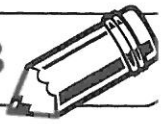
Name Date Time

LESSON 4•1

Testing for Divisibility by 7, 11, and 13



Use these divisibility rules to test large numbers.

To test if a number is divisible by 7:

◆ Take the rightmost digit.	25,809
◆ Double it.	$9 * 2 = 18$
◆ Subtract the result from the remaining digits.	$2{,}580 - 18 = 2{,}562$
◆ Repeat, each time doubling the rightmost digit and subtracting, until the result is small enough to know that it is, or is not, divisible by 7.	2,562 $2 * 2 = 4$ $256 - 4 = 252$
	252 $2 * 2 = 4$ $25 - 4 = 21$
	21 is divisible by 7, so 25,809 is divisible by 7.

1. Is 33,992 divisible by 7? _____

To test if a number is divisible by 11:

◆ Find the sum of every other digit.	10,648 $1 + 6 + 8 = 15$
◆ Find the sum of the digits that are left.	$0 + 4 = 4$
◆ Subtract.	$15 - 4 = 11$ 11 is divisible by 11, so 10,648 is divisible by 11.

2. Is 9,723 divisible by 11? _____

To test if a number is divisible by 13:

◆ Multiply the rightmost digit by 4.	1,166,932	$2 * 4 = 8$
◆ Add the result to the remaining digits.	$116{,}693 + 8 = 116{,}701$	
◆ Repeat, each time multiplying the rightmost digit and adding, until the result is small enough to know that it is, or is not, divisible by 13.	116,701	$1 * 4 = 4$
	$11{,}670 + 4 = 11{,}674$	$4 * 4 = 16$
	$1{,}167 + 16 = 1{,}183$	$3 * 4 = 12$
	$118 + 12 = 130$	
	$130 = 13 * 10$, so 1,166,923 is divisible by 13.	

3. Is 89,362 divisible by 13? _____

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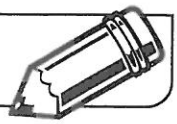
LESSON 4•2

Divisibility by the Digits



Ms. Winters asked Vito and Jacob to make answer cards for a division puzzle. They had to find numbers that met all of the following characteristics.

	Example:
◆ The first digit is divisible by 1.	1
◆ The first two digits are divisible by 2.	12
◆ The first three digits are divisible by 3.	120
◆ The first four digits are divisible by 4.	1,204
◆ The first five digits are divisible by 5.	12,040
◆ The first six digits are divisible by 6.	120,402
◆ The first seven digits are divisible by 7.	1,204,021
◆ The first eight digits are divisible by 8.	12,049,216
◆ The first nine digits are divisible by 9.	120,402,162

1. Jacob knew that with divisibility rules, it should be easy. The boys started with 3-digit numbers and found 123 and 242. Latoya checked their work. What should she tell them?

2. Use the characteristics listed above to find as many puzzle numbers as you can. Record them in the boxes below.

Puzzle Numbers					
4-digit	5-digit	6-digit	7-digit	8-digit	9-digit

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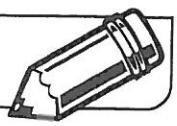
Name # Date Time

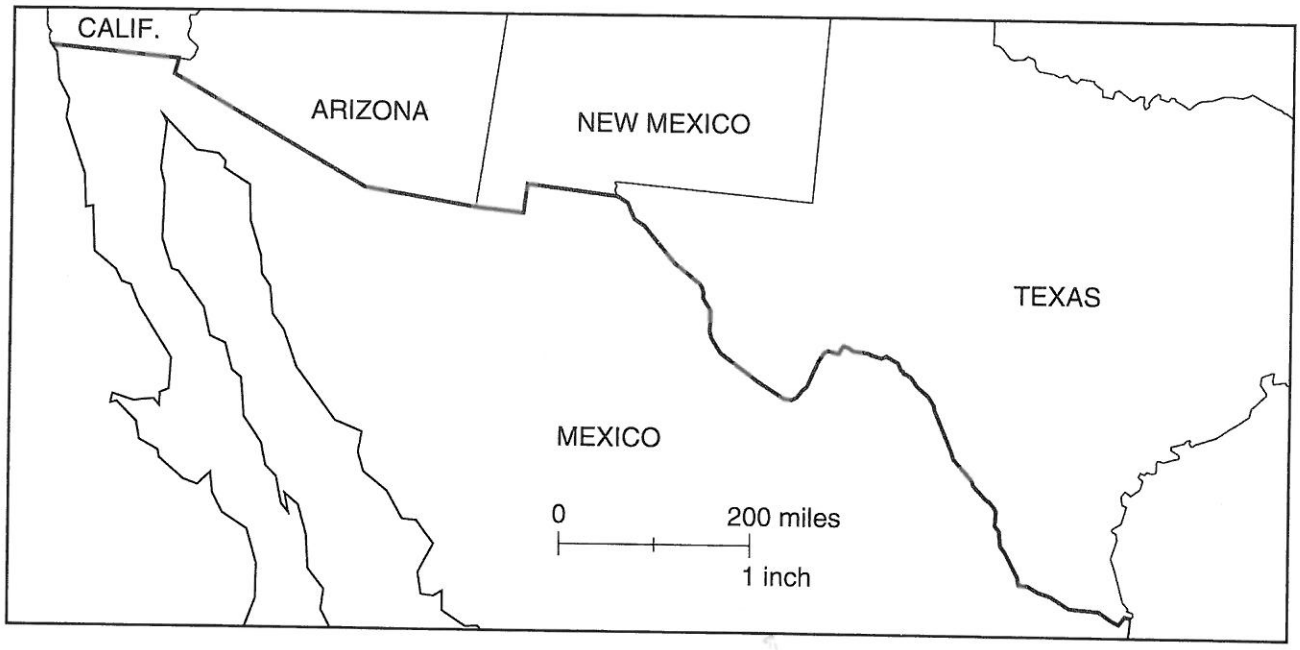
LESSON 4•3

Estimating Curved-Path Distances



Use a ruler, string, compass, paper and pencil, or any other tool.

1. The map below shows the border between Mexico and the United States. Estimate the length of the border. _____ mi



2. a. Estimate the lengths of the following rivers. Use the map on pages 386 and 387 of the *Student Reference Book.*

River	Length (miles)
Arkansas (CO, KS, OK, and AR)	
Missouri (MT, ND, SD, NE, IA, KS, and MO)	
Brazos (NM and TX)	
Chattahoochee (GA, AL, FL)	

b. Explain how you found the length of the Chattahoochee River.

_____

_____

_____

_____

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Name 7+ Date Time

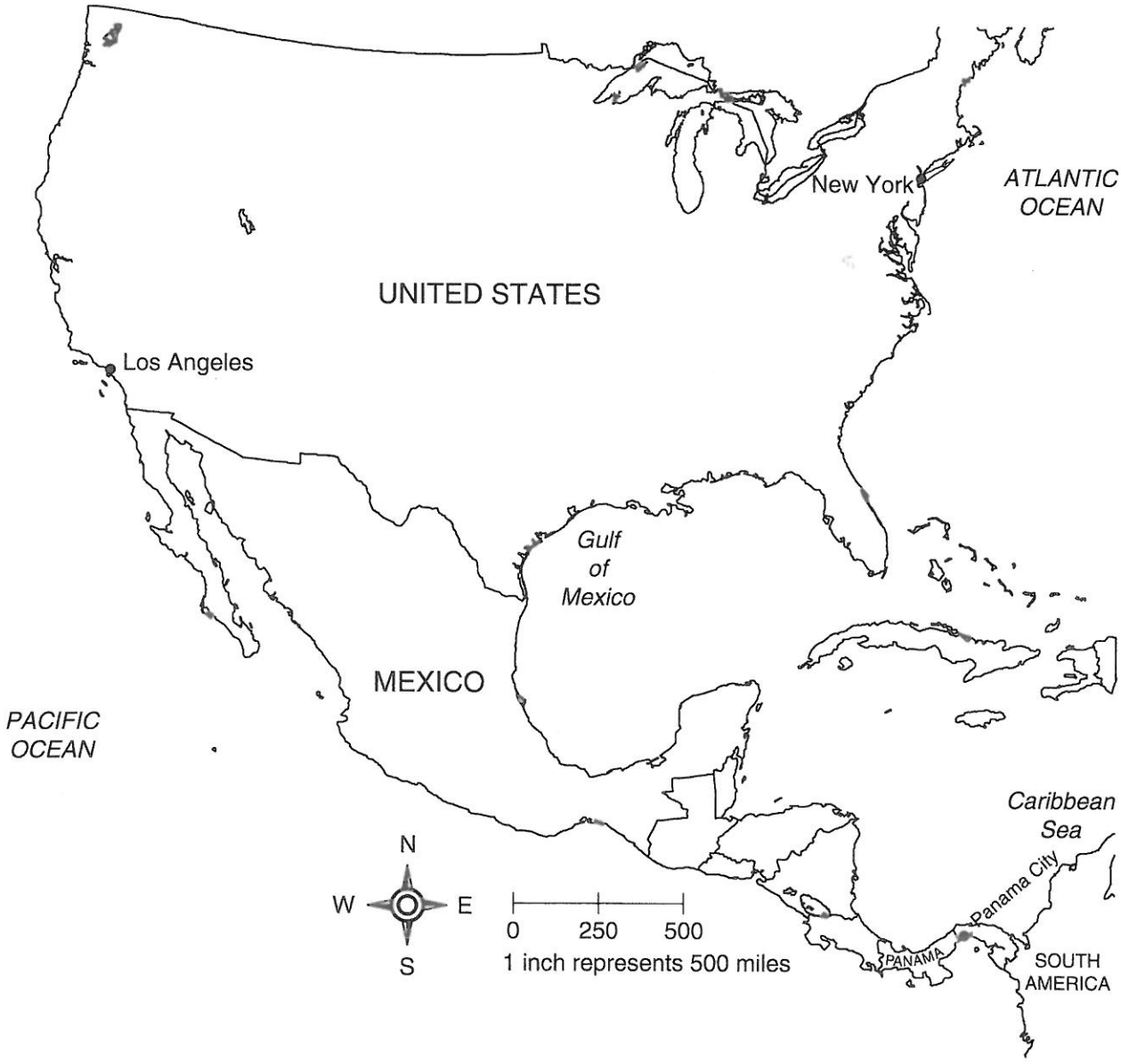
LESSON 4•3

A Trip through the Panama Canal

The Panama Canal crosses the country of Panama near its capital city, Panama City. The canal connects the Atlantic Ocean and the Pacific Ocean.

Pretend that you will travel by ship from New York, through the Panama Canal, to Los Angeles.

1. Use the map below to decide on a route your ship will take. Then use a pencil to draw this route on the map.
2. Estimate the length of the route you have chosen. Use a ruler, string, compass, paper and pencil, or any other tool. _____ mi
3. How much longer is your route than the straight-line distance from New York to Los Angeles? _____ mi



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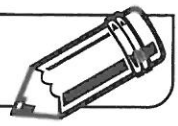
LESSON 4•4

Division Practice



For each division problem, complete the list of multiples of the divisor. Then divide.

1. _____) _____

Answer: _____

200 * _____ = _____

100 * _____ = _____

50 * _____ = _____

20 * _____ = _____

10 * _____ = _____

5 * _____ = _____

2. _____ ÷ _____

Answer: _____

200 * _____ = _____

100 * _____ = _____

50 * _____ = _____

20 * _____ = _____

10 * _____ = _____

5 * _____ = _____

3. _____ / _____

Answer: _____

200 * _____ = _____

100 * _____ = _____

50 * _____ = _____

20 * _____ = _____

10 * _____ = _____

5 * _____ = _____

4. _____ ÷ _____

Answer: _____

200 * _____ = _____

100 * _____ = _____

50 * _____ = _____

20 * _____ = _____

10 * _____ = _____

5 * _____ = _____

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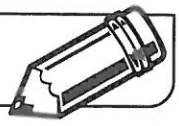
LESSON 4•4

Using Expanded Notation



- Work with a partner. Use a deck with 4 each of cards 1–9.
- Take turns dealing 4 cards and forming a 4-digit number.
- Write the number in standard notation and expanded notation.
- Then write equivalent names for the value of each digit.

1. Write a 4-digit number. _____

2. Write the number in expanded notation.

_____ + _____ + _____ + _____

3. Write equivalent names for the value of each digit.

1st digit	2nd digit	3rd digit	4th digit

4. Write a 4-digit number. _____

5. Write the number in expanded notation.

_____ + _____ + _____ + _____

6. Write equivalent names for the value of each digit.

1st digit	2nd digit	3rd digit	4th digit

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LESSON 4•5

A Division Challenge

Judy and two friends bought a raffle ticket at the school fund-raiser. They agreed that if they won, they would share the winnings equally. They won $145! They received one $100 bill, four $10 bills, and five $1 bills. Judy used this division algorithm to calculate how much money each person should get. Can you figure out how the algorithm works?

(*Hint:* There were 3 people in all. Judy realized that in order to share the $100 bill, they needed to trade it for ten $10 bills. Then they would have fourteen $10 bills and five $1 bills.)

	100s	10s	1s	10ths	100ths
		4	8	3	3
3	1	4	5	0	0
		14	25	10	10
		−12	−24	−9	−9
		2	1	1	1

1. Explain how you think the algorithm works. _____

2. Explain what Judy did when she had $1 left. _____

3. How much money did each person get? _____

4. Use the algorithm to divide: $4\overline{)51.6}$ _____

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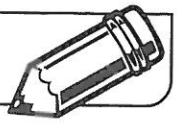
LESSON 4•6

Finding Number Story Information



For each problem, write the number of the sentence that has the information for each part of the situation diagram. Then complete the situation diagram.

Problem 1

1. Ms. Haag is rearranging her classroom.
2. There are 32 students.
3. The students sit at tables.
4. Four students can sit at each table.
5. How many tables does she need?

Sentence(s): _____

tables	_____ per _____	total students
?	4	_____

Problem 2

1. Marc needs 3 yards of fabric to make a cape for a costume party.
2. His friends want capes that match his.
3. If Marc has 15 yards of fabric, how many capes can he make?

Sentence(s): _____

_____	_____ per _____	_____ _____ in all
_____		_____

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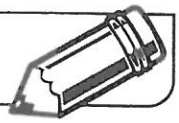
LESSON 4•7

Solving for Unknown Quantities



For each number story:

- Draw a situation diagram.
- Fill in the numbers. Write a ? for the unknown quantity.
- Write a number sentence with ☐ for the unknown.
- Solve the problem.

Example:

Fran bought a bag of 14 marbles from a game store. She added them to her collection. She now has 47 marbles. How many marbles did she have before she bought more?

Number sentence: $14 + \square = 47$

Solution: ☐ = 33

Total	
47	
Part	**Part**
14	?

Diagram

1. It was 68° when Nadine left for school. By lunchtime, it was 75°. By how many degrees had the temperature gone up?

   Number sentence: _____

   Solution: _____

2. Michael wants to buy a milkshake. With tax, it costs $3.92, and he has $3.43. How much more money does he need?

   Number sentence: _____

   Solution: _____

3. Lora bought 5 packages of pencils. Each package had 12 pencils in it. How many pencils did she buy in all?

   Number sentence: _____

   Solution: _____

4. Make up a problem of your own on the back of this page.

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