

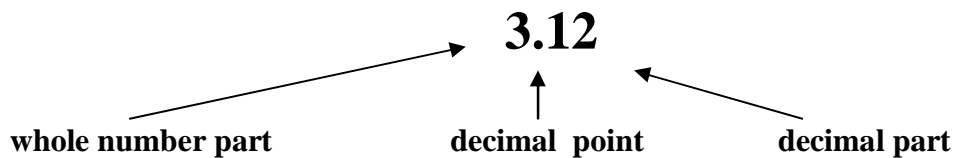
Introduction to Decimals

Numbers that cannot be represented as whole numbers are written as either fractions or in decimal notation. We are familiar with the concept of decimal notation from numerous examples in our lives, namely the use of money (\$3.12 is decimal notation for 3 dollars and 12 cents)

We can think of decimal notation as another way of writing certain special types of fractions (those with multiples of ten in the denominator)

$\frac{3}{10}$	Three tenths	0.3	Note: 1 zero in the denominator and 1 decimal place
$\frac{3}{100}$	Three hundredths	0.03	Note: 2 zeroes in the denominator and 2 decimal places
$\frac{239}{1000}$	Two hundred thirty-nine thousandths	0.239	Note: 3 zeroes in the denominator and 3 decimal places

We should be able to note that there are exactly three parts to a decimal number.



Writing decimals numbers in words

0.03 is read as 3 hundredths since the 3 is in the second decimal place (1/100)

0.6481 is read as six thousand four hundred eighty-one ten-thousandths since the 1 is in the fourth decimal place (1/10000)

Writing decimal numbers in standard form

Five and thirty-eight hundredths – hundredths implies a total of 2 decimal places to be filled by the 38 so we get 5.38

Nineteen and four thousandths – thousandths implies a total of 3 decimal places to be filled by 4 so we add two leading zeroes to make 004 and get 19.004

Rounding decimals

Sometimes we are called upon to limit the number of decimal places that can be used in a specific application (it makes no sense to take money out to 3 places). This process is known as Rounding.

Rounding rules

If the number to the right of the given place value is less than 5, drop that number and all numbers to the right of it.

If the number to the right of the given place value is 5 or greater, increase the number in the given place value by one and drop all numbers to the right of it

Round 26.3799 to the nearest hundredth

Look at 26.3799, 7 is in the hundredths (second) place and $9 > 5$ so increase 7 to 8 and drop the 99 and get 26.38

Round 42.0237412 to the nearest hundred thousandth

Look at 42.0237412, 4 is in the hundred thousandth (fifth) place and $1 < 5$ so drop the 12 and get 42.02374