Decimals

Decimal notation may be used to represent a part of a whole number. Numbers written in decimal notation are referred to as decimals. Here are some examples:

1.52,0.782,90.43

Parts of a Decimal

Each place in a decimal has a name. The number below can be broken down into the following places.

154.01276

hundreds	tens	ones		tenths	hundredths	thousandths	ten-thousandths	hundred-thousandths
1	5	4	.	0	1	2	7	6

In this example, the 7 is in the ten-thousandth place while the 0 is in the tenth place.

Note that the value of each place is $\frac{1}{10}$ of the value of the place to its left.

For example, having a 3 in the tens place is $\frac{1}{10}$ of having a 3 in the hundreds place.

30 is $\frac{1}{10}$ of 300.

Hint:

+ For any decimal, adding zeroes after the last digit does not change the value of the number

4.3=4.30=4.300= ...

Writing a Decimal in Words

A decimal can be written into words using the following steps

Step 1: Write the numbers before the decimal point in words

Step 2: Write ”and” to represent the decimal point

Step 3: Write the numbers after the decimal point in words followed by the place value of the last digit.

Example:

Write the decimal 284.76 in words.

+ First, we write the numbers before the decimal

Two hundred eighty-four

+ Second, we add the word ”and” to represent the decimal point

Two hundred eighty-four and

+ Third, we write the numbers after the decimal point followed by the place value of the last digit.

Two hundred eighty-four and seventy-six hundredths

Writing a Decimal in Standard Form

A decimal written in words can be written in standard form, or numerical form, using the following steps.

Step 1: Write the whole number part before the ”and”

Step 2: Write a decimal point where the ”and” appears

Step 3: Write the decimal part after the decimal point

Step 4: Add zeros before the decimal part in order to put the last digit in the stated place.

Example:

Fifty-four and eighty-two thousandths

+ First, we write the numbers before the ”and”

54

+ Second, we write the decimal point where the ”and” appears

54.

+ Third, we write the numbers that come after the ”and”

54.82

+ Fourth we add a zero after the decimal and before the 82 in order to push the 2 into the thousandth place

54.082

Writing Decimals as Fractions

We can rewrite decimals as fractions. Use the fractions associated with the words you have used when you read it. The place value is written in the denominator of the fraction.

Examples:
0.12 is read as ”twelve hundredths”. This can be written as the following:

$$\frac{12}{100}$$

0.025 is read as ”twenty-five thousandths”, This can be written as the following

$$\frac{25}{1000}$$

Hint:

+ Notice that the number of decimals places in a decimal is the same as the number of zeros in the denominator of the equivalent fraction

Rounding Decimals

We may round decimals using the following steps.

Step 1: Locate the digit to the right of the given place value

Step 2: If this digit is 5 or larger, add 1 to the given place value and drop all digits to the right. If this digit is less than five, drop all digits to the right of the given place.

Example:
Round 12.5602 to the hundredth place.

+ First we identify the hundredth place. 6 is in the hundredth place.

+ Second we look to the the digit to the right of 6. This digit is 0. Since this is less than five, we drop all values to the right of the hundredth place.

12.56

Now Give It a Try!

1. What is in the thousandth place of 13.245
2. What is in the tens place of 13.245
3. What is in the ten-thousandth place of 13.145

Write the following numbers in words

4. 98.57
5. 1.0012

Write the following in standard notation

6. Two hundred twenty eight thousandth
7. Five and one hundred-thousandth

8. Round 0.79306 to the hundredth place.
9. Round 0.79306 to the ten-thousandth place.

Answer Key:

1. 5
2. 2
3. 0
4. ninetyeightandfiftysevenhundredth
5. oneandtwelveten-thousandths
6. 0.228
7. 5.00001
8. 0.80
9. 0.7930