

Classify Real Numbers

Natural Numbers

You can think of natural numbers as the set of numbers that if you were told to start counting, it would be “natural” to start with 1 and keep counting up by 1.

Natural Numbers: {1, 2, 3, 4, 5, 6, ...}

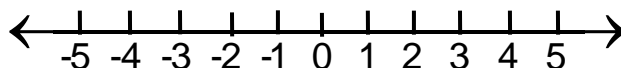
Whole Numbers

You can think of whole numbers as the numbers that have no parts to them. They are whole. There are no decimals, no fractions, and no negative signs. The whole numbers are the same as the natural numbers in addition to 0.

Whole Numbers: {0, 1, 2, 3, 4, 5, 6, ...}

Integers

You can think of integers as the numbers that you would draw on the number line to divide it into nice, even intervals. They are the whole numbers and their opposites.



Integers: {..., -3, -2, -1, 0, 1, 2, 3}

Rational Numbers

$\frac{a}{b}$, where a and b are integers and $b \neq 0$.

Rational numbers can be written as a ratio of 2 integers. It could be a positive or a negative fraction. If you divide out the fraction, you would get a decimal that either terminates or repeats. Any decimal that terminates or repeats is a rational number. So, look for the repeating bar or any decimal that simply does not end with “...”.

Rational Numbers: 2.35 or $4.\overline{76}$ or $\frac{3}{4}$

Irrational Numbers:

Irrational numbers are the numbers that are not rational. This means that the number does not repeat or terminate as a decimal. There may be a pattern in the decimal but you cannot write it with a repeat bar. Other common irrational numbers contain symbols like π and $\sqrt{\quad}$. If you do not know the square root of the number under the radical, it is an irrational number.

Irrational numbers: $\sqrt{3}$ or 3.12122122212222...

Real Numbers:

Real numbers are all rational and irrational numbers combined.

The following is a Venn diagram to help visualize how these sets of numbers are related:

