GMAT MATHS FORMULAS

NUMBER PROPERTIES

[Positive Number] X [Positive Number] = [Positive Number]

[Positive Number] X [Negative Number] = [Negative Number]
[Negative Number] X [Negative Number] = [Positive Number]

[Positive Number] / [Positive Number] = [Positive Number]
[Positive Number] / [Negative Number] = [Negative Number]
[Negative Number] / [Negative Number] = [Positive Number]

[Odd Number] + [Odd Number] = [Even Number]
[Odd Number] – [Odd Number] = [Even Number]
[Odd Number] + [Even Number] = [Odd Number]
[Odd Number] – [Even Number] = [Odd Number]
[Even Number] + [Even Number] = [Even Number]
[Even Number] – [Even Number] = [Even Number]

[Odd Number] X [Odd Number] = [Odd Number]
[Odd Number] X [Even Number] = [Even Number]
[Even Number] X [Even Number] = [Even Number]

ORDER OF OPERATIONS

Parentheses – Exponents – Multiplication – Division – Addition – Subtraction (PEMDAS)

INTEREST

Simple Interest = P*r*t

P = starting principle; r = annual interest rate; t = number of years

Annual Compound Interest = P(1+r) t

Compound Interest = P(1 + r/x) xt ; x = number of times the interest compounds over the year

PROBABILITY

Probability = (Number of favourable outcomes) / (Number of all possible outcomes)

Probability of events A & B happening = (Probability of A) * (Probability of B)

Probability of either event A or B happening = (Probability of A) + (Probability of B)

GMAT GEOMETRY FORMULAS

Area & Perimeter formulas

Square: Area: $(\text{length})^2$ | Perimeter: 4(length)

Rectangle: Area: length X breadth | Perimeter: 2(length) + 2(breadth)

Parallelogram: Area: base X height | Perimeter: 2(base) + 2(height)

Circle: Area: πr^2 | Circumference of a circle: $2\pi r$ [where Pi (π) = 3.14]

Triangle: Area: (1/2) length X breadth

Pythagoras Theorem (for right angled triangles): $(\text{base})^2 + (\text{height})^2 = (\text{hypotenuse})^2$

Cube: $(\text{length})^3$

Rectangular prism: length X breadth X height

Cylinder: $\pi r^2 h$

Cone: $(1/3)\ \pi r^2 h$

Pyramid: (1/3) base length X base width X height

Sphere: $(4/3)\pi r^3$

GMAT ALGEBRA FORMULAS

ABSOLUTE VALUE

|x| depicts the absolute value.

$|x| = x$

$|-x| = x$

$|x| = |-x|$

$|x| \geq 0$

$|x| + |y| \geq |x+y|$

BASE - EXPONENT RELATIONSHIPS

In the expression x^n , 'x' is the base and 'n' is the exponent. The way to interpret is that the base 'x' gets multiplied 'n' times.

Some rules and formulas that apply to base/exponents:

$0^n = 0$

$1^n = 1$

$x^0 = 1$

$x^1 = x$

$(x)^{-n} = 1 / x^n$

$x^m * x^n = x^{m+n}$

$x^m / x^n = x^{m-n}$

$(x^m)^n = x^{m*n}$

$(x/y)^n = (x)^n/(y)^n$

QUADRATIC EQUATIONS

$ax^2 + bx + c = 0$

$x = (-b \mp \sqrt{[b^2 - 4ac]}) / 2a$

PERMUTATION AND COMBINATION FORMULAS

Permutation formula: ${}^nP_r = n! / (n-r)!$

Combination formula: ${}^nC_r = n! / (r!)(n-r)!$

Divisibility Rules :

Number Divisible by **2**

A number is divisible by 2 if the ones digit is 0, 2, 4, 6, or 8.

Number Divisible by **3**

A number is divisible by 3 if the sum of all the digits is divisible by 3.

Number Divisible by **4**

If the last two digits of a number are divisible by 4 then the number is divisible by 4.

Number Divisible by **5**

A number is divisible by 5 if the last digit is a 0 or 5.

Number Divisible by **6**

A number is divisible by 6 if the number is divisible by both 2 and 3.

Number Divisible by **8**

If the last three digits of a number are divisible by 8, then the number is

divisible by 8.

Number Divisible by **9**

A number is divisible by 9 if the sum of all the digits is divisible by 9.

Number Divisible by **11**:

A number is divisible by 11 if the sum of the odd-numbered place digits minus the sum

of the even-numbered place digits is

divisible by 11.

ROOTS

Perfect Squares to Memorize

0, 1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144,

169, 196, and 225.

Perfect Cubes to Memorize

0, 1, 8, 27, 64, 125, 216, 343, 512, 729, and

1,000.

Non-perfect Square Roots to Memorize:

$\sqrt{2}$~1.4$\sqrt{3}$~1.7$\sqrt{5}$~2.2

Rate-Time-Distance Formula

Distance= Rate*Time

Time= Distance/Rate

Rate= Distance/Time

Average rate= Total distance/Total time

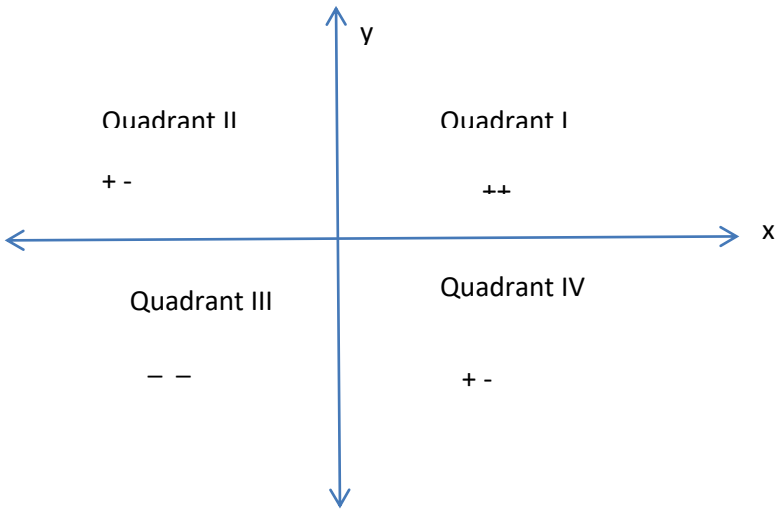
Rate-Time-Work Formula

(Rate* Time)= Work

Time= Work/Rate

Rate=Work/Time

Coordinate Geometry



Slope of a line:

$m= y_2-y_1/x_2-x_1$

where :

m= slope of the line

y_2= the second y-coordinate

y_1= the first y-coordinate

x_2= the second x-coordinate

$x_{1=}$ the first x-coordinate