat 395 people. How many people can be seated in the gym?

7. **Write Math** Show how to multiply 6×298 using friendly numbers and then using properties and mental math. Write about which method you like better and why.

Lesson Check

8. Pencils come in cartons of 24 boxes. A school bought 50 cartons of pencils for the start of school. Each box of pencils cost $2. How much did the school spend on pencils?

9. The school also bought 195 packages of markers. There are 6 markers in each package. How many markers did the school buy?

Spiral Review

10. Alex has 175 baseball cards. Raul has 3 times as many baseball cards as Alex. How many fewer cards does Alex have than Raul?

11. A theater seats 1,860 people. The last 6 shows have been sold out. Estimate the total number of people attending the last 6 shows.

12. At one basketball game, there were 1,207 people. At the next game, there were 958 people. How many people were at the two games?

13. Tell whether each equation is true or false.

a. $4 \times 3 = 3 + 3 + 3$ _____

b. $2 \times 6 = 6 + 6$ _____

c. $8 + 8 + 8 + 8 + 8 + 8 + 8 + 8 = 8 \times 2$ _____

d. $5 + 5 + 5 + 5 + 5 = 5 \times 5$ _____

Name _____

Multi-Step Multiplication Problems

I Can solve real-world problems involving multiplication of whole numbers.

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.

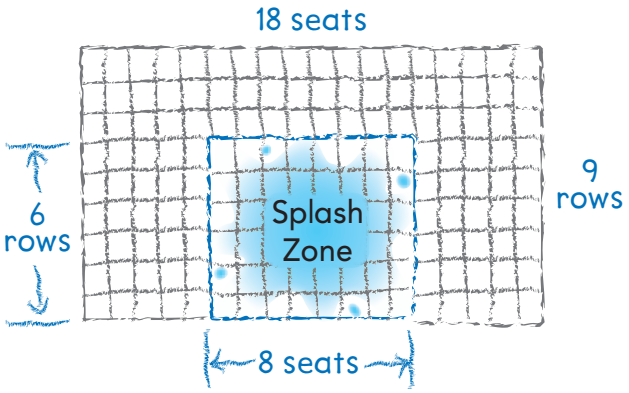
There are 6 rows with _____ seats in each row of the splash zone.

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.



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

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

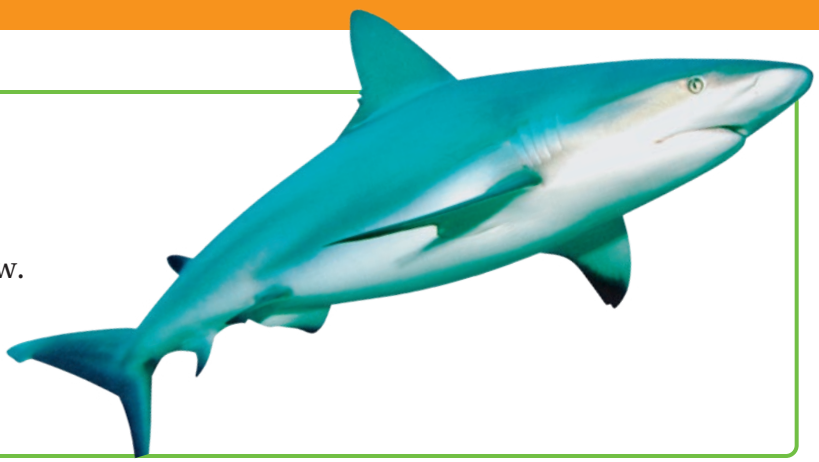
1. What else do you need to do to solve the problem?

_____

_____

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?	

Math Talk

MP Reason abstractly and quantitatively.

How do you know your answer is correct?

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

Name _____

Share and Show

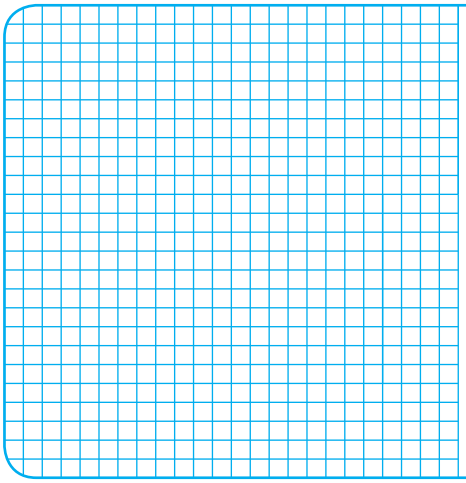
Math Board

Unlock the Problem

- √ 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 the Math

Demonstrate Your Thinking

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

_____

3. Mei's vegetable garden has 13 rows with 8 plants in each row. Mei plans to plant peppers in the first 2 rows and the last 2 rows of the garden. The rest of the rows will be tomatoes. How many tomato plants will Mei plant?

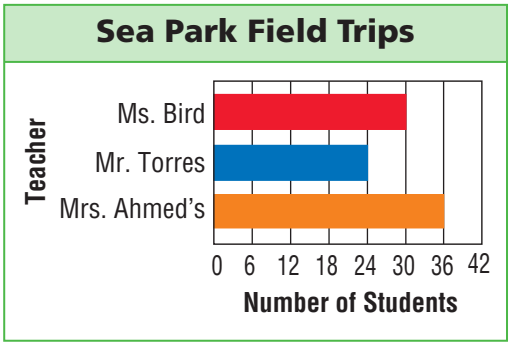
_____

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

Use the graph for problems 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. Ahmed's class can sit if an equal number of students sits in each row.

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

8. MP 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. Allie is building a patio. The patio will have 8 tiles in each of 13 rows. She has already built the center section with 4 tiles in each of 7 rows. How many more tiles are needed to complete the patio? Show your work.

Show the Math

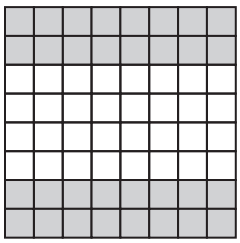
Demonstrate Your Thinking

Name _____

Multi-Step Multiplication Problems

Solve each problem.

1. A community park has 6 tables with a chessboard painted on top. Each board has 8 rows of 8 squares. When a game is set up, 4 rows of 8 squares on each board are covered with chess pieces. If a game is set up on each table, how many total squares are NOT covered by chess pieces?



$4 \times 8 = 32$

$6 \times 32 = \square$

192 squares

2. Jonah and his friends go apple picking. Jonah fills 5 baskets. Each basket holds 15 apples. If 4 of Jonah's friends pick the same amount as Jonah, how many apples do Jonah and his friends pick in all? Draw a diagram to solve the problem.

3. **Write Math** Write a word problem that can be solved using multiplication of two-digit numbers. Solve your word problem and explain the solution.

Lesson Check

4. At a tree farm, there are 9 rows of 36 spruce trees. In each row, 14 of the spruce trees are blue spruce. How many spruce trees are NOT blue spruce?

5. Kai is tiling a countertop. He needs to place 54 square tiles in each of 8 rows to cover the counter. He wants to randomly place 8 groups of 4 blue tiles each and have the rest of the tiles be white. How many white tiles will Kai need?

Spiral Review

6. Juan reads a book with 368 pages. Savannah reads a book with 172 fewer pages than Juan's book. How many pages are in the book Savannah reads?

7. Hailey has bottles that hold 678 pennies each. About how many pennies does she have if she has 6 bottles filled with pennies?

8. Terrence plants a garden that has 8 rows of flowers, with 28 flowers in each row. How many flowers did Terrence plant?

9. Ivan has 5 fish in his fish tank. Jasmine has 4 times as many fish as Ivan has. How many fish does Jasmine have?

Name _____

Multiply 3-Digit and 4-Digit Numbers with Regrouping

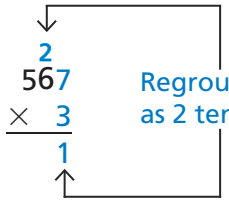
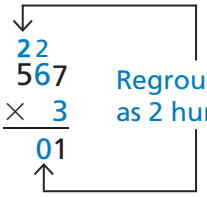
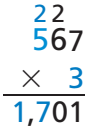
I Can multiply whole numbers using estimation, rounding, and place value.

UNLOCK the Problem Real World

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

Multiply. 3 × 567

Estimate. 3 × _____ = _____

THINK	RECORD
STEP 1 Multiply the ones. 3 × 7 ones = _____ ones Regroup the 21 ones.	 Regroup the 21 ones as 2 tens 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.	 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	 17 hundreds is the same as 1 thousand 7 hundreds.

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

Example

Use an estimate or an exact answer.

Many organisms move from one place to another. This movement is called migration. The table shows how far different organisms have migrated.

Organism Migration

Organism	Miles
caribou	838
humpback whale	3,786
bat	325
monarch butterfly	1,299

A About how far will a caribou and a humpback whale travel in 2 migrations?

STEP 1

Estimate the distance for the caribou.

2×838

↓

$2 \times 800 =$ _____

STEP 2

Estimate the distance for the humpback whale.

$2 \times 3{,}786$

↓

$2 \times 4{,}000 =$ _____

STEP 3

Add to estimate the total distance.

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

So, in 2 migrations, a caribou and a humpback whale will travel about 9,600 miles.

Math Talk

MP Construct arguments and critique reasoning of others.

How did you use the information to know that you needed an estimate?

B Which pair of organisms travel farther in 2 migrations: a bat and a monarch butterfly or a caribou and a humpback whale? How much farther?

Bat	Monarch butterfly	Total Distance	Caribou	Humpback whale	Total Distance
325 × 2	1,299 × 2	+	838 × 2	3,786 × 2	+

Subtract to compare the total distances.

$$\begin{array}{r} 9{,}248 \\ -\ 3{,}248 \\ \hline \square \end{array}$$

Math Talk

MP Attend to precision.

How did you use the information to know that you needed an exact answer?

So, the _____ would migrate _____ miles farther than the _____.

Name _____

Share and Show

Math Board

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

_____

_____

STEP 1	STEP 2	STEP 3	STEP 4
$\overset{2}{1,274} \times 6 = 4$	$\overset{42}{1,274} \times 6 = 44$	$\overset{142}{1,274} \times 6 = 644$	$\overset{142}{1,274} \times 6 = 7,644$

Estimate. Then find the product.

2. Estimate: _____

$$603 \times 4$$

3. Estimate: _____

$$1,935 \times 7$$

4. Estimate: _____

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

Math Talk

MP Attend to precision.

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. Mr. Xiang has $5,400 to buy supplies for the school computer lab. He buys 8 boxes of printer ink that cost $149 each and 3 printers that cost $1,017 each. How much money will Mr. Xiang have left after he buys the printer ink and printers?

_____

Practice: Copy and Solve

Compare. Write <, >, or =.

9. $5 \times 352 \bigcirc 4 \times 440$

10. $6 \times 8,167 \bigcirc 9,834 \times 5$

11. $3,956 \times 4 \bigcirc 5 \times 7,692$

12. $740 \times 7 \bigcirc 8 \times 658$

13. $4 \times 3,645 \bigcirc 5 \times 2,834$

14. $6,573 \times 2 \bigcirc 4,365 \times 3$

Problem Solving · Applications

15. Airplane tickets to Fairbanks, Alaska, will cost $958 each. Airplane tickets to Vancouver, Canada, will cost $734. How much can the four members of the Harrison family save on airfare by vacationing in Vancouver?

16. 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.

17. MP Vahe says that the product of a 4-digit number and a 1-digit number is always a 4-digit number. Does Vahe's statement make sense? Explain.

18. What number is 150 more than the product of 5 and 4,892? Explain how you found the answer.

Show the Math

Demonstrate Your Thinking

MATH on the Spot

Name _____

Multiply 3-Digit and 4-Digit Numbers with Regrouping

Estimate. Then find the product.

1. Estimate: 4,000

1 2 2
1,467
× 4
5,868

2. Estimate: _____

5,339
× 6

3. Estimate: _____

$879
× 8

4. Estimate: _____

3,182
× 5

5. Estimate: _____

4,616
× 3

6. Estimate: _____

$2,854
× 9

7. Estimate: _____

7,500
× 2

8. Estimate: _____

948
× 7

Problem Solving Real World

9. Lafayette County has a population of 7,022 people. Columbia County's population is 8 times as great as Lafayette County's population. What is the population of Columbia County?

_____

10. A seafood company sold 9,125 pounds of fish last month. If 6 seafood companies sold the same amount of fish, how much fish did the 6 companies sell last month in all?

_____

11. Write Math Explain how finding 4 × 384 can help you find 4 × 5,384. Then find both products.

_____

_____

_____

Lesson Check

12. By recycling 1 ton of paper, 6,953 gallons of water are saved. How many gallons of water are saved by recycling 4 tons of paper?

13. Esteban counted the number of steps it took him to walk to school. He counted 1,138 steps. How many steps does he take walking to and from school each day?

Spiral Review

14. A website has 13,406 people registered. What is the word form of this number?

15. In one year, the Kumar family drove their car 15,680 miles. To the nearest thousand, how many miles did they drive their car that year?

16. In a store there are 3 aisles of 20 bins of fruits and vegetables. In each aisle, 12 of the bins are vegetables. How many bins of fruit are there in all?

17. Lea buys 6 model cars that each cost $15. She also buys 4 bottles of paint that each cost $11. How much does Lea spend on model cars and paint?

Name _____

Solve Multi-Step Problems Using Equations

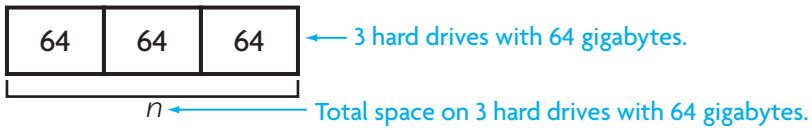
I Can solve real-world multi-step problems using multiplication, addition, and subtraction.

UNLOCK the Problem Real World

Chris's computer has 3 hard drives with 64 gigabytes of space each, and 2 hard drives with 16 gigabytes of space each. The files on his computer use 78 gigabytes of space. How much hard drive space does his computer have left?

Use multiple single-step equations.

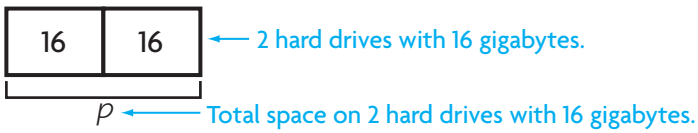
STEP 1 Find how much hard drive space is on 3 hard drives with 64 gigabytes of space each.



$3 \times 64 = n$

_____ $= n$

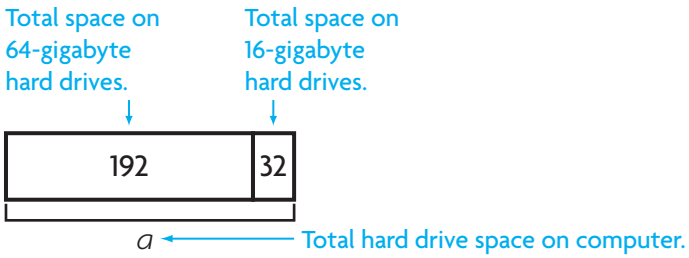
STEP 2 Find how much hard drive space is on 2 hard drives with 16 gigabytes of space.



$2 \times 16 = p$

_____ $= p$

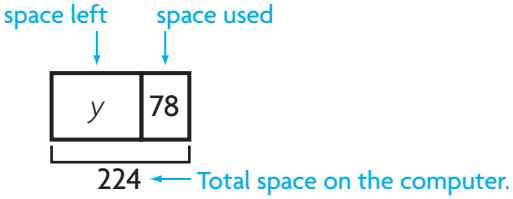
STEP 3 Find the total hard drive space on the computer.



$192 + 32 = a$

_____ $= a$

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



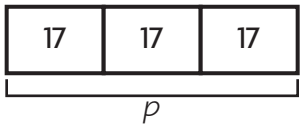
$224 - 78 = y$

_____ $= y$

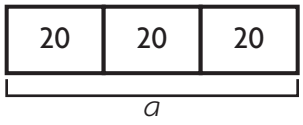
So, Chris has _____ gigabytes of hard drive space left on his computer.

Share and Show

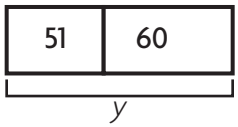
1. Carnie and Doug bake cookies to sell at a bake sale. Carnie makes 3 batches of 17 cookies each and Doug makes 3 batches of 20 cookies each. After ten minutes at the bake sale, they sold 32 cookies. How many cookies do Carnie and Doug have left to sell?



$3 \times 17 = p$; $51 = p$ ← First, multiply 3×17. Let p represent the number of cookies Carnie makes.



$3 \times 20 = a$; $60 = a$ ← Next, multiply 3×20. Let a represent the number of cookies Doug makes.



$51 + 60 = y$; $111 = y$ ← Then, add the two products. Let y represent the number of cookies Carnie and Doug make.

$111 - 32 = n$; $79 = n$ ← Finally, subtract to find the number of cookies Carnie and Doug have left to sell.

2. Dyani buys 3 bags of lollipops, with 12 lollipops in each bag. She also buys 4 bags of gum, with 11 pieces in each bag. How many lollipops and pieces of gum does Dyani have?

3. Simba 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?

On Your Own

4. Mario drove 60 miles each day to and from work for 5 days. Then he drove 54 miles each day on Saturday and Sunday. How many miles did Mario drive during those seven days?

5. Keqing 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?

Math Talk MP Attend to precision.

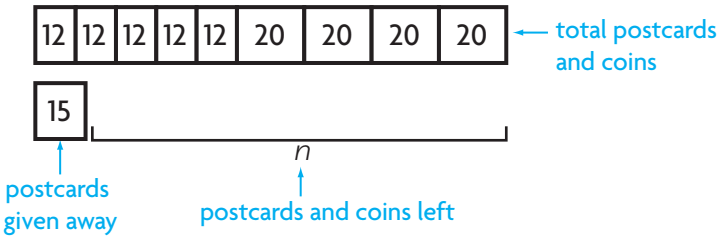
Explain why in Problem 1 you added during step 3 instead of multiplying.

Name _____

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

MATH on the Spot

Dominic drew this model.



Dominic used these steps to solve.

$5 + 12 = p$

$4 + 20 = c$

$17 + 24 = y$

$41 - 15 = n$

$26 = n$

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.

Problem Solving · Applications

Fill in the bubble completely to show your answer.

7. Eric is getting his mountain climbing certificate. There are 63 days that Eric climbs for 2 hours, there are 97 days that he climbs for 1 hour, and there are 22 days that he climbs for 3 hours. How many more hours does Eric need to climb until he earns a certificate for climbing 500 hours?

Ⓐ 211 hours
Ⓒ 318 hours
Ⓑ 289 hours
Ⓓ 321 hours

8. Hanh has 315 photos that she wants to put into albums. She buys 4 albums that hold 24 photos each. There are 3 albums that hold 72 photos each. Hanh plans to put any leftover photos into frames. How many frames will Hanh need to buy?

Ⓐ 0
Ⓒ 5
Ⓑ 3
Ⓓ 13

9. The soccer team sells 54 bagels with cream cheese for $2 each and 36 muffins for $1 each during a bake sale. The coach uses the bake sale money to buy socks for the 14 players at $6 a pair. How much money does the coach have left to buy soccer balls?

Ⓐ $0
Ⓒ $60
Ⓑ $27
Ⓓ $138

10. 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?

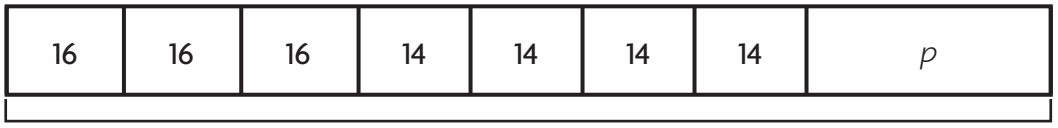
Ⓐ 28
Ⓑ 105
Ⓒ 133
Ⓓ 138

Name _____

Solve Multi-Step Problems Using Equations

Problem Solving Real World

1. Rebecca bought a flat of 144 pansies. She planted 3 rows of 16 pansies each. She planted 4 rows of 14 pansies each. How many pansies does she have left to plant?



144

$3 \times 16 =$ _____ $4 \times 14 =$ _____

$p = 144 -$ _____ $-$ _____

$p =$ _____

2. Kiara packed 18 DVDs in each of 4 boxes. She packed 15 DVDs in each of 5 boxes. She has 8 DVDs left over. How many DVDs does Kiara have?

3. Monty buys 2 adult dinner tickets for $22 each, 2 senior tickets for $18 each and 3 child tickets for $12 each. How much change will he get from $120?

4. Quaddus has 4 shelves with 22 dinosaur models on each shelf. He has 3 shelves with 20 dragon models on each shelf. How many more dinosaur models than dragon models does Quaddus have?

5. Alexis needs 280 screws to finish her deck. She bought 3 boxes of screws with 40 screws in a box. She had 168 screws. How many screws will she have left over when she finishes the deck?

Lesson Check

Fill in the bubble completely to show your answer.

6. Erika baked 7 trays of 12 muffins each. Simon baked 5 trays of 18 muffins each. They agreed to make 200 muffins for the school bake sale. How many more muffins do they need to make?

Ⓐ 26

Ⓑ 36

Ⓒ 38

Ⓓ 52

7. Victoria is buying stickers. She bought 3 packages of stars with 24 in each package. She bought 2 packages of rainbows with 16 in each package. She bought 4 packages of hearts with 10 in each package. She used 82 of the stickers to make cards. How many stickers does Victoria have left?

Ⓐ 62

Ⓑ 72

Ⓒ 96

Ⓓ 114

8. Ghandi bagged his potatoes in 18 ten-pound bags, 16 five-pound bags, and 4 twenty-five pound bags. He has 2 pounds of potatoes left over. How many pounds of potatoes does Ghandi have?

Ⓐ 262 pounds

Ⓑ 352 pounds

Ⓒ 358 pounds

Ⓓ 362 pounds

9. Mateo bought 6 hats for $14 each and 3 belts for $33 each. How much change did he get from $200?

Ⓐ $7

Ⓑ $17

Ⓒ $27

Ⓓ $58

Spiral Review

10. Jarita bought 352 ounces of juice. She used 320 ounces of juice to make punch. How many ounces of juice does Jarita have left?

Ⓐ 22 ounces

Ⓑ 32 ounces

Ⓒ 42 ounces

Ⓓ 52 ounces

11. Jules counted 30 big balloons. There were 6 times as many small balloons as big balloons. How many small balloons were there?

Ⓐ 18

Ⓑ 108

Ⓒ 180

Ⓓ 1,800

Name _____

Chapter 3

Chapter Review

For Problems 1–3, use the table.

Prices for Trees					
Tree	**Regular Price**	**Price for 3 or more**	**Tree**	**Regular Price**	**Price for 3 or more**
Ivory silk lilac	$25	$22	Hazelnut	$9	$8
White pine	$40	$37	Red maple	$9	$8
Bur oak	$35	$32	Birch	$9	$8

1. What is the cost of 3 bur oak trees and 2 ivory silk lilac trees? Show your work.

2. Mr. Tan buys 4 white pine trees and 5 birch trees. What is the cost of the trees? Show your work and explain how you found the answer.

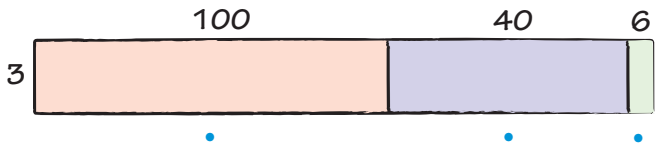
3. Rudy will buy 3 ivory silk lilac trees or 2 bur oak trees. He wants to buy the trees that cost less. What trees will he buy? How much will he save? Show your work.

4. For Problems 4a–4d, select True or False for each equation.

4a.	$7 \times 9 = 7 + 7 + 7 + 7 + 7 + 7 + 7$	○ True	○ False
4b.	$2 + 2 + 2 + 2 + 2 + 2 + 2 = 7 \times 2$	○ True	○ False
4c.	$6 \times 3 = 3 + 3 + 3 + 3 + 3$	○ True	○ False
4d.	$4 + 4 + 4 + 4 + 4 = 5 \times 4$	○ True	○ False

5. **Part A**

Draw a line to match each section in the model to the partial product it represents.



3×6 3×100 3×40

Part B

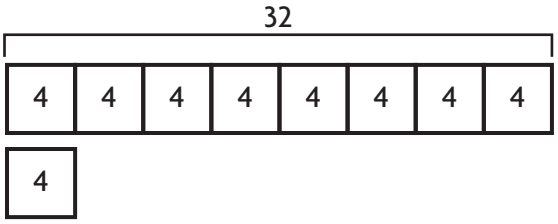
Find 3×146. Show your work and explain.

Name _____

6. For Problems 6a–6c, write an equation or a comparison sentence using the numbers on the tiles.

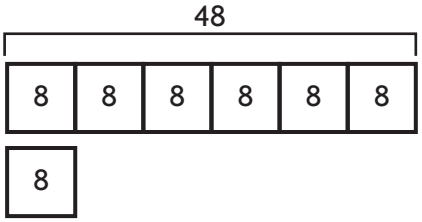
3	4	6	8	8
9	27	32	48	

6a.



☐ times as many as ☐ is ☐.

6b.



☐ × ☐ = ☐

6c. $9 \times 3 = 27$

☐ times as many as ☐ is ☐.

7. Multiply 7×435. For Problems 7a–7d, select True or False for each statement.

7a.	A reasonable estimate of the product is 2,800.	○ True	○ False
7b.	Using partial products, the products are 28, 21, and 35.	○ True	○ False
7c.	Using regrouping, 35 ones are regrouped as 5 tens and 3 ones.	○ True	○ False
7d.	The product is 3,045.	○ True	○ False

8. It costs 328 points to build each apartment building in the computer game *Big City Building*. What is the cost to build 5 apartment buildings? Show your work.

9. Multiply 7×462 using place value and expanded form.
Choose the number from each box to complete the expression.

$(7 \times$ [4 / 40 / 400] $) + (7 \times$ [600 / 60 / 6] $) + (7 \times$ [2 / 20 / 200] $)$

10. For Problems 10a–10d, use mental math to find the unknown number.

10a. $31 \times 30 = 930$, so $31 \times 32 =$ _____.

10b. $7 \times 80 = 560$, so $14 \times 40 =$ _____.

10c. $82 \times 25 = 2{,}050$, so $82 \times 50 =$ _____.

10d. $15 \times 15 = 225$, so $30 \times 15 =$ _____.

11. Liam has 3 boxes of baseball cards with 50 cards in each box. He also has 5 boxes with 40 basketball cards in each box. If Liam goes to the store and buys 50 more baseball cards, how many baseball and basketball cards does Liam have? Show your work.

Name _____

12. There is a book sale at the library. The price for each book is $4. Which expression can be used to show how much money the library will make if it sells 289 books? Use the numbers on the tiles to complete your answer.

2	4	8	9
80	90	200	

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

13. Find 8×397. Show your work and explain why the strategy you chose works best with the factors.

14. A clown bought 6 bags of round balloons with 24 balloons in each bag. The clown also bought 3 bags of long balloons with 36 balloons in each bag.

Part A

How many more round balloons than long balloons did the clown buy? Show your work.

Part B

The clown also bought 5 bags of heart-shaped balloons with 14 balloons in each bag. When the clown blew up all of the round, long, and heart-shaped balloons, 23 balloons burst. How many blown-up balloons were left? Explain your answer.

15. Hector planted 185 flowers in 2 days. There were 5 volunteers, including Hector, who each planted about the same number of flowers. About how many flowers did they plant?

185

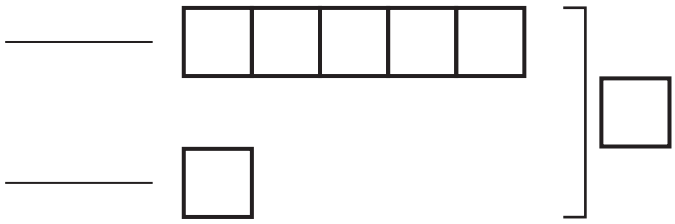
400

500

1,000

16. Jay and Blair went fishing. Together, they caught 36 fish. Jay caught 2 times as many fish as Blair. How many fish did Jay and Blair each catch? Write an equation and solve. Explain your work.

17. At the pet fair, Danica's dog weighed 5 times as much as Louie's dog. Together, the dogs weighed 84 pounds. How much did each dog weigh? Complete the bar model. Write an equation and solve.



18. Use the Distributive Property to model the product on the grid. Record the product.

$4 \times 12 =$ _____