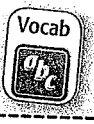
Review

Chapter 1
Place Value

Vocabulary Check



Use the words in the word bank to complete each sentence.

digits	**expanded form**	**is equal to (=)**
is greater than (>)	**is less than (<)**	**number line**
period	**place value**	**standard form**
word form		

1. 83,502 _____ 82,502.
2. You can use a _____ to compare numbers.
3. There are five _____ in the number 35,024.
4. 392,903 _____ 392,903.
5. The _____ of 32,052 is *thirty-two thousand, fifty-two.*
6. The _____ of 853,025 is 800,000 + 50,000 + 3,000 + 20 + 5.
7. _____ is the value given to a digit by its position in a number.
8. The name given to each group of three digits on a place-value chart is called a _____.
9. The _____ of *fifteen thousand, sixty-two* is 15,062.
10. 473,503 _____ 474,503.

Concept Check

11. Write *two hundred thirty-nine thousand, eight hundred four* in standard form and expanded form.

_____

_____

Compare. Use <, >, or =.

12. 689,000 ◯ 679,000

13. 515,063 ◯ 515,603

14. 739,023 ◯ 739,023

15. 405,032 ◯ 450,002

16. Round 415,203 to the thousands place. _____

Use the place-value chart for Exercises 17–23.

Thousands Period			Ones Period		
hundreds	tens	ones	hundreds	tens	ones
5	3	7	2	8	0

17. The 3 is in the _____ place.

18. The _____ is in the thousands place.

19. The 8 has a value of 8 × _____.

20. The 3 has a value of 3 × _____.

21. The _____ has a value of _____ × 100,000.

22. The _____ is in the hundreds place.

23. The digit in each place has a value that is _____ times as great as it has in the place to its _____.

Order the numbers from *greatest* to *least*.

24. 374,273 _____

374,372 _____

347,732 _____

25. 263,224 _____

623,224 _____

633,222 _____

Name .....

Addition Properties and Subtraction Rules

Lesson 1

ESSENTIAL QUESTION
What strategies can I use to add or subtract?

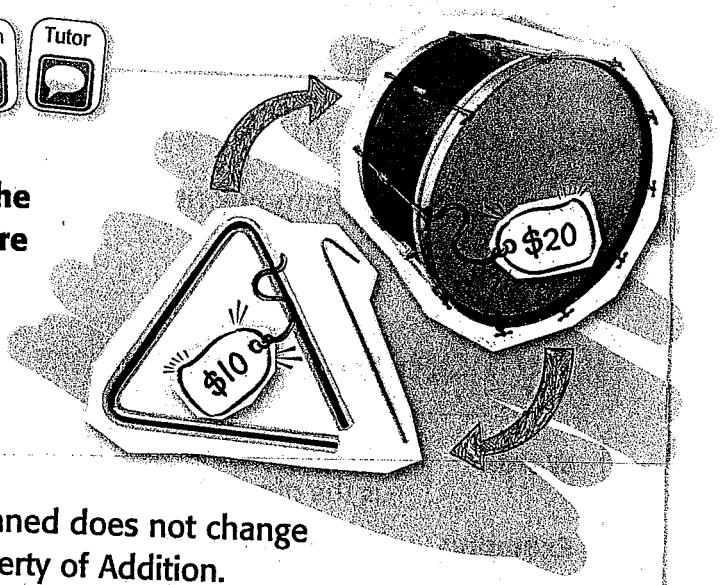
Addition properties can be used to help solve addition problems.

Math in My World

Watch Tutor

Example 1

Carlos is buying the items shown. Does the order in which the musical instruments are scanned change the total cost?



$\$10 + \$20 = \$20 + \$10$

$\square = \square$

The order in which the instruments are scanned does not change the total cost. This is the Commutative Property of Addition.

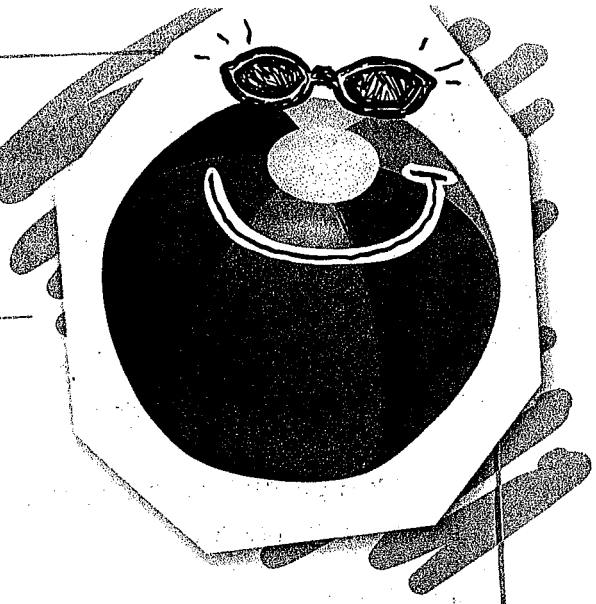
Key Concept Addition Properties

Words	**Commutative Property of Addition** The order in which numbers are added does not change the sum.
Examples	$4 + 1 = 5$ $1 + 4 = 5$
Words	**Associative Property of Addition** The way in which numbers are grouped when added does not change the sum.
Examples	$(5 + 2) + 3$ $5 + (2 + 3)$ $7 + 3$ $5 + 5$ 10 10 Parentheses ( ) show which numbers are added first.
Words	**Identity Property of Addition** The sum of any number and 0 is the number.
Examples	$8 + 0 = 8$ $0 + 8 = 8$

Example 2

Tutor

There were 16 people at the pool on Saturday. There were no people at the pool on Sunday. How many people were there on Saturday and Sunday?



_____ + _____ = _____ This is the _____ Property of Addition.

So, there were _____ people at the pool on Saturday and Sunday.

You can use properties and rules to find the **unknown**, or missing number, in a number sentence.

Example 3

Tutor

Find the unknown in 10 − ■ = 10.

When you subtract 0 from any number, the result is the number.

So, the unknown is _____.

Key Concept Subtraction Rules

Words	When you subtract 0 from any number, the result is the number.
Examples	22 − 0 = 22 14 − 0 = 14
Words	When you subtract any number from itself, the result is 0.
Examples	16 − 16 = 0 20 − 20 = 0

Talk-MATH

Which subtraction rule is like the opposite of the Identity Property of Addition? Explain your reasoning.

Guided Practice

Check

Find each unknown. Draw a line to identify the property or rule used.

1. 19 − ■ = 19
■ = _____

2. (5 + ■) + 2 = 5 + (9 + 2)
■ = _____

3. 74 + 68 = ■ + 74
■ = _____

- Commutative Property of Addition
- Associative Property of Addition
- When you subtract 0 from any number, the result is the number.

Name _____

Independent Practice

Algebra Find each unknown. Write each property or rule that is used.

4. $(\square + 8) + 7 = 9 + (8 + 7)$

$\square$ = _____

_____

5. $14 + 13 = 13 + \square$

$\square$ = _____

_____

6. $\square + 0 = 19$

$\square$ = _____

_____

7. $25 - \square = 0$

$\square$ = _____

_____

8. $17 + (11 + 18) = (17 + \square) + 18$

$\square$ = _____

_____

9. $37 - \square = 37$

$\square$ = _____

_____

Use the properties of addition to add.

10. $17 + 0$ = _____

11. $(22 + 35) + 15$ = _____

12. $16 + 22$ = _____

13. $0 + 47$ = _____

14. $19 + (61 + 15)$ = _____

15. $27 + (43 + 16)$ = _____

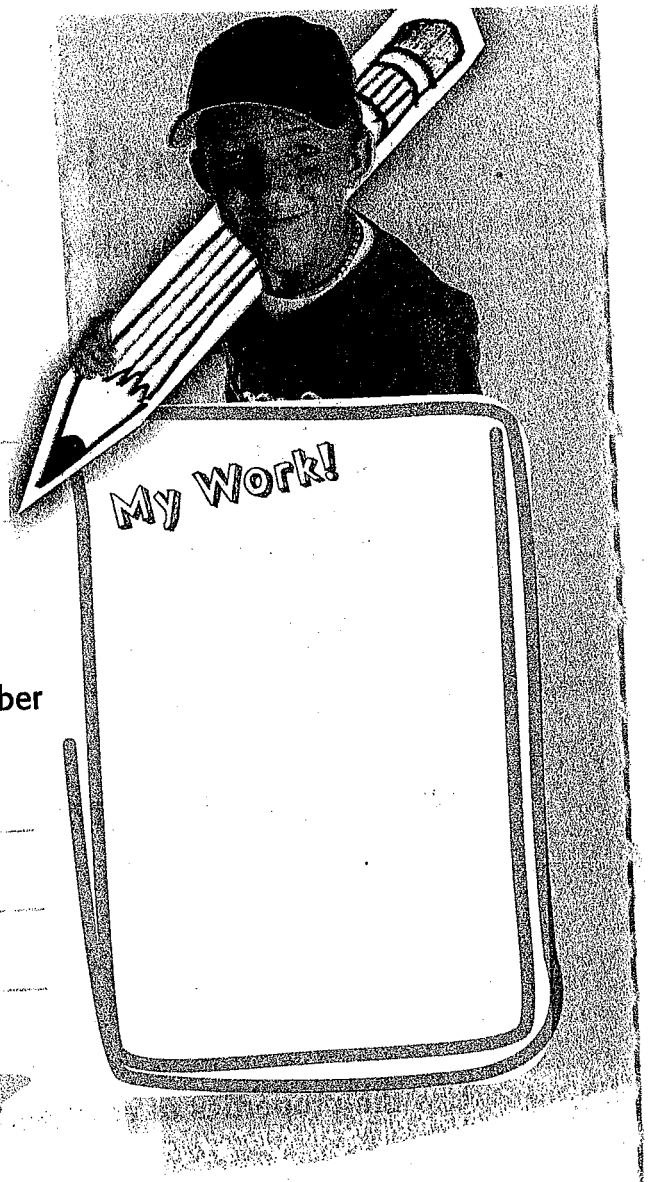
16. $23 + 74$ = _____

17. $(24 + 24) + 16$ = _____

18. $0 + 83$ = _____

19. $25 + (35 + 19)$ = _____

Real World Problem Solving



20. Paco has 75 minutes before he needs to get ready for baseball practice. He cleans his room for 40 minutes and reads for 35 minutes. How much time will he have left before his baseball practice? Explain.

21. Mathematical PRACTICE 7 **Identify Structure** Chloe ate 10 grapes and 5 crackers. Layla ate 5 grapes and 10 crackers. Who ate more food items? Write a number sentence. Then identify the property or rule used.

HOT Problems

22. Mathematical PRACTICE 2 **Use Number Sense** $(23 + \blacksquare) + 19 = 23 + (\blacksquare + 19)$

Can any number complete the number sentence? Explain.

23. **Building on the Essential Question** How are addition properties and subtraction rules helpful when solving problems?

Name _____

Independent Practice

Write each number.

7. 100 less than 37,972 _____

8. 10,000 more than 374 _____

9. 10 more than 45,301 _____

10. 1 more than 12,349 _____

11. 10,000 less than 12,846 _____

12. 1,000 more than 91,928 _____

13. 1 less than 37,937 _____

14. 1,000 less than 82,402 _____

Complete the table.

	Start	End	Change
15.	28,192		100 less
16.	8,392	8,402	
17.	521,457	520,457	
18.	51,183		1 more

Complete each number sentence.

19. 45,311 + _____ = 46,311

20. 28,400 − _____ = 28,390

21. 89,420 − _____ = 89,320

22. 84,552 + _____ = 94,552

23. 6,339 + _____ = 6,340

24. 3,014 + _____ = 13,014

Identify and complete each number pattern.

25. 8,901 | 8,911 | 8,921 | | | more

26. | 969,987 | 979,987 | | 999,987 | more

27. 56,789 | | 56,589 | 56,489 | 56,389 |

28. 42,578 | | | 42,608 | 42,618 |

Problem Solving

29. Go up the ladder. Write the resulting number on each rung.

	100 more
	10 more
	1,000 more
	1 more
	10,000 more
	10 more
	1,000 more
272	**Start**

30. Go down the ladder. Write the resulting number on each rung.

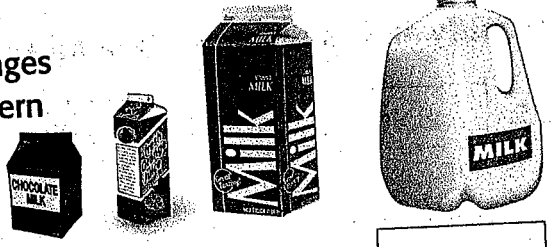
12,393	**Start**
	10,000 less
	100 less
	100 less
	1,000 less
	1,000 less
	100 less
	10 less

HOT Problems

31. Mathematical PRACTICE 3 **Find The Error** Gary completed this number pattern. Find and correct his mistake.

27,389; 26,389; 25,389; 23,389; 24,389

32. Mathematical PRACTICE 2 **Use Number Sense** Beverages at the Quick Mart increase in price. If this pattern continues, what would be the price of the gallon of milk?



79¢ $1.79 $2.79

33. **Building on the Essential Question** Why do we study patterns in mathematics?

Name .....

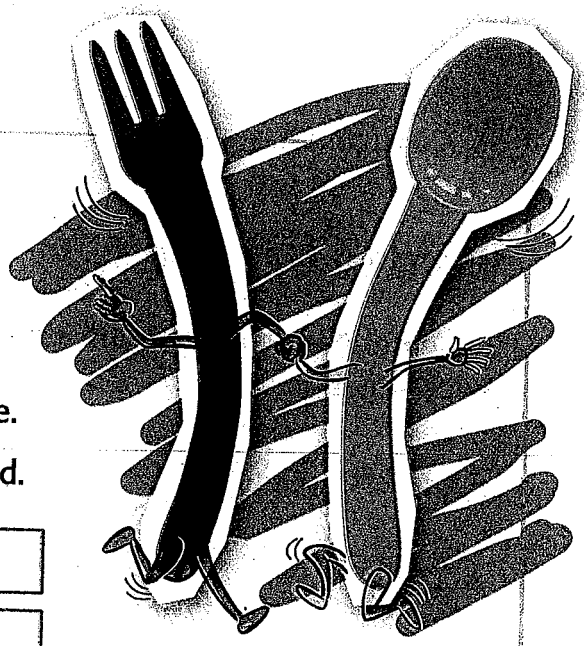
Number and Operations in Base Ten
4.NBT.3, 4.NBT.4

Estimate Sums and Differences

Lesson 4

ESSENTIAL QUESTION
What strategies can I use to add or subtract?

When estimating, you can round to any place value.



Math in My World

Watch Tutor

Example 1

The Central School District needs 5,481 forks and 2,326 spoons for a school function. About how many forks and spoons will they need altogether?

Estimate 5,481 + 2,326. Round to the hundreds place.

Round each number to the nearest hundred. Then add.

5,481 — rounds to → ☐,☐☐☐

+ 2,326 — rounds to → + ☐,☐☐☐

———— ☐,☐☐☐

So, 5,481 + 2,326 is about _____.

Example 2

Watch Tutor

Estimate $7,542 – $3,225. Round to the hundreds place.

$7,542 — rounds to → $☐,☐☐☐

– $3,225 — rounds to → – $☐,☐☐☐

———— $☐,☐☐☐

So, $7,542 – $3,225 is about _____.

Example 3

Tutor

The table shows populations for two cities in Kentucky. About how many more people live in Covington than in Ashland?

Kentucky Populations	
City	Population
Ashland	21,510
Covington	42,811

Round each population to the nearest thousand. Then, subtract.

42,811 — rounds to → ☐☐,☐☐☐

− 21,510 — rounds to → − ☐☐,☐☐☐

☐☐,☐☐☐

So, Covington has about _____ more people.

Guided Practice

Check

Estimate. Round each number to the given place value.

1. 1,454 + 335; hundreds

_____ + _____ = _____

2. 2,871 + 427; hundreds

_____ + _____ = _____

3. $2,746 − $1,529; tens

_____ − _____ = _____

4. 48,344 − 7,263; thousands

_____ − _____ = _____

Talk MATH

Estimate 829 + 1,560 to the nearest hundred and the nearest thousand.

Name _____

Independent Practice

Add. Estimate to check your work.

3. 8,346
+ 7,208

4. $23,824
+ $ 7,346

5. 82,828
+ 4,789

6. $37,178
+ $82,370

7. $693,782
+ $ 47,816

8. 743,980
+ 211,315

9. 254,671
+ 381,366

10. $15,789
+ $22,503

11. 56,772
+ 29,428

Add. Use the place-value chart to help set up the problem.

12. 17,599 + 72,682 = _____

	Thousands			Ones		
	hundreds	tens	ones	hundreds	tens	ones
			,			
+			,			
			,			

Real World Problem Solving

My Work!

13. There are 4,585 students who rode the bus to school today. There were 3,369 students who came to school another way. How many students were there in all at the school?

14. Mathematical PRACTICE 6 **Explain to a Friend** Becky's mom wants to buy a new TV that costs $1,500 and a DVD player that costs $300. She has $2,000. If she buys groceries for $150, will she have enough money for the TV and the DVD player? Explain to a friend.

15. Mr. Russo's class is collecting bottles to recycle. The class collected 1,146 bottles in March and 2,555 bottles in April. How many bottles were collected?

HOT Problems

16. Mathematical PRACTICE 1 **Make Sense of Problems** Write two 5-digit addends whose sum would give an estimate of 60,000.

17. **Building on the Essential Question** Explain why an addition problem that has 4-digit addends could have a 5-digit sum.

Name _____

Independent Practice

Subtract. Use addition or estimation to check.

3. 2,040
− 946

4. 7,008
− 2,055

5. 12,050
− 3,162

6. 10,400
− 5,445

7. 46,801
− 5,823

8. 60,032
− 21,833

9. $52,006
− $13,055

10. 600,000
− 28,005

11. 508,200
− 136,118

Subtract. Use addition or estimation to check. Use the place-value chart to set up the problem.

12. 900,000 − 31,650 = _____

	Thousands			Ones		
	hundreds	tens	ones	hundreds	tens	ones
−						

Real World Problem Solving

For Exercises 13 and 14, use the table which shows the distance between New York City and five other cities around the world.

City	Miles
Jakarta, Indonesia	10,053
London, England	3,471
Mexico City, Mexico	2,086
Munich, Germany	4,042
Paris, France	3,635

13. How many more miles is it to travel to Jakarta than to London?

_____

14. How many more miles is it to travel to Munich than to Paris?

_____

15. Mathematical PRACTICE 5 **Use Math Tools** Trent earned 4,005 points in a video game. His brother earned 2,375 points in the same game. How many more points did Trent earn than his brother?

_____

My Work!

HOT Problems

16. Mathematical PRACTICE 1 **Plan Your Solution** Identify a number that results in a 4-digit number when 156,350 is subtracted from it.

_____

17. **Building on the Essential Question** How does understanding place value help you to subtract across zeros?

_____

_____

_____

Review

Chapter 2
Add and Subtract Whole Numbers

Vocabulary Check

Use the vocabulary words in the word bank to fill in the blanks.

Associative Property of Addition	**Commutative Property of Addition**
equation	**Identity Property of Addition**
minuend	**subtrahend**
unknown	**variable**

1. The _____ states that for any number, zero plus that number is the number.

2. A(n) _____ quantity is an amount whose value needs to be found.

3. The _____ states that the order in which two numbers are added does not change the sum.

4. The first number in a subtraction sentence from which a second number is to be subtracted is the _____.

5. The _____ states that the grouping of the addends does not change the sum.

6. A number that is subtracted from another number is called the _____.

7. A(n) _____ is a symbol, usually a letter, that is used to represent an unknown quantity.

8. A(n) _____ is a sentence that contains an equals sign (=), showing that two expressions are equal.

Concept Check

Find each unknown. Write the addition property or subtraction rule that each shows.

9. $35 - \blacksquare = 35$

10. $(16 + 5) + \blacksquare = 16 + (5 + 10)$

11. $83 + 35 = 35 + \blacksquare$

12. $76 + 0 = \blacksquare$

Write each number.

13. 10,000 more than 25,953

14. 1,000 less than 63,035

Make a ten, hundred, or thousand to mentally add.

15. $4{,}529 + 56 =$ _____

16. $506 + 349 =$ _____

Add. Estimate to check your work.

17.
$$\begin{array}{r} 82{,}267 \\ +\ 21{,}037 \\ \hline \end{array}$$

18.
$$\begin{array}{r} 432{,}901 \\ +\ 177{,}235 \\ \hline \end{array}$$

19.
$$\begin{array}{r} 206{,}522 \\ +\ 321{,}877 \\ \hline \end{array}$$

Subtract. Use addition or estimation to check.

20.
$$\begin{array}{r} \$54{,}751 \\ -\ \$43{,}226 \\ \hline \end{array}$$

21.
$$\begin{array}{r} 9{,}004 \\ -\ 632 \\ \hline \end{array}$$

22.
$$\begin{array}{r} 70{,}909 \\ -\ 63{,}485 \\ \hline \end{array}$$

Name .....

MY Homework

Lesson 5
Multiplication Properties and Division Rules

Homework Helper

eHelp Need help? connectED.mcgraw-hill.com

The tables show the properties of multiplication and the division rules that can be used to help solve problems. Identify the property or rule used in the equation $5 \times 1 = 5$.

Multiplication Properties	
Commutative Property of Multiplication When multiplying, the order of the factors does not change the product.	$3 \times 4 = 12$ $4 \times 3 = 12$
Identity Property of Multiplication When any number is multiplied by 1, the product is that number.	$7 \times 1 = 7$
Zero Property of Multiplication When any number is multiplied by 0, the product is 0.	$6 \times 0 = 0$

Division Rules	
Zeros in Division When you divide 0 by any nonzero number, the quotient is 0. It is not possible to divide a number by 0.	$0 \div 9 = 0$
Ones in Division When you divide any number by 1, the quotient is always the dividend. When you divide any nonzero number by itself, the quotient is always 1.	$8 \div 1 = 8$ $6 \div 6 = 1$

The equation $5 \times 1 = 5$ shows the Identity Property of Multiplication.

Practice

Identify the property or rule shown by each equation.

1. $9 \div 1 = 9$

2. $33 \times 1 = 33$

Problem Solving

Complete each number sentence. Identify the property or rule.

3. $5 \div$ _____ $= 5$

_____

4. $9 \times 8 = 8 \times$ _____

_____

5. _____ $\div 12 = 0$

_____

6. Mathematical PRACTICE 7 **Identify Structure** Dennis has 3 packs of pens with 2 pens in each pack. He has 2 packs of pencils with 3 pencils in each pack. Write two multiplication sentences to show how many pens and pencils he has.

_____

Vocabulary Check

Write a number sentence for each rule or property.

7. Ones in Division _____

8. Commutative Property of Multiplication _____

9. Zeros in Division _____

10. Zero Property of Multiplication _____

11. Identity Property of Multiplication _____

Test Practice

12. The Zero Property of Multiplication tells you that 25×0 is equal to what number?

Ⓐ 0 Ⓒ 7

Ⓑ 1 Ⓓ 25

Name .....

The Associative Property of Multiplication

Lesson 6

ESSENTIAL QUESTION
How are multiplication and division related?

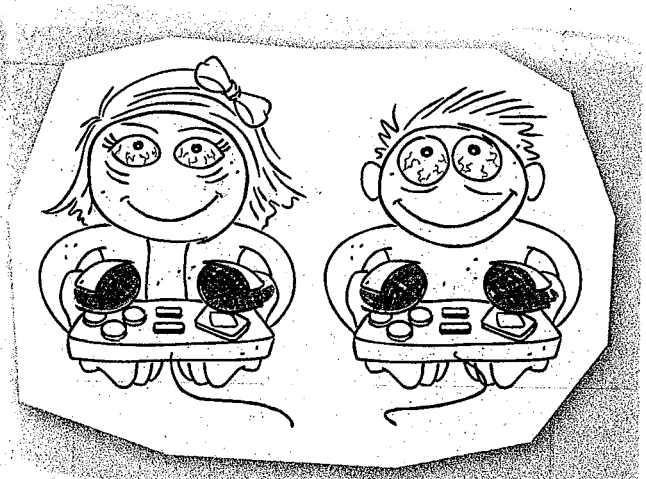
The **Associative Property of Multiplication** shows that the way in which numbers are grouped does not change their product.

Math in My World

Watch Tutor

Example 1

There are 2 video games in each value pack. There are 6 value packs in each box. If Raul buys 3 boxes for his collection, how many video games will he have?



You need to find $2 \times 6 \times 3$. There are two ways to group the numbers.

One Way

Multiply 2 × 6 first.

$2 \times 6 \times 3 = (2 \times 6) \times 3$

$= \square \times \square$

Helpful Hint
Use repeated addition to find 12×3.
$12 + 12 + 12 = \square$

$= \square$

Another Way

Multiply 6 × 3 first.

$2 \times 6 \times 3 = 2 \times (6 \times 3)$

$= \square \times \square$

Helpful Hint
Use repeated addition to find 18×2.
$18 + 18 = \square$

$= \square$

So, Raul will have _____ video games.

Example 2

Watch Tutor

Use the Associative Property of Multiplication to find $9 \times 2 \times 4$.

Find 9×2 first.

$9 \times 2 \times 4 = (9 \times 2) \times 4$

$= \square \times 4$

$= 18 + 18 + 18 + 18$

$= \square$

It is easier to find 9×8 than 18×4.

Find 2×4 first.

$9 \times 2 \times 4 = 9 \times (2 \times 4)$

$= 9 \times \square$

$= \square$

Helpful Hint

Parentheses ( ) tell you which numbers to multiply first.

Guided Practice

Check

Multiply. Use the Associative Property.

1. $5 \times 3 \times 3 = 5 \times (3 \times 3)$

$= \square \times \square$

$= \square$

2. $4 \times 2 \times 7 = (4 \times 2) \times 7$

$= \square \times \square$

$= \square$

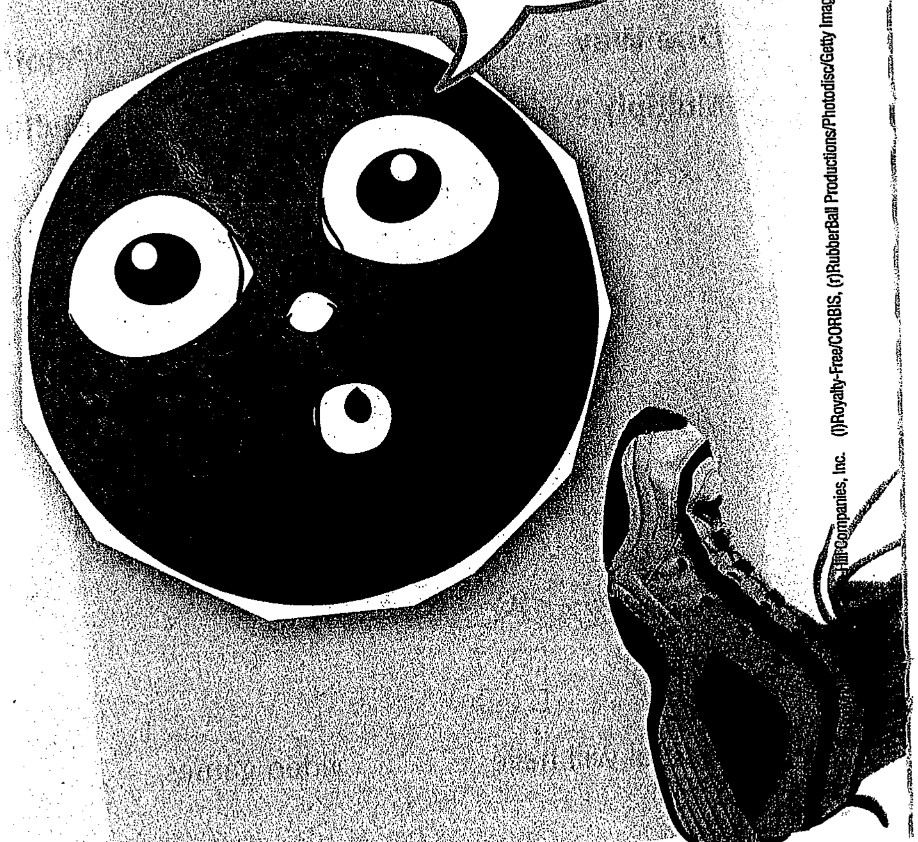
3. $3 \times 1 \times 6 = (3 \times 1) \times 6$

$= \square \times \square$

$= \square$

Talk MATH

Identify the order that makes it easier to multiply the factors in $9 \times 4 \times 2$. Explain.



Review

Chapter 3
Understand Multiplication and Division

Vocabulary Check

Vocab

Write the letter of each definition on the line next to the correct vocabulary word.

1. **Associative Property of Multiplication** _____
2. **Commutative Property of Multiplication** _____
3. **decompose** _____
4. **dividend** _____
5. **divisor** _____
6. **fact family** _____
7. **factor** _____
8. **Identity Property of Multiplication** _____
9. **multiple** _____
10. **product** _____
11. **quotient** _____
12. **repeated subtraction** _____
13. **Zero Property of Multiplication** _____

A. A group of related facts using the same numbers.

B. The number by which the dividend is being divided.

C. The property that states that the order in which two numbers are multiplied does not change the product.

D. The property that states any number multiplied by zero is zero.

E. A number that is multiplied by another number.

F. The answer of a division problem.

G. The answer of a multiplication problem.

H. The product of a given number and any whole number.

I. The property that states that the grouping of the factors does not change the product.

J. A strategy that can be used to divide.

K. A number that is being divided.

L. The property that states when any number is multiplied by 1, the product is that number.

M. A way to break down a number into its factors.

Concept Check

Write a fact family for each set of numbers.

14. 3, 7, 21 _____ _____ _____ _____

15. 9, 5, 45 _____ _____ _____ _____

Use repeated subtraction to divide.

16. $42 \div 7 =$ _____ **17.** $56 \div 8 =$ _____ **18.** $36 \div 9 =$ _____

19. Use multiplication to complete the number sentence.

5 times as many

$\square \times \square = \square$

Identify the property or rule shown by each equation.

20. $6 \times 8 = 8 \times 6$

_____

_____

21. $(3 \times 2) \times 6 = 3 \times (2 \times 6)$

_____

_____

Find the factors of each number.

22. 16 _____

23. 18 _____

24. 15 _____

List the first five multiples.

25. 2 _____

26. 10 _____

27. 12 _____

Name _____

Independent Practice

Estimate. Round to the greatest place value. Circle whether the estimate is *greater than* or *less than* the actual product.

3. 562 × 6

greater than
less than

_____ × _____ = _____

4. 2 × 896

greater than
less than

_____ × _____ = _____

5. 729 × 8

greater than
less than

_____ × _____ = _____

6. 2 × $438

greater than
less than

_____ × _____ = _____

7. $450 × 7

greater than
less than

_____ × _____ = _____

8. 3 × 5,489

greater than
less than

_____ × _____ = _____

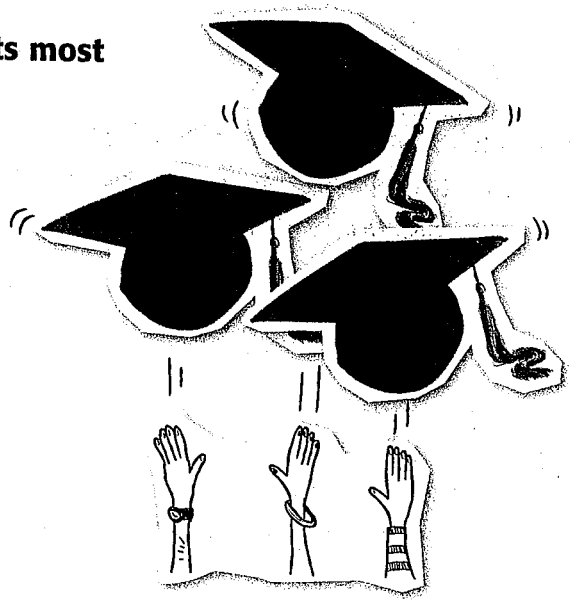
Draw lines to match each product with its most reasonable estimate.

9. 7 × 189 • 4,800

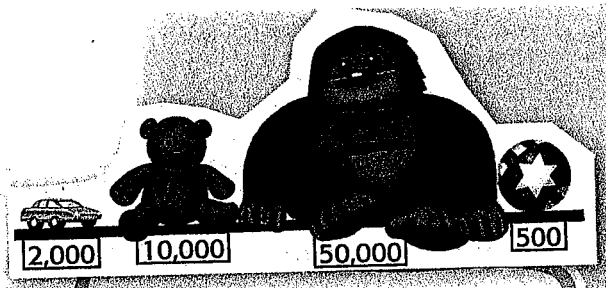
10. 211 × 9 • 1,400

11. 8 × 632 • 2,500

12. 455 × 5 • 1,800



Problem Solving



Toby and Lena like to go to the arcade. They earn points towards prizes. For Exercises 13–15, use the information to the right.

13. Mathematical PRACTICE 1 **Plan Your Solution** Toby went to the arcade 2 times. He earned 5,150 points each time. What is the biggest prize Toby can get?

My Work!

_____

14. How many toy cars could Toby get with his points?

_____

15. Lena went to the arcade 7 times. She earned 9,050 points each time. What are the two largest prizes she can get?

_____

16. The students in Mrs. Pluma's class each wrote 4 letters to their pen pals. There were about 80 letters written in all. About how many students are in Mrs. Pluma's class?

_____

HOT Problems

17. Mathematical PRACTICE 2 **Use Number Sense** Explain how you can tell if your estimated answer is greater or less than the exact answer to a multiplication problem.

_____

_____

18. **Building on the Essential Question** How is estimation helpful when finding a product mentally? Explain.

_____

Name _____

Multiply by a Multi-Digit Number

Lesson 9

ESSENTIAL QUESTION
How can I communicate multiplication?

You can use partial products to multiply by a multi-digit number.

Math in My World

Watch Tutor

Example 1

Today is Laura's birthday, and she is nine years old. Except for leap years, there are 365 days in one year. How many days old is Laura?

Find 365×9.

Estimate $9 \times 365 \longrightarrow 9 \times$ _____ = _____

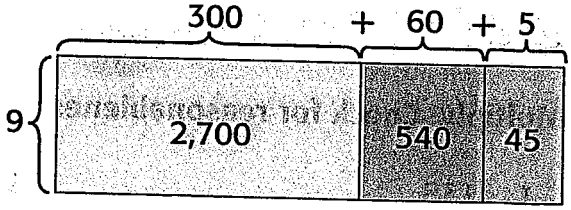
$$\begin{array}{r} 3\ 6\ 5 \\ \times \quad\ 9 \\ \hline \square\square \\ \square\square\square \\ +\ \square,\square\square\square \\ \hline \square,\square\square\square \end{array}$$

Multiply 9×5.

Multiply 9×60.

Multiply 9×300.

Add the partial products.



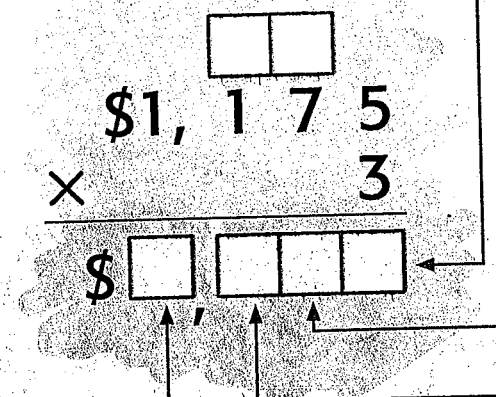
So, Laura is _____ days old.

Check for Reasonableness

The product, _____, is close to the estimate, _____.

Example 2

Find 3 × $1,175.



1 **Multiply the ones.**

3 × 5 ones = 15 ones

Regroup 15 ones as 1 ten and 5 ones.

2 **Multiply the tens.**

3 × 7 tens = 21 tens

Add the regrouped tens.

21 tens + 1 ten = 22 tens

Regroup 22 tens as 2 hundreds and 2 tens.

3 **Multiply the hundreds.**

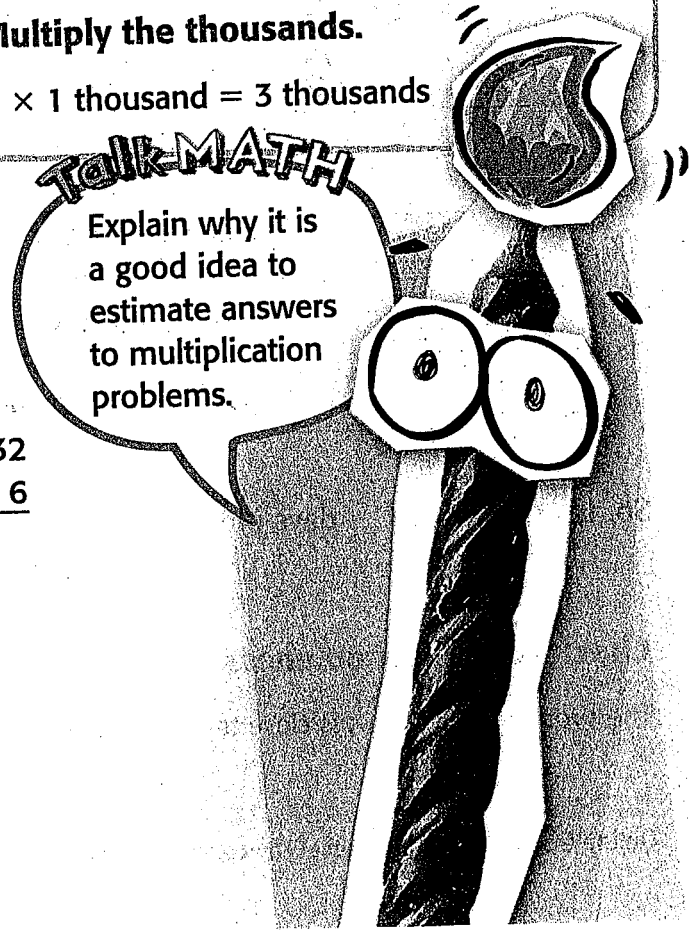
3 × 1 hundred = 3 hundreds

Add the regrouped hundreds.

3 hundreds + 2 hundreds = 5 hundreds

4 **Multiply the thousands.**

3 × 1 thousand = 3 thousands



Guided Practice

Multiply. Check for reasonableness.

1. 135
× 2

2. 532
× 6

Name _____

Independent Practice

Multiply. Check for reasonableness.

3. 313 × 3

4. 819 × 5

5. $781 × 5

6. 238 × 4

7. 7 × $460 = _____

8. 7 × 561 = _____

9. 8 × 6,328 = _____

10. 9 × $5,679 = _____

Algebra Find each unknown number.

11. 8 × 7,338 = *x*

x = _____

12. 7 × 8,469 = *y*

y = _____

13. 9 × $9,927 = *t*

t = _____

14. 9 × 8,586 = *u*

u = _____

Algebra Find each product if *n* = 8.

15. *n* × 295 = _____

16. 737 × *n* = _____

17. *n* × $2,735 = _____

Compare. Use >, <, or =.

18. 4 × 198 ◯ 3 × 248

19. 7 × 385 ◯ 6 × 457

Real World Problem Solving

20. Mr. Gibbons buys 8 cases of seeds at the school plant sale. If there are 144 packages of seeds in each case, how many packages of seeds has he bought?

21. On average, 1,668 gallons of water are used daily by each person in the United States. How much water is used by one person in a week?

22. Each set of furniture costs $2,419. How much would it cost to buy 5 sets of furniture?

HOT Problems

23. Mathematical PRACTICE 1 **Keep Trying** Complete the equation.

$\square$, $287 \times 6 = 25$, $\square 2 \square$

24. Mathematical PRACTICE 7 **Identify Structure** Write a four-digit number and a one-digit number whose product is greater than 6,000 and less than 6,200.

25. **Building on the Essential Question** How is multiplying by multi-digit numbers similar to multiplying by two-digit numbers?

Name _____

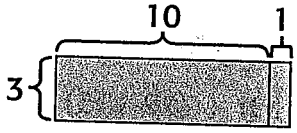
Hands On
Use the Distributive Property to Multiply

Lesson 3

ESSENTIAL QUESTION
How can I multiply by a two-digit number?

You have used the Distributive Property to find a product of a two-digit number and a one-digit number.

$$3 \times 11 = 3 \times (10 + 1)$$
$$= (3 \times 10) + (3 \times 1)$$
$$= \_\_\_\_ + \_\_\_\_$$
$$= \_\_\_\_$$



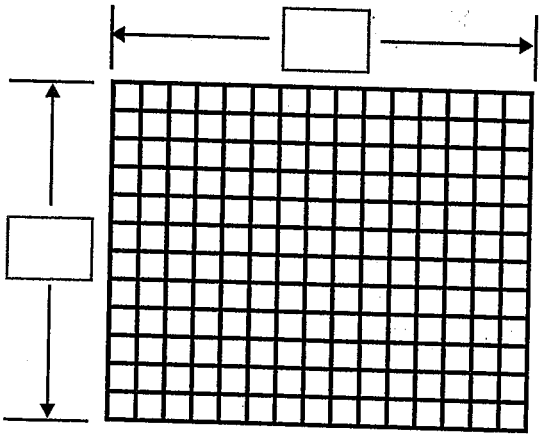
You can also use the Distributive Property to find the product of a two-digit number and a two-digit number.

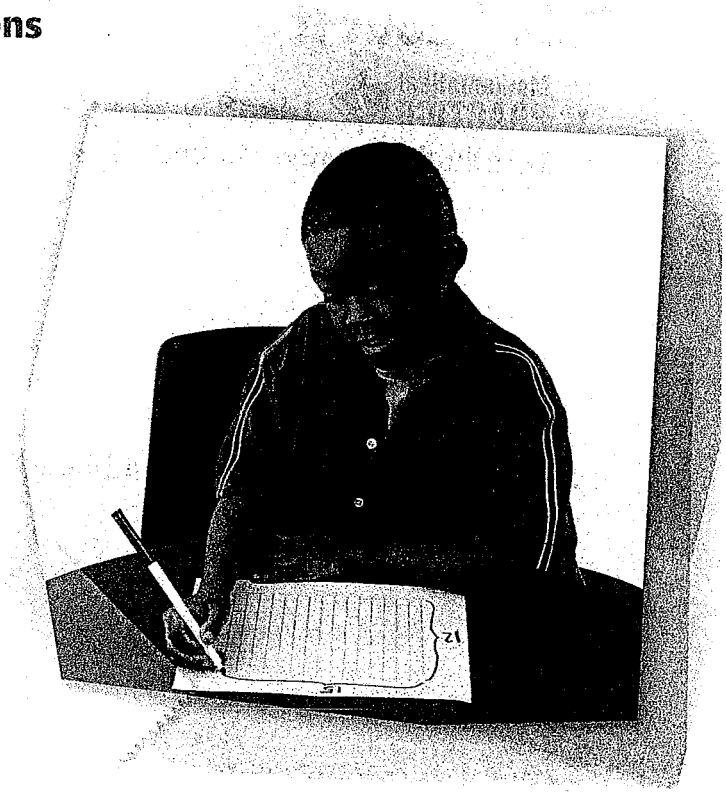
Draw It

Tools

Find 12×15.

1 **Label 12 and 15 as the dimensions of the area model.**

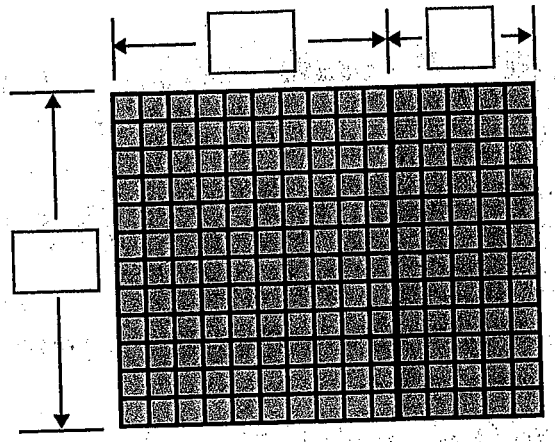




2 **Separate the tens and ones of one factor. Label each part.**

Write 15 as _____ and _____.

$12 \times 15 = 12 \times (10 + 5)$



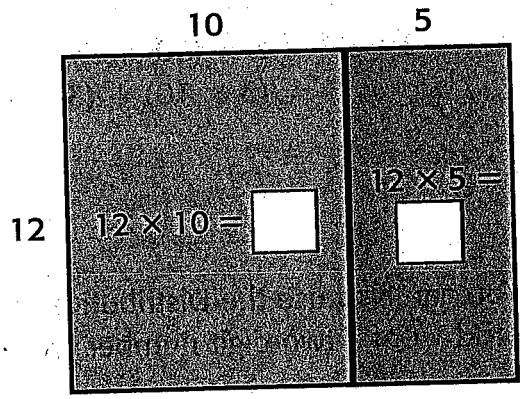
3 **Find each product. Then add.**

$12 \times 15 = 12 \times (10 + 5)$

$= (12 \times 10) + (12 \times 5)$

$=$ _____ $+$ _____

$=$ _____



So, $12 \times 15 =$ _____.

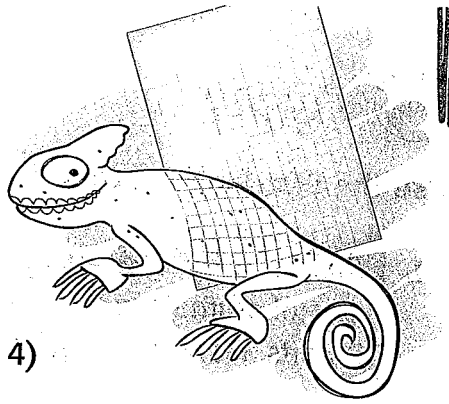
Talk About It

1. Mathematical PRACTICE 7 **Identify Structure** How would you use the Distributive Property to find 12×18? Then find the product.

2. How would you use the Distributive Property to find 14×17? Then find the product.

Name _____

Practice It



Draw an area model. Then use the Distributive Property to find each product.

3. Find 36×24.

	20	4
36	720	144

$36 \times 24 = 36 \times (20 + 4)$

$= (36 \times 20) + (36 \times 4)$

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

$= \_\_\_\_$

4. Find 47×19.

$47 \times 19 = 47 \times (10 + 9)$

$= (47 \times \_\_\_\_) + (47 \times \_\_\_\_)$

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

$= \_\_\_\_$

5. Find 52×11.

$52 \times 11 = \_\_\_\_ \times (\_\_\_\_ + \_\_\_\_)$

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

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

$= \_\_\_\_$

6. Find 46×22.

$46 \times 22 = \_\_\_\_ \times (\_\_\_\_ + \_\_\_\_)$

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

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

$= \_\_\_\_$

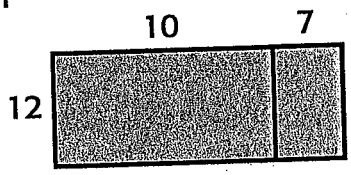
Apply It

Use the Distributive Property to solve.

7. Mathematical PRACTICE 7 **Identify Structure** There are 15 types of animals in each part of the zoo. The zoo has 12 parts. How many types of animals are there in all?

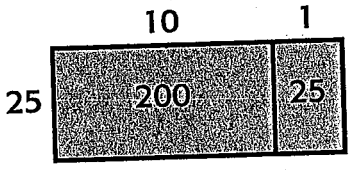
_____

8. Write the multiplication sentence for the area model. Then find the product.



_____ × _____ = _____

9. Mathematical PRACTICE 3 **Find the Error** Tim drew a model to find 11 × 25. Find and correct his mistake.



200 + 25 = 225

_____

_____

My Work!

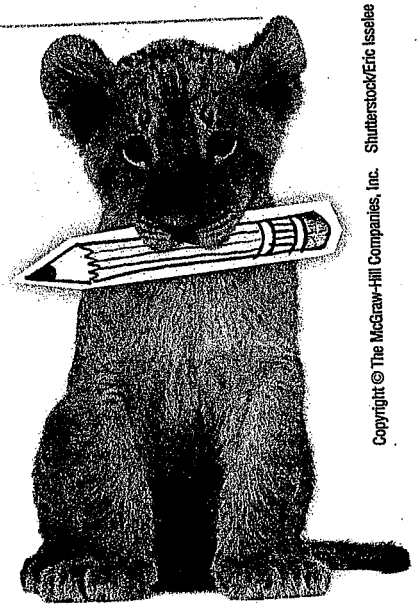
Write About It

10. Why is the Distributive Property appropriate for two-digit multiplication? Explain.

_____

_____

_____



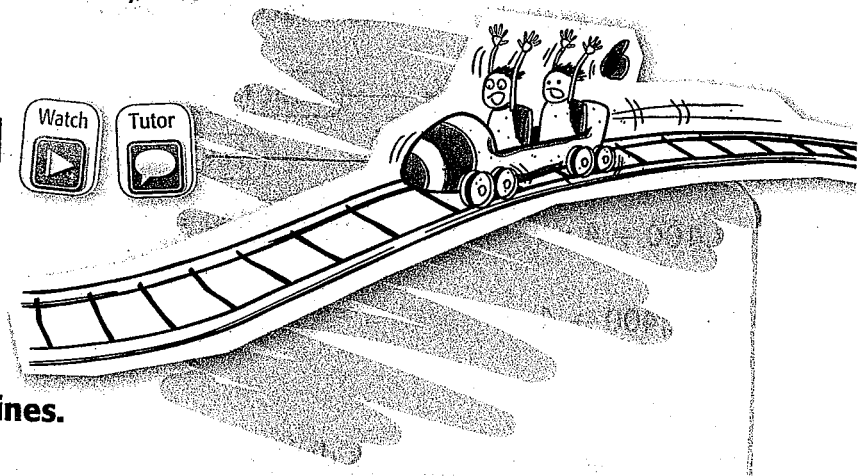
Name _____

Divide Multiples of 10, 100, and 1,000

Lesson 1

ESSENTIAL QUESTION
How does division affect numbers?

You use place value and patterns to divide dividends that are multiples of 10, 100, and 1,000.



Real World Math in My World

Watch Tutor

Example 1

Anita's family went on vacation to an amusement park. The park has 5 entrances. 1,500 people entered the park and separated into equal lines. How many people are in each line?

Divide 1,500 people into 5 equal groups.

One Way **Use a multiplication pattern.**

$5 \times 3 = 15$ → $15 \div 5 = 3$

$5 \times 30 = 150$ → $150 \div 5 = 30$

$5 \times 300 = 1{,}500$ → $1{,}500 \div 5 =$ _____

Another Way **Use a basic fact and place value.**

$15 \div 5 = 3$ ← basic fact

$150 \div 5 = 30$ ← 150 is 10 times as big as 15. So, the quotient 30, is 10 times as big as 3.

$1{,}500 \div 5 =$ _____ ← 1,500 is 100 times as big as 15. So, the quotient is 100 times as big as 3.

So, there are _____ people in each line.

Example 2

Tutor

Find the quotient of 2,400 and 4.

Find 2,400 ÷ 4.

One Way **Use a multiplication pattern.**

$4 \times 6 = 24$ → $24 \div 4 = 6$

$4 \times 60 = 240$ → $240 \div 4 = 60$

$4 \times 600 = 2{,}400$ → $2{,}400 \div 4 =$ _____

Another Way **Use a basic fact and place value.**

$24 \div 4 = 6$ ← basic fact

$240 \div 4 = 60$ ← $240 = 10 \times 24$. So, $60 = 10 \times 6$.

$2{,}400 \div 4 =$ _____ ← $2{,}400 = 100 \times 24$. So, the quotient is 100 times as big as 6.

So, $2{,}400 \div 4 =$ _____.

Check

Use multiplication to check division.

$2{,}400 \div 4 =$ _____

_____ $\times 4 = 2{,}400$

Talk MATH

What basic fact will help you find the quotient of 4,200 and 7?

Guided Practice

Check

Complete each set of patterns.

1. $12 \div 4 =$ _____

$120 \div 4 =$ _____

$1{,}200 \div 4 =$ _____

2. $36 \div 9 =$ _____

$360 \div 9 =$ _____

$3{,}600 \div 9 =$ _____

Divide. Use patterns and place value.

3. $\$400 \div 2 =$ _____

4. $1{,}600 \div 4 =$ _____

Name _____

Independent Practice

Complete each set of patterns.

5. $12 \div 2 =$ _____

$120 \div 2 =$ _____

$1{,}200 \div 2 =$ _____

6. $54 \div 9 =$ _____

$540 \div 9 =$ _____

$5{,}400 \div 9 =$ _____

7. $\$36 \div 4 =$ _____

$\$360 \div 4 =$ _____

$\$3{,}600 \div 4 =$ _____

8. $42 \div 6 =$ _____

$420 \div 6 =$ _____

$4{,}200 \div 6 =$ _____

9. $\$28 \div 7 =$ _____

$\$280 \div 7 =$ _____

$\$2{,}800 \div 7 =$ _____

10. $\$72 \div 8 =$ _____

$\$720 \div 8 =$ _____

$\$7{,}200 \div 8 =$ _____

Divide. Use patterns and place value.

11. $200 \div 5 =$ _____

12. $\$600 \div 3 =$ _____

13. $900 \div 3 =$ _____

14. $800 \div 2 =$ _____

15. $\$1{,}400 \div 7 =$ _____

16. $4{,}500 \div 5 =$ _____

17. $\$3{,}500 \div 5 =$ _____

18. $6{,}300 \div 9 =$ _____

19. $\$6{,}400 \div 8 =$ _____

20. $1{,}600 \div 8 =$ _____

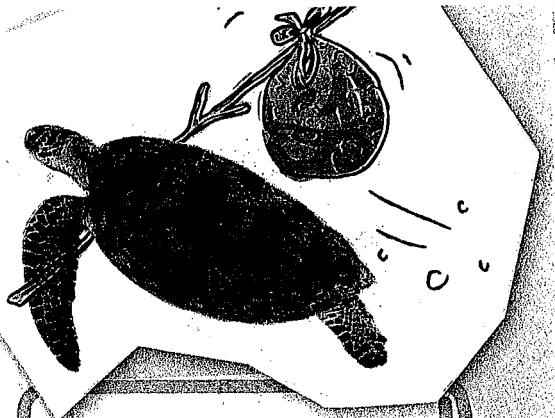
21. $5{,}400 \div 6 =$ _____

22. $\$8{,}100 \div 9 =$ _____

Real World Problem Solving

Animals migrate due to factors such as climate and food availability. The table shows a few migration distances.

Migration	
Animals	Distance (in miles)
Caribou	2,400
Desert locust	2,800
Green sea turtle	1,400



My Work!

23. Suppose a group of green sea turtles travels 7 miles a day. How many days will the migration take?

_____

24. Mathematical PRACTICE 4 **Model Math** A herd of caribou migrated the distance shown in 8 months. If they traveled the same distance each month, how many miles did the herd travel each month?

_____

HOT Problems

25. Mathematical PRACTICE 5 **Use Mental Math** Using mental math, tell which has a greater quotient, 1,500 ÷ 3 or 2,400 ÷ 6? Explain.

_____

_____

26. Mathematical PRACTICE 1 **Plan Your Solution** Complete the equation.

□,80□ ÷ 6 = □□□

27. **Building on the Essential Question** Why are basic facts needed when dividing large numbers?

_____

_____

_____

Name _____

Divide with Remainders

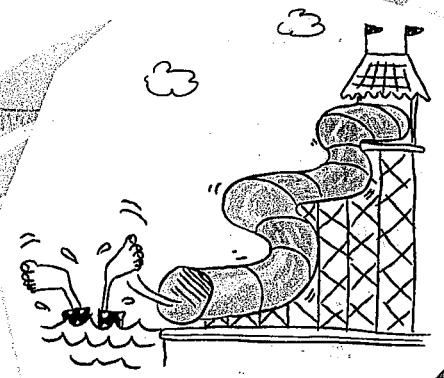
Lesson 5

ESSENTIAL QUESTION
How does division affect numbers?

You have used models and fact families to divide.
You can also use place value.

Math in My World

Tools Watch Tutor



Example 1

Nolan and his family went to a water park during their vacation. Each seat on a water ride can hold 2 people. There are 39 people. How many seats will be needed?

Find 39 ÷ 2.

1 Divide the tens.

How many groups of 2 are in 3 tens? _____

_____ group of ten

2 Multiply, subtract, and compare.

Multiply. $2 \times 1 =$ _____

Subtract. $3 - 2 =$ _____

Compare. $1 < 2$

3 Bring down the ones.

Bring down 9 ones. There are now _____ ones.

4 Divide the ones.

How many groups of 2 are in 19? _____ groups

Multiply. $2 \times 9 =$ _____

Subtract. $19 - 18 =$ _____

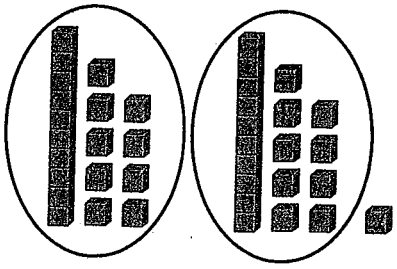
Compare. $1 < 2$

19 seats are full. One additional seat has 1 person.

So, _____ seats are needed.

$$\begin{array}{r} 19\ R1 \\ 2\overline{)39} \\ -2\downarrow \\ \hline 19 \\ -18 \\ \hline 1 \end{array}$$

Check Use models to check.



Example 2

Tutor

Find 85 ÷ 3.

1 **Divide the tens.**

Divide How many groups of 3 are in 8? 2 groups

Multiply 2 × 3 = 6

Subtract 8 − 6 = 2

Compare. 2 < 3

Bring Down Bring down the 5.

$$\begin{array}{r} \square\,\square\ \text{R}\ \square \\ 3\overline{)8\ 5} \\ -\ \square \\ \hline \square\,\square \\ -\ \square\,\square \\ \hline \square \end{array}$$

2 **Divide the ones.**

Divide How many groups of 3 are in 25? 8 groups

Multiply 8 × 3 = 24

Subtract 25 − 24 = 1

Compare. 1 < 3

Bring Down Since there are no numbers to bring down, 1 is the remainder.

So, 85 ÷ 3 = _____.

Check

85 ÷ 3 = ☐ R ☐

☐ × 3 = 84 Then add the remainder. 84 + ☐ = 85

Guided Practice

Check

Divide. Use multiplication to check.

1.
$$\begin{array}{r} 1\,\square\ \text{R}\ \square \\ 2\overline{)2\ 7} \\ -\ \square \\ \hline \square\ 7 \\ -\ \square \\ \hline \square \end{array}$$

Check: ☐ × 2 = ☐

☐ + ☐ = ☐

2.
$$\begin{array}{r} \square\,\square\ \text{R}\ \square \\ 5\overline{)5\ 9} \\ -\ \square \\ \hline \square\ 9 \\ -\ \square \\ \hline \square \end{array}$$

Check: ☐ × 5 = ☐

☐ + ☐ = ☐

Talk MATH

When you divide a number by 6, can the remainder be 6? Explain.

Name _____

Independent Practice

Divide. Interpret the remainder.

2. Gianna is at the school carnival. She has 58 tickets. It costs 3 tickets to play the basketball game. If she plays the basketball game as many times as she can, how many tickets will she have left?

$3\overline{)58}$

58 ÷ 3 = _____

So, there is _____ ticket left.

3. There are 75 people waiting in line to ride a roller coaster. Each car of the roller coaster holds 6 people. How many cars will be needed?

$6\overline{)75}$

75 ÷ 6 = _____

The answer is the next whole number, _____.

So, they will need _____ cars.

4. There are 4 cartons of orange juice in each package. If there are 79 cartons of orange juice, how many packages can be filled?

$4\overline{)79}$

79 ÷ 4 = _____

So, _____ packages can be filled.

5. The fourth grade classes are going on a field trip. There are 90 students in all. Each van can seat 8 students. How many vans will be needed?

$8\overline{)90}$

90 ÷ 8 = _____

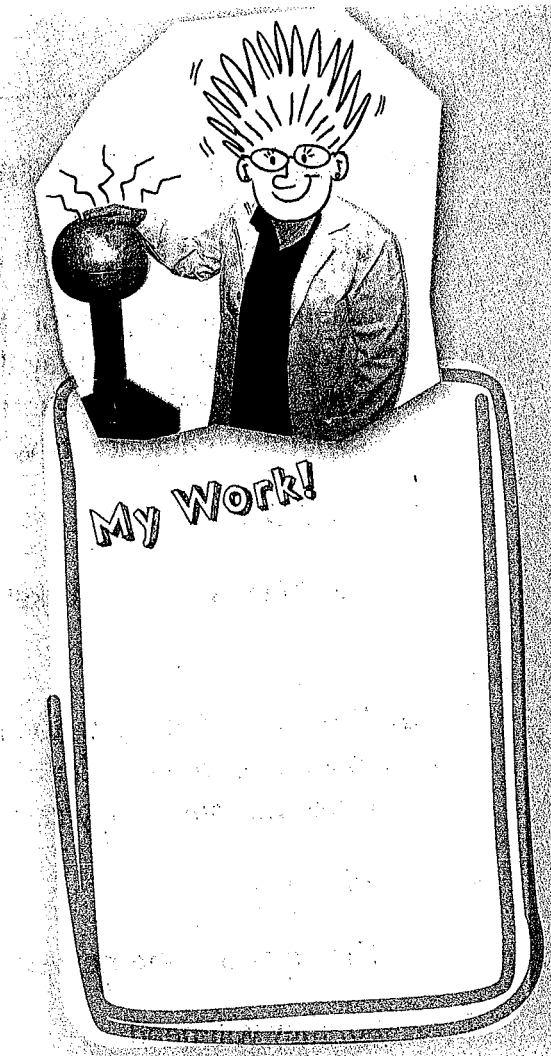
The answer is the next whole number, _____.

So, they will need _____ vans.

Real World Problem Solving

For Exercises 6 and 7, use the following information.

Parents are driving groups of children to the science center. Each van holds 5 children. There are 32 children in all.



6. Mathematical PRACTICE 2 **Reason** How many vans are needed?

7. Circle the true statement about the remainder.

- You do not need to know anything about the remainder to solve this problem.
- The remainder tells you that the answer is the next greatest whole number.
- The remainder is the answer to the question.

HOT Problems

8. Mathematical PRACTICE 2 **Use Number Sense** Brody is organizing his action figures on a shelf. He wants to divide them equally among 4 shelves. There are 37 action figures. Brody says he will have 2 left over. Find and correct his mistake.

9. **Building on the Essential Question** Why is it important to know how to interpret a remainder?

Name _____

Divide Greater Numbers

Lesson 9

ESSENTIAL QUESTION
How does division affect numbers?

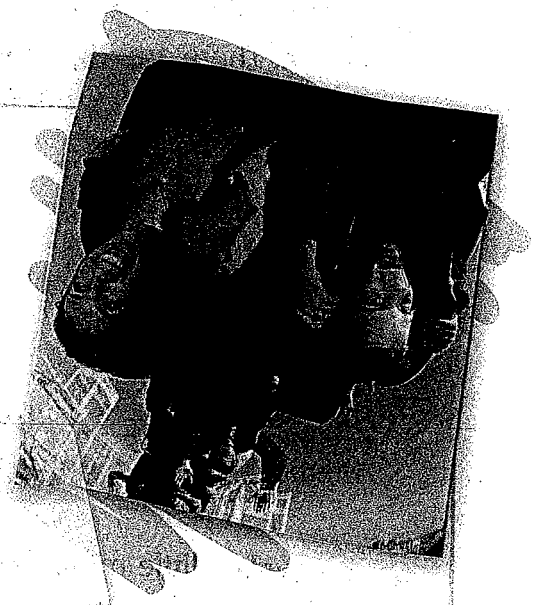
Dividing three- and four-digit numbers is similar to dividing two-digit numbers.

Math in My World

Watch Tutor

Example 1

There are 678 people in line to ride a roller coaster. Each coaster car holds 6 people. How many coaster cars are needed so that everyone in line rides the coaster once?



Divide 678 by 6.

1 Divide the hundreds.

Divide. $6 \div 6 = 1$
Write 1 in the hundreds place.
Multiply. $6 \times 1 = 6$
Subtract. $6 - 6 = 0$
Compare. $0 < 6$
Bring down the tens.

$$\begin{array}{r} 1 \\ 6\overline{)678} \\ -\ 6 \\ \hline 07 \end{array}$$

2 Divide the tens.

Divide. There is 1 group of 6 in 7.
Write 1 in the tens place.
Multiply. $6 \times 1 = 6$
Subtract. $7 - 6 = 1$
Compare. $1 < 6$
Bring down the ones.

$$\begin{array}{r} 113 \\ 6\overline{)678} \\ -\ 6 \\ \hline 07 \\ -\ 6 \\ \hline 18 \\ -\ 18 \\ \hline 0 \end{array}$$

3 Divide the ones.

Divide. $18 \div 6 = 3$
Write 3 in the ones place.
Multiply. $6 \times 3 = 18$
Subtract. $18 - 18 = 0$
Compare. $0 < 6$

$678 \div 6 =$ _____

So, _____ coaster cars are needed.

Example 2

A roller coaster takes about 4 minutes to travel its 1,970-foot track. How many feet does the coaster travel in one minute?

Divide 1,970 by 4.

Estimate 1,970 ÷ 4 ⟶ 2,000 ÷ 4 = _____

1 Divide the thousands.

Since is 1 < 4, you cannot divide the thousands.

2 Divide the hundreds.

Divide. There are 4 groups of 4 in 19.
Multiply. Subtract. Compare. Bring down.

3 Divide the tens.

Divide. There are 9 groups of 4 in 37.
Multiply. Subtract. Compare. Bring down.

4 Divide the ones.

Divide. There are 2 groups of 4 in 10.
Multiply. Subtract. Compare. Bring down.

$$\begin{array}{r} \square\square\square \text{ R}\square \\ 4\overline{)1,970} \\ -16\downarrow \\ \hline 37 \\ -36\downarrow \\ \hline 10 \\ -\ 8 \\ \hline 2 \end{array}$$

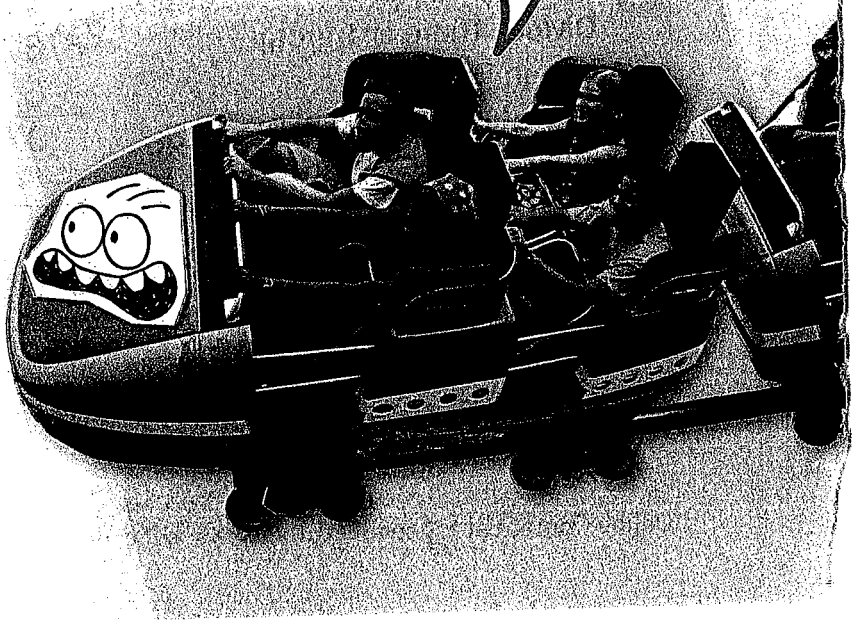
5 Find the remainder.

So, it travels a little more than _____ feet each minute.

Check The answer, a little more than _____, is close to the estimate of 500. So, the answer is reasonable.

Talk-MATH

How would you mentally determine the number of digits in the quotient for 795 ÷ 5?



Guided Practice

Divide. Use estimation to check.

$$\begin{array}{r} \square\square\square \\ 2\overline{)286} \\ -2\downarrow \\ \hline 08 \\ -8\downarrow \\ \hline 06 \\ -6 \\ \hline 0 \end{array}$$

1. $2\overline{)286}$

2. $2\overline{)745}$

Name .....

Independent Practice

Divide. Use estimation to check.

3. $2\overline{)324}$

Estimate:

4. $3\overline{)585}$

Estimate:

5. $2\overline{)1,573}$

Estimate:

Divide. Use multiplication to check.

6. $3\overline{)787}$

Check:

7. $2\overline{)849}$

Check:

8. $4\overline{)994}$

Check:

9. $3\overline{)1,863}$

Check:

10. $4\overline{)3,974}$

Check:

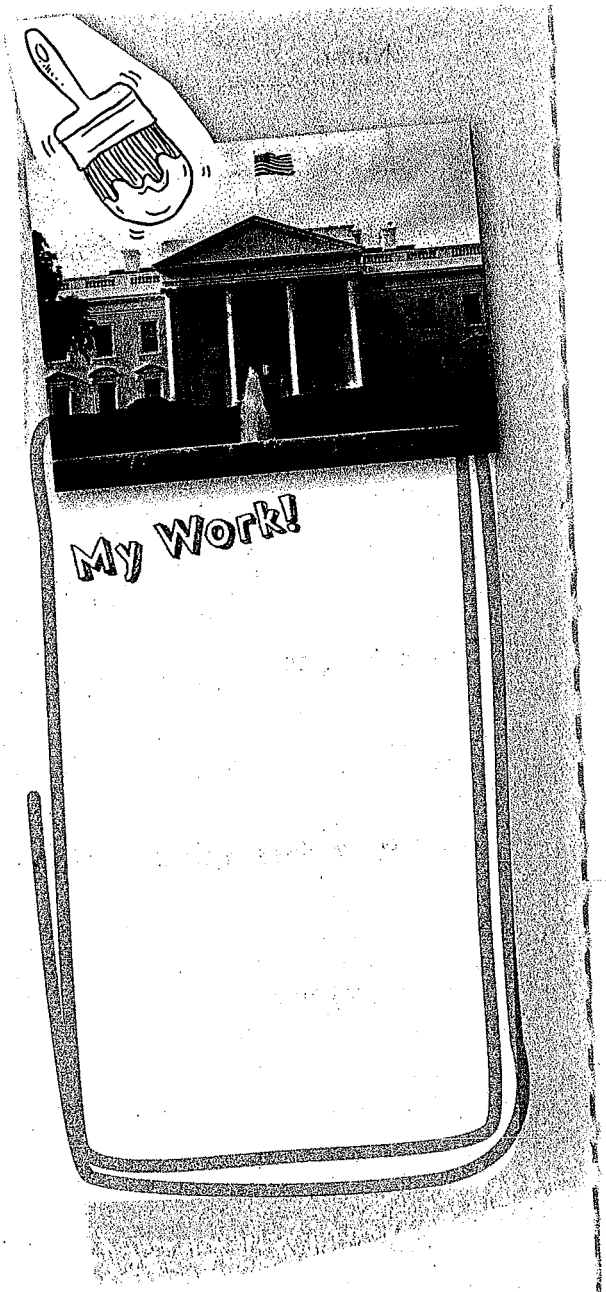
11. $4\overline{)2,611}$

Check:

Real World Problem Solving

Use the following information for Exercises 12–13.

The White House is the official home and workplace of the President of the United States. President Theodore Roosevelt gave the White House its name, based on its color.



12. Mathematical PRACTICE 2 **Reason** It takes 570 gallons of paint to paint the outside of the White House. If the number of gallons used to paint each of its 4 sides is equal, how many gallons of paint are used on each side?

13. There are 132 rooms and 6 floors in the White House. If each floor has the same number of rooms, how many rooms would each floor have?

14. Britney reads a book in 9 days. If the book is 1,116 pages long, and she reads the same number of pages each day, how many pages does she read each day?

HOT Problems

15. Mathematical PRACTICE 1 **Make a Plan** Write a division problem that results in a quotient that is greater than 200 and less than 250.

16. **Building on the Essential Question** Do the quotients always have the same number of digits when dividing 3-digit numbers by 1-digit numbers?