Real Numbers

Real Numbers are just numbers like:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1 | 12.38 | −0.8625 | *3***4** | **π** ([pi](https://www.mathsisfun.com/numbers/pi.html)) | 198 |

In fact:

Nearly any number you can think of is a Real Number

Real Numbers include:

|  |  |  |
| --- | --- | --- |
|  |  | [Whole Numbers](https://www.mathsisfun.com/whole-numbers.html) (like 0, 1, 2, 3, 4, etc) |
|  |  | [Rational Numbers](https://www.mathsisfun.com/rational-numbers.html) (like 3/4, 0.125, 0.333..., 1.1, etc ) |
|  |  | [Irrational Numbers](https://www.mathsisfun.com/irrational-numbers.html) (like **π**, √2, etc ) |

Real Numbers can also be **positive**, **negative** or [zero](https://www.mathsisfun.com/numbers/zero.html).

So ... what is NOT a Real Number?

|  |  |  |
| --- | --- | --- |
|  |  | [Imaginary Numbers](https://www.mathsisfun.com/numbers/imaginary-numbers.html) like **√−1** (the [square root](https://www.mathsisfun.com/square-root.html) of minus 1)  are not Real Numbers |
|  |  | [Infinity](https://www.mathsisfun.com/numbers/infinity.html) is not a Real Number |

Mathematicians also play with some special numbers that that aren't Real Numbers.

The Real Number Line

The Real Number Line is like a geometric [line](https://www.mathsisfun.com/geometry/line.html).

A point is chosen on the line to be the **"origin"**. Points to the right are positive, and points to the left are negative.

A distance is chosen to be "1", then whole numbers are marked off: {1,2,3,...}, and also in the negative direction: {...,−3,−2,−1}

**Any point on the line is a Real Number:**

* The numbers could be whole (like 7)
* or rational (like 20/9)
* or irrational (like **π**)

But we won't find Infinity, or an Imaginary Number.

Why are they called "Real" Numbers?

**Because they are not**[**Imaginary Numbers**](https://www.mathsisfun.com/numbers/imaginary-numbers.html)**.**

The Real Numbers had no name before Imaginary Numbers were thought of. They got called "Real" because they were not Imaginary. That is the actual answer!

|  |  |
| --- | --- |
| Type of Number | Quick Description |
| Counting Numbers | {1, 2, 3, ...} |
| Whole Numbers | {0, 1, 2, 3, ...} |
| Integers | {..., -3, -2, -1, 0, 1, 2, 3, ...} |
| Rational Numbers | p/q : p and q are integers, q is not zero |
| Irrational Numbers | Not Rational |
| Real Numbers | Rationals and Irrationals |
| Imaginary Numbers | Squaring them gives a negative Real Number |
| Complex Numbers | Combinations of Real and Imaginary Numbers |