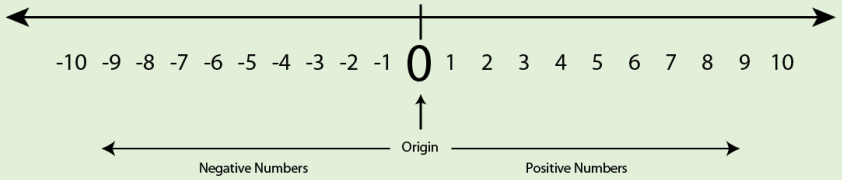
Basic Math Review – Number Sense

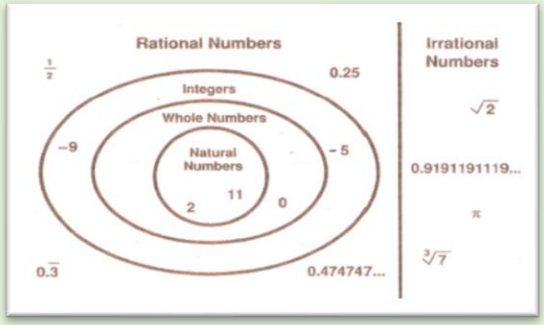
Natural Numbers {1, 2, 3, 4, 5 . . . . .}
Whole Numbers {0, 1, 2, 3, 4 . . . . . .}
Integers {. . . . ., -3, -2, -1, 0, 1, 2, 3 . . . . .}
The Number Line



Rational Numbers:
Numbers which can be written in the form a/b, where a and b are integers and b≠ 0

Irrational Numbers
Real numbers that cannot be written as the quotient of two integers but can be represented on the number line.

Real Numbers
All numbers that can be represented on the number line.



Properties

Properties of Addition

- Identity property of zero: a + 0 = a
- Additive Inverse: a + (-a) = 0
- Commutative Property: a + b = b + a
- Associative Property: a + (b + c) = (a + b) + c

Properties of Multiplication

- Property of Zero: a × 0 = 0
- Multiplicative identity: a × 1 = a
- Multiplicative inverse: $a \times \frac{1}{a} = 1$
- Commutative Property: a × b = b × a
- Associative Property: a × (b × c) = (a × b) × c

Properties of Division

- Division by Zero $\frac{a}{0}$ is not defined.
- Property of zero: $\frac{0}{a} = 0, a \neq 0$
- Identity Property of 1: $\frac{a}{1} = a \times 1$

Prime Numbers
A number greater than 1 that has only two factors: itself and 1.
Examples: 2,3,5,7,11 . . .

Composite Numbers,
Numbers which are not prime, that is numbers which have factors besides 1 and themselves.
Examples: 4, 6, 8, 9, 10 . . . .

Order of Operations – PEMDAS or BODMAS

Solve from left to right in the order Parentheses, Exponents, Multiplication and Division, Addition and Subtraction.

Absolute Value

The absolute value of a number is always greater than or equal to zero.

If a > 0, then $|a|$ = a

If a < 0, then $|-a|$ = a

Least Common Multiple (L.C.M.)

- The L.C.M. of a set of numbers is the smallest number that is the multiple of the numbers given.
- L.C.M. of coprime numbers is their product.

Examples:

The L.C.M. of 6, 9 and 12 is 36.

The L.C.M. of 4 and 5 (coprime numbers) is 20.

Greatest Common Factor (G.C.F.)

The G.C.F. of two or more numbers is the largest number that can be evenly divided into each of the given numbers.

Examples:

The G.C.F. of 6, 9 and 12 is 3.

The G.C.F. of 4 and 5 (coprime numbers) is 1.

Fractions

- A fraction is used to represent part of a whole, or division or a ratio.
- The number at the top is called a numerator, while the one at the bottom is the denominator.
- Equivalent fractions can be created by multiplying the numerator and the denominator of the fraction by the same number.