



Many different types of numbers exist. They often fall into one or more categories. Real Numbers are made of both Rational and Irrational Numbers. Rational Numbers contain Integers, Whole Numbers and Natural Numbers. Sometimes a number can fall into more than one category. For example, Whole numbers are a subset of the integers, Natural numbers are also whole numbers. If you take a look at the Venn Diagram, you will see sets WITHIN sets. This indicates that numbers belong to more than one set.

**Real Numbers:** all rational and irrational numbers. They can be written in a finite or infinite decimal form, such as  $\sqrt{2} = 1.414213562 \dots$  and  $\pi = 3.141592654 \dots$ . If a number is not real, it is imaginary.

**Rational Numbers:** numbers that can be written as a fraction where both the numerator and denominator are integers.

**Irrational Numbers:** numbers that **CANNOT** be written as fractions. For example,  $\pi$  and  $\sqrt{2}$ . If we try to write these numbers as decimals they go on forever, with no recurring digits.

**Whole Numbers:** counting numbers starting at zero. They are not negative.

**Natural Numbers:** also called *counting numbers*. They are whole numbers **greater than zero**. They are not negative.

**Integers:** are whole numbers, both negative and positive, including zero. These numbers are  $\dots, -3, -2, -1, 0, 1, 2, 3, \dots$

**Even Numbers:** counting numbers that are divisible by 2. These end in 2, 4, 6, 8, 0.

**Odd Numbers:** counting numbers that are not divisible by 2. These end in 1, 3, 5, 7, 9.

**Square Numbers:** integers written as the product of an integer multiplied by itself.

**Cube Numbers:** integers written as the product of an integer multiplied by the square of itself.

**Triangular Numbers:** numbers formed by adding consecutive integers starting with 1. They form triangles when dots are used. (1, 1+2, 1+2+3...)

**Surds:** Surds are numbers left in the form  $\sqrt{n}$  where  $n$  is a positive integer that is not a square number.

**Prime Numbers:** numbers greater than 1 that have only two factors: 1 and the number itself. 2 is the first and only even prime number.

**Factors:** one of two numbers which when multiplied, give you a product.

**Multiples:** the result of multiplying two whole numbers.

1. Place a tick in the column that applies to each number

Number	Real	Rational	Irrational	Integer	Natural	Whole
28						
-4						
0						
1						
13						
$\sqrt{2}$						
3						
$\pi$						
$\sqrt{9}$						
$\frac{2}{3}$						
$\sqrt{-1}$						

2. Place a tick in the column that applies to each number

Number	Square	Cube	Triangular	Odd	Even	Prime
31						
-6						
100						
1						
0						
$\sqrt{81}$						
27						
10						
15						
$\frac{1}{2}$						
-4						
2						