Real Numbers (R)

$$(\dots -\frac{3}{1}, -\frac{5}{2}, -\frac{1}{1}, -\frac{1}{7}, \frac{0}{1}, \frac{1}{13}, \frac{1}{17}, \frac{2}{3}, \frac{1}{1}, \frac{2}{1}, e, \pi, \sqrt{2} \ \dots)$$

Irrational Numbers (Q') Decimal: Doesn't End or Repeat Can't be expressed as a Fraction

 $(..., e, \pi, 5.49..., \sqrt{2}..., ...)$

Rational Numbers (Q) **Decimal**: Ends or Repeats Can be expressed as a Fraction

$$(... -\frac{2}{1}, -\frac{3}{2}, ,\frac{1}{2}, 0.6, \frac{3}{1}, ...)$$

Integers (I or Z) (... -2, -1, 0, 1, 2, ...)Whole Numbers (W) (0, 1, 2, 3, ...)Natural Numbers (N) (1, 2, 3, ...)

Metric Prefix 10^{12} Tera T 10^{9} Giga G 10^{6} Mega Μ 10^{3} Kilo k 10^{2} Hecto 10^{1} Deca da Base 10^{0} 10^{-1} Deci 10^{-2} Centi 10^{3} Milli m 10^{-6} Micro μ 10^{-9} Nano 10^{-12} Pico

Exponents: Mistakes

Never multiply the base by the Exponent

$$2^3 \neq 2 \times 3$$

$$2^3 = 2 \times 2 \times 2$$

$$3^2 \neq 3 \times 2$$

$$3^2 = 3 \times 3$$

Need same base!

 $2^3 \times 5^2 \neq 10^5$ $200 \neq 100000$ Same Exponent->Multiply Bases

 $2^3 \times 5^3 = 10^3$ 1000 = 1000

No Rules for Addition/Subtraction $2^2 + 3^2 \neq 5^2$ $3^2 - 2^2 \neq 1^2$

$$4+9 \neq 25$$

$$3^2 - 2^2 \neq 1^2$$

 $9 - 4 \neq 1$

$2^3 = 8$

Negative numbers with brackets to odd exponents stay negative.

 $(-2)^3 = -8$

$$-(-2)^3 = 8$$

Negative Coefficients

 $2^4 = 16$

Negative numbers with brackets to even exponents become positive

$$(-2)^4 = 16$$
$$-(-2)^4 = -16$$

Negative numbers without brackets stay negative

$$-2^3 = -8 \quad -2^4 = -16$$

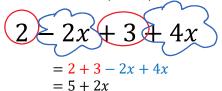
Unnecessary brackets

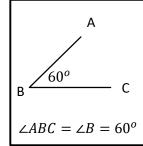
$$-(2)^3 = -8 \qquad -(2)^4 = -16$$

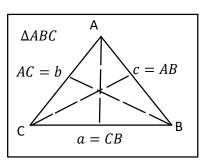
$$(-2^3) = -8$$
 $(-2^4) = -16$

Polynomials

Remember Circle/Cloud/Box the term's sign!







Inequality:

The alligator eats bigger number Greater than or equal to: ≥

Divide/Multiply by a negative: Change the direction of sign



Greater than: >

Less than: <

Less than or equal to: \leq Does not equal: ≠

> Between $-1 \le x < 3$

≤,≥ • Included (closed, square, solid)

<,> $()(-\infty,\infty)$ Not Included (open, round, dotted)