Name _____

Place Value and Patterns

You can use a place-value chart and patterns to write numbers that are 10 times as much as or $\frac{1}{10}$ of any given number.

Each place to the right is $\frac{1}{10}$ of the value of the place to its left.

	$\frac{1}{10}$ of the hundred thousands place	$\frac{1}{10}$ of the ten thousands place	$\frac{1}{10}$ of the thousands place	$\frac{1}{10}$ of the hundreds place	$\frac{1}{10}$ of the tens place
Hundred Thousands	**Ten Thousands**	**Thousands**	**Hundreds**	**Tens**	**Ones**
10 times the ten thousands place	10 times the thousands place	10 times the hundreds place	10 times the tens place	10 times the ones place	

Each place to the left is 10 times the value of the place to its right.

Find $\frac{1}{10}$ of 600.

$\frac{1}{10}$ of 6 hundreds is 6 __tens__ .

So, $\frac{1}{10}$ of 600 is __60__ .

Find 10 times as much as 600.

10 times as much as 6 hundreds is 6 __thousands__.

So, 10 times as much as 600 is __6,000__ .

Use place-value patterns to complete the table.

Number	10 times as much as	$\frac{1}{10}$ of		Number	10 times as much as	$\frac{1}{10}$ of
1. 200				**5.** 900		
2. 10				**6.** 80,000		
3. 700				**7.** 3,000		
4. 5,000				**8.** 40		

Place-Value Mystery

Find the number that makes each statement true.

1. $\frac{1}{10}$ of 3,000 is 10 times as much as _____.

2. $\frac{1}{10}$ of _____ is 10 times as much as 8.

3. $\frac{1}{10}$ of 50,000 is 10 times as much as _____.

4. $\frac{1}{10}$ of 400,000 is 10 times as much as _____.

5. 10 times as much as _____ is $\frac{1}{10}$ of 900.

6. 10 times as much as _____ is $\frac{1}{10}$ of 60,000.

7. 10 times as much as 70 is $\frac{1}{10}$ of _____.

8. 10 times as much as 2,000 is $\frac{1}{10}$ of _____.

9. Write Math Explain how you solved Exercise 8.

_____

_____

_____

_____

_____

Place Value of Whole Numbers

You can use a place-value chart to help you understand whole numbers and the value of each digit. A **period** is a group of three digits within a number separated by a comma.

Millions Period			Thousands Period			Ones Period		
Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones
		2,	3	6	7,	0	8	9

Standard form: 2,367,089

Expanded Form: Multiply each digit by its place value, and then write an addition expression.

$(2 \times 1,000,000) + (3 \times 100,000) + (6 \times 10,000) + (7 \times 1,000) + (8 \times 10) + (9 \times 1)$

Word Form: Write the number in words. Notice that the millions and the thousands periods are followed by the period name and a comma.

two million, three hundred sixty-seven thousand, eighty-nine

To find the value of an underlined digit, multiply the digit by its place value. In 2,367,089, the value of 2 is $2 \times 1,000,000$, or 2,000,000.

Write the value of the underlined digit.

1. 153,732,991

_____

2. 236,143,802

_____

3. 264,807

_____

4. 78,209,146

_____

Write the number in two other forms.

5. 701,245

_____

_____

6. 40,023,032

_____

_____

Place-Value Match

Match the standard form of the number given in Column A with either the word form or the expanded form of the number in Column B.

	Column A	Column B
1.	900,000	thirty million
2.	8,000,000	5 × 1,000,000
3.	30,000,000	six hundred million
4.	2,000,000	eight hundred thousand
5.	100,000	9 × 100,000
6.	5,000,000	three million
7.	60,000,000	sixty million
8.	7,000,000	2 × 1,000,000
9.	800,000	5 × 10,000,000
10.	300,000	3 × 100,000
11.	1,000,000	seven million
12.	50,000,000	one hundred thousand
13.	600,000,000	one million
14.	3,000,000	eight million

15. **Write Math** Explain the method you used to match the standard form of a number to either its word form or its expanded form.

_____

_____

_____