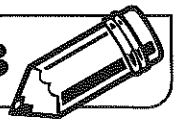
Name Date Time

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? _____