India CBSE Year 10 Maths Formulas from www.autotutor.com.au .
Get this free Algebra formula sheet to support your maths study.
Use it in conjunction with AutoTutor for practice questions, explanations, and quizzes designed to help you master maths.
Explore AutoTutor's full learning platform at www.autotutor.com.au .

Expansions:
$(a + b)^2 = a^2 + 2ab + b^2$
$a^2 - b^2 = (a - b)(a + b)$ (difference of squares)
$(x + a)(x + b) = x^2 + (a + b)x + ab$

Quadratics

Solve $a x^2 + b x + c = 0$	$x = (-b \pm \sqrt{(b^2 - 4ac)}) / 2a$
	Sum of roots = -b/a Product of roots = c/a Discriminant = $b^2 - 4ac$

Area:
Triangle: (1/2) base x height
Circle: πr^2
Sector of a circle with angle x degrees: $(\pi r^2 x)/360$
Sector of a circle with angle x radians: $(r^2 x)/2$

Volume:
Sphere: $(4 \pi r^3)/3$
Cone height h: $(\pi r^2 h)/3$
Cylinder $\pi r^2 h$

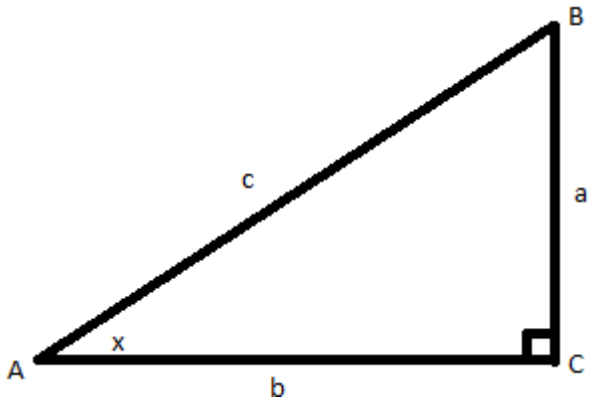
Scale factors:
Increasing scale of an object by k increases area by k^2 and volume by k^3.

Powers:
$(-1)^2 = 1$
$(x^m)/(x^n) = x^{m-n}$
$x^m x^n = x^{m+n}$
$(x^m)^n = x^{mn}$
$x^{1/2} = \text{sqrt}(x)$
$x^{-1} = 1/x$
$(x/y)^n = x^n/y^n$

Arithmetic series:
Let L = last term
S_n = sum to n terms
$S_n = a + (a + d) + \ldots + (a + (n - 1) d) = (n/2)[2a + (n - 1) d] = (n/2)(a + L)$
T_n = term n = $a + (n - 1) d$
$S_n = (n (n + 1))/2$

Pythagoras theorem $c^2 = a^2 + b^2$; a, b and c are the sides of a right angled triangle. If a, b and c are integers they are called a Pythagorean triple. Examples are: 3, 4, 5; 5, 12, 13; 7, 24, 25.

Trigonometric identities:



a = opposite side to angle x (also called angle A).
b = adjacent side to angle x.
c = hypotenuse.
$\sin(x) = a/c$
$\cos(x) = b/c$
$\tan(x) = a/b$
$\sin(-x) = -\sin(x)$
$\cos(-x) = \cos(x)$
$\tan(-x) = -\tan(x)$
$\sec(x) = 1/\cos(x)$
$\text{cosec}(x) = \csc(x) = 1/\sin(x)$
$\cot(x) = 1/\tan(x) = (\tan(x))^{-1}$
$\cot(x) = \tan(90^o - x)$
$\cos(x) = \sin(90^o - x) = \sin(90^o + x)$
$\text{cosec}(x) = \csc(x) = \sec(90^o - x)$
$1 + \sin(2x) = (\sin(x) + \cos(x))^2$
$\sin^2 x + \cos^2 x = 1$
$1 + \tan^2 x = \sec^2 x = (\sec(x))^2$
$1 + \cot^2 x = \text{cosec}^2 x = \csc^2 x$

Statistics:
Mean = average = μ = sum_of_items / number_of_items = E(X) = estimated value of X
Standard deviation = σ
Variance: $\text{var}(X) = \sigma^2 = E((X - \mu)^2) = E(X^2) - \mu^2$
Median = middle value in an ordered data set.
If the number of data points is even use the mean of the 2 central data points.
Mode = most frequent value in a data set.
Range = largest value – smallest value.
Mean absolute deviation (MAD) from mean = $E(|X - \mu|) = (\sum |X - \mu|)/n$ where n is number of terms.
Arithmetic mean of a and b is $(a + b)/2$.
Geometric mean of a and b is $\sqrt{(ab)}$.