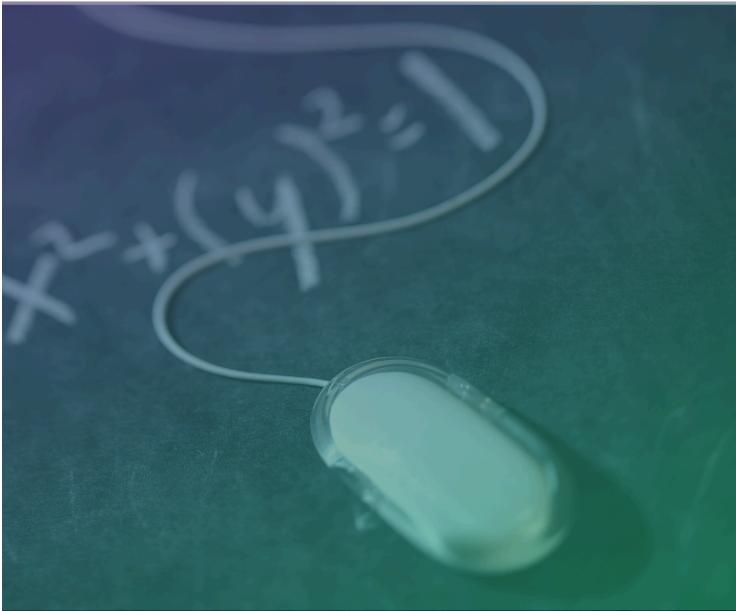




MAGOOSH PRESENTS:  
**GRE MATH FORMULAS  
CHEAT SHEET**



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# Geometry

## Squares

$$\text{Perimeter} = 4 \times s$$

$$\text{Area} = s^2$$

where  $s$  = side

## Rectangles

$$\text{Area} = l \times w$$

$$\text{Perimeter} = 2l + 2w$$

where  $l$  = length and  $w$  = width

## Trapezoids

Area =

$$\frac{\text{Base 1} + \text{Base 2}}{2} \times \text{height}$$

## Polygons

Total degrees =

$$180(n - 2)$$

Average degrees per side or  
degree measure of congruent polygon =

$$180 \frac{(n - 2)}{n}$$

where  $n$  = number of sides

## Circles

Area =

$$\pi r^2$$

Circumference =

$$2\pi r$$

Arc length =

$$\frac{x}{360} \times 2\pi r$$

Area of sector =

$$\frac{x}{360} \times \pi r^2$$

## Triangles

Area =

$$\frac{1}{2} \times bh$$

Pythagorean Theorem

$$a^2 = b^2 + c^2$$

▶ [Click here for a practice question on triangles!](#)

## Divisibility

- 3 : sum of digits divisible by 3
- 4 : the last two digits of number are divisible by 4
- 5 : the last digit is either a 5 or zero
- 6 : even number and sum of digits is divisible by 3
- 8 : if the last three digits are divisible by 8
- 9: sum of digits is divisible by 9

## Combinations and Permutations

### Combinations

$${}^n C_r = \frac{n!}{r! (n - r) !}$$

### Permutations

$${}^n P_r = \frac{n!}{(n - r) !}$$

$n$  is the total number,  $r$  = is the number you are choosing

## Prime Numbers and Integers

- 1 is not a prime. 2 is the smallest prime and the only even prime.
- An integer is any counting number including negative numbers (e.g. -3, -1, 2, 7...but not 2.5).

# Averages

$$\text{Average} = \frac{\text{sum of } n \text{ numbers}}{n}$$

$$\text{Average speed} = \frac{\text{total distance}}{\text{total time}}$$

▶ [Click here for a practice question on averages!](#)

# Probability

$$\text{Probability of event} = \frac{\text{number of ways that fit the requirement}}{\text{number of total ways}}$$

# Percentages

$$\text{Percent Increase} = \frac{\text{new amount} - \text{original amount}}{\text{original amount}} \times 100$$

$$\text{Percent Decrease} = \frac{\text{original amount} - \text{new amount}}{\text{original amount}} \times 100$$

## Interest rate

### Simple Interest

$$V = P \left( 1 + \frac{rt}{100} \right)$$

where  $P$  is principal,  $r$  is rate,  
 $t$  is time

### Compound Interest

$$V = P \left( 1 + \frac{r}{100n} \right)^{nt}$$

where  $n$  is the number of times  
compounded per year

▶ [Click here for a practice question on percentages!](#)

## Distance, Rate, and Time

$$D = rt$$

*Distance = rate × time*

### The Distance Formula

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

## Slope of a Line

$$y = mx + b$$

▶ [Click here for a practice slope of a line question!](#)

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