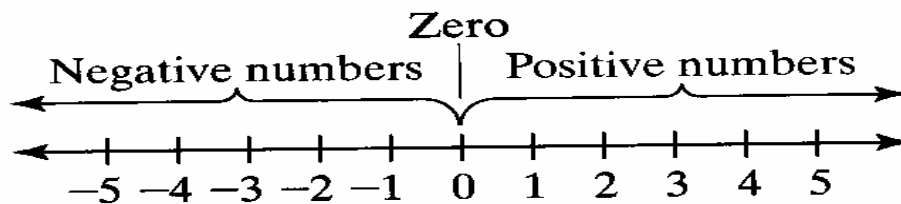


Number Sense (Part 1 - Real numbers)

You will classify real numbers as members of one or more subsets. Real numbers are the set of all numbers each of which corresponds to a point on the number line. A set is a collection of objects, called elements, enclosed in braces.

On the following number line, we see that real numbers can be positive, negative, or 0. Numbers to the left of 0 are called negative numbers; numbers to the right of 0 are called positive numbers. Positive and Negative numbers are also called signed numbers.



The Real Number System:

The numbers we use every day are part of the Real number system. The real number system consists of the following subsets.

Natural numbers consist of the counting numbers:

$$\{1, 2, 3, 4, 5, 6, 7, 8, \dots\}$$

Whole numbers consist of the natural numbers and zero:

$$\{0, 1, 2, 3, 4, 5, 6, 7, \dots\}$$

Integers consist of the natural numbers, their opposites, and zero:

$$\{\dots, -4, -3, -2, -1, 0, 1, 2, 3, 4, \dots\}$$

Rational numbers consist of the numbers that can be expressed as a fraction $\left(\frac{a}{b}\right)$,

where a and b are both integers and $b \neq 0$. This set includes the integers, terminating decimals, and repeating decimals. Here are a few examples of rational numbers:

$$\frac{2}{1} = 2$$

$$\frac{13}{4} = 3\frac{1}{4}$$

$$-\frac{25}{100} = -\frac{1}{4} = -0.25$$

$$\frac{1}{3} = 0.\overline{33}$$

Irrational numbers consist of the numbers that cannot be expressed as a fraction of integers. In decimal form, They are the numbers that go on forever without a repeating pattern. Here are a few examples of irrational numbers:

$$\sqrt{2} \approx 1.4142\dots$$

$$\pi \approx 3.1415\dots$$

$$45.9492\dots$$