



Essential Algebraic and Coordinate Geometry Formulas

Numbers and Sequences

Distance Formula

- $d = rt$,
- $r = \text{rate}$
- $t = \text{time}$

Mean (Average)

$\frac{\text{Sum of Items}}{\# \text{ of Items}} = \text{Average}$

Mode

The number that appears most frequently

Median

- Odd Number of Items: The number that falls in the middle after items have been put in sequence order.
- Even Number: The average of the two middle numbers

Arithmetic Sequences

$$a_n = a_1 + d * (n - 1)$$

- n is the number of the term that you are attempting to find: the first, fourth, etc.
- d is the difference between each number in the sequence, the common pattern
- a_1 is the first number in the sequence
- a_n is the n th term itself.

Geometric Sequence

$$a_n = a_1 * r^{(n-1)}$$

- n is the number of the term that you are attempting to find: the first, fourth, etc.
- r is the common factor between each number in the sequence, the common pattern
- a_1 is the first number in the sequence
- a_n is the n th term, usually the one that you are attempting to find.

1 st	P	Parentheses
2 nd	E	Exponents
3 rd	M	Multiplication
4 th	D	Division
5 th	A	Addition
6 th	S	Subtraction

The “M” and the “D” are interchangeable, and the “A” and the “S” are interchangeable. Why? Dividing is the same as multiplying by a reciprocal, and subtracting is the same as adding a negative.

Percents

$$\% = \frac{\text{part}}{\text{whole}} * 100$$

Coordinate Geometry

Slope-Intercept Form

$$y = mx + b$$

$m = \text{slope}$

x and y are coordinates on the line

b is the y -intercept

Point-Slope Form

$$(y^2 - y^1) = m(x^2 - x^1)$$

Slope Formula

$$m = \frac{y^2 - y^1}{x^2 - x^1}$$

Distance Formula

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$