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Place Value

Unit 1 Lesson 1

Place Value

Students will be able to:

Read, write, whole numbers and decimals to thousandths.

Key Vocabulary:

Digits

Place value position

Decimal point

The standard form

The expanded form

Digits are mathematical symbols that are arranged in a specific order to represent numeric values. There are ten different digits in our number system: 0 1 2 3 4 5 6 7 8 9.

We use these ten digits (or ten symbols) to create numbers by placing them in a specific order. It is the position of each digit within a number that determines its **place value**.

Place Value

- One digit alone can also represent a number.
- A single digit that represents a number is said to be in the ones place value position.
- To assist us in determining place value, we use commas to separate periods of a number, and also use a decimal point to define the location of the ones place.

Place Value

- The ones place is just to the left of the decimal point.

- When writing down whole numbers we normally do not write down the decimal point. In this case it is understood that the digit furthest to the right, or rightmost place, is in the ones place.

- When we read a number with decimal in it, we read the decimal as “end”. We also put “THS” to the end of the last place value.

Place Value

Hundred-millions	Ten-millions	One-millions	Hundred - thousands	Ten-thousands	One-thousands	Hundreds	Tens	Ones	and	Tenths	Hundredths	One-thousandths	Ten-thousandths	Hundreds-thousandths
100,000,000	10,000,000	1,000,000	100,000	10,000	1,000	100	10	1		0.1	0.01	0.001	0.0001	0.00001
8	9	4,	6	0	0,	3	0	7	.	0	2	0	1	

894,302,020.0201

Eight hundred ninety-four million, three hundred two thousand, twenty and two hundred one ten-thousandths.

Sample Problem 1: Write down the place value of the digit 3 in the following numbers.

a. 213,245

Sample Problem 1: Write down the place value of the digit 3 in the following numbers.

a. 213,245

The three is in the one-thousand place

Sample Problem 1: Write down the place value of the digit 3 in the following numbers.

b. 114,365

Sample Problem 1: Write down the place value of the digit 3 in the following numbers.

b. 114,365

The three is in the hundreds place

Sample Problem 1: Write down the place value of the digit 3 in the following numbers.

c. 0.1203

Sample Problem 1: Write down the place value of the digit 3 in the following numbers.

c. 0.1203

The three is in the ten-thousandths place

- Knowing place values as well as knowing how the periods of a number are ordered, enables us to read and write whole numbers and decimals correctly.

Sample Problem 2: **Write each of the following numbers using words.**

a. 41,004

Sample Problem 2: Write each of the following numbers using words.

a. 41,004

Forty-one thousand, four

Sample Problem 2: **Write each of the following numbers using words.**

b. 0.7

Sample Problem 2: Write each of the following numbers using words.

b. 0.7

Seven tenths

Sample Problem 2: Write each of the following numbers using words.

c. 0.0030

Sample Problem 2: Write each of the following numbers using words.

c. 0.0030

Thirty ten-thousandths

Sample Problem 3: Write each of the following numbers using digits.

a. Eight hundred seven

Sample Problem 3: Write each of the following numbers using digits.

a. Eight hundred seven

807

Sample Problem 3: Write each of the following numbers using digits.

b. Two thousand and fifty-four hundredths

Sample Problem 3: Write each of the following numbers using digits.

b. Two thousand and fifty-four hundredths

2,000.54

Sample Problem 3: Write each of the following numbers using digits.

c. Three thousand, fourteen and seventy-seven one-thousandths

Sample Problem 3: Write each of the following numbers using digits.

c. Three thousand, fourteen and seventy-seven one-thousandths

3,014.077

- **The standard form of number** is the usual or common way to write a number using digits.
- **The expanded form of a number** is a way of writing a number as the sum of the value of its digits. The places with zero as a digit are not included in the expanded form.

Sample Problem 4: Write the following numbers in standard form.

a. 300,000 + 400 + 50 + 2

Sample Problem 4: **Write the following numbers in standard form.**

a. 300,000 + 400 + 50 + 2

3 * 100,000 + 4 * 100 + 5 * 10 + 2 * 1 = 300,452

Sample Problem 4: Write the following numbers in standard form.

b. $1000 + 2 + 0.3 + 0.004$

Sample Problem 4: Write the following numbers in standard form.

b. $1000 + 2 + 0.3 + 0.004$

$1 * 1{,}000 + 2 * 1 + 3 * 0.1 + 4 * 0.001 = 1{,}002.304$

Sample Problem 4: **Write the following numbers in standard form.**

c. $1 + 0.5 + 0.006$

Sample Problem 4: Write the following numbers in standard form.

c. $1 + 0.5 + 0.006$

$1 * 1 + 5 * 0.1 + 6 * 0.001 = 1.506$

Sample Problem 5: Write the following numbers in expanded form.

a. 1,005,456

Sample Problem 5: Write the following numbers in expanded form.

a. 1,005,456

Value of 1 = 1 * 1,000,000 = 1,000,000
Value of 5 = 5 * 1,000 = 5,000
Value of 4 = 4 * 100 = 400
Value of 5 = 5 * 10 = 50
Value of 6 = 6 * 1 = 6
1,005,456 = 1,000,000 + 5,000 + 400 + 50 + 6

Sample Problem 5: Write the following numbers in expanded form.

b. 234,563,200.045

Sample Problem 5: Write the following numbers in expanded form.

b. 234,563,200.045

Value of 2 = 2 * 100,000,000 = 200,000,000
Value of 3 = 3 * 10,000,000 = 30,000,000
Value of 4 = 4 * 1,000,000 = 4,000,000
Value of 5 = 5 * 100,000 = 500,000
Value of 6 = 6 * 10,000 = 60,000
Value of 3 = 3 * 1,000 = 3,000
Value of 2 = 2 * 100 = 200
Value of 4 = 4 * 0.01 = 0.04
Value of 5 = 5 * 0.001 = 0.005

Sample Problem 5: Write the following numbers in expanded form.

b. 234,563,200.045

234,563,200.045 = 200,000,000 + 30,000,000 + 4,000,000 + 500,000 + 60,000 + 3,000 + 200 + 0.04 + 0.005

Sample Problem 5: Write the following numbers in expanded form.

c. 25.4078

Sample Problem 5: Write the following numbers in expanded form.

c. 25.4078

Value of 2 = 2 * 10 = 20
Value of 5 = 5 * 1 = 5
Value of 4 = 4 * 0.1 = 0.4
Value of 7 = 7 * 0.001 = 0.007
Value of 8 = 8 * 0.0001 = 0.0008
25.4078 = 20 + 5 + 0.4 + 0.007 + 0.0008