Free e-book

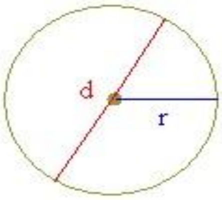
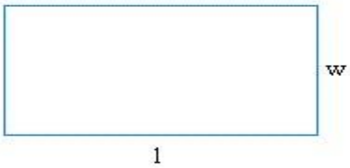
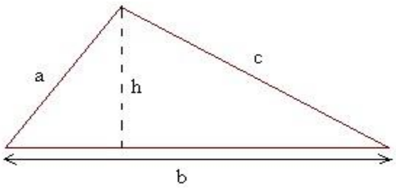
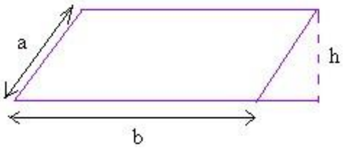
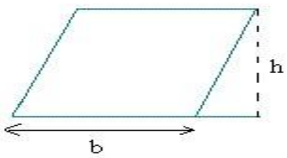
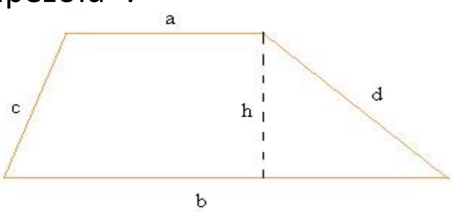
QUANTITATIVE APTITUDE FORMULAS - GEOMETRY, SIMPLIFICATION & TRIGONOMETRY

For Bank and Government Exams

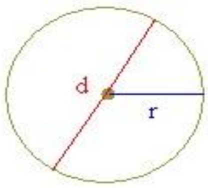
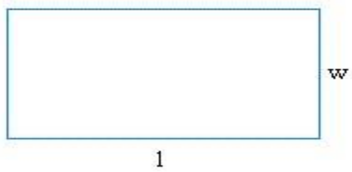
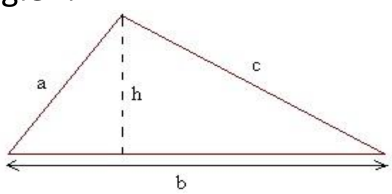
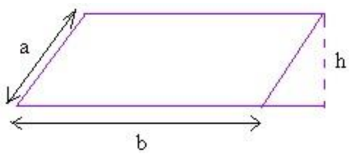
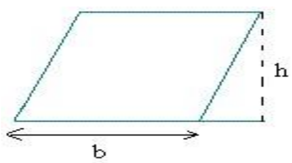
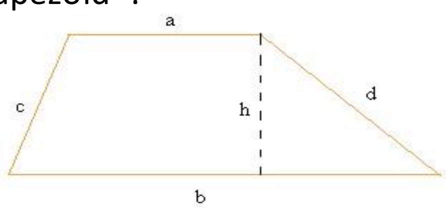
Quantitative Aptitude section is one of the difficult sections of any Bank and Government Exam. However, with right tricks and practice it can also turn out to be a high scoring section. To help you prepare most effectively for **Quantitative Aptitude**, we are providing you with Free E-books about tips, tricks and formulas for the most important topics from the Quantitative Aptitude syllabus for the exams.

In this E-book we are providing you with all the **Important Quantitative Aptitude formulas** for **Geometry (Mensuration), Simplification and Trigonometry** to help you solve the questions in various Bank and Government Exams.

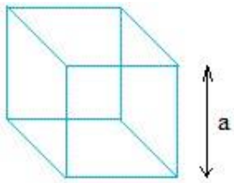
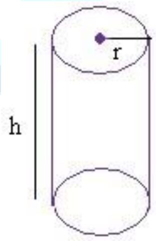
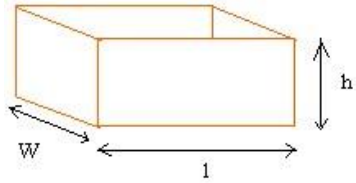
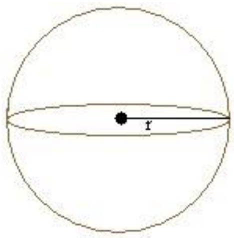
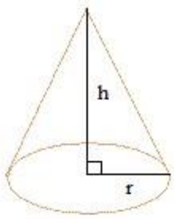
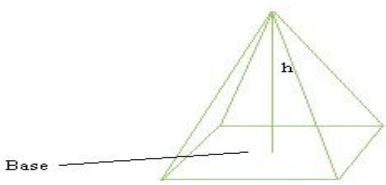
Quantitative Aptitude Formulas: AREA

Figure	Formula of Area
Circle -: 	$= pi * R^2$ or $= (pi * D^2) / 4$
Square -: 	= s x s
Rectangle -: 	= l * w
Triangle -: 	= (b * h) / 2
Parallelogram -: 	$= b \times h$
Rhombus -: 	$= b \times h$
Trapezoid -: 	$= (a + b) / 2 \times h$

Quantitative Aptitude Formulas: Perimeter

Figure	Formula of Perimeter
Circle -: 	= 2 × pi × r or =pi * d
Square -: 	= s + s + s + s = 4 x s
Rectangle -: 	= l + l + w + w or = 2 × l + 2 × w
Triangle -: 	= a + b + c
Parallelogram -: 	= a + a + b + b or = 2 × a + 2 × b
Rhombus -: 	*= b + b + b + b = 4 x b
Trapezoid -: 	= a + b + c + d

Quantitative Aptitude Formulas: Volume

Figure	Formula of Volume
Cube -: 	$= a^3$ $= a \times a \times a$
Cylinder -: 	$= pi \times r^2 \times h$
Rectangular Solid -: 	$= l \times w \times h$
Sphere -: 	$= (4 \times pi \times r^3)/3$
Cone -: 	$= (pi \times r^2 \times h)/3$
Pyramid -: 	$= (B \times h)/3$

Quantitative Aptitude Formulas: Simplification

- **$(a + b)(a - b) = (a^2 - b^2)$**
- **$(a + b)^2 = (a^2 + b^2 + 2ab)$**
- **$(a - b)^2 = (a^2 + b^2 - 2ab)$**
- **$(a - b)^2 = (a^2 + b^2 - 2ab)$**
- **$(a + b + c)^2 = a^2 + b^2 + c^2 + 2(ab + bc + ca)$**
- **$(a^3 + b^3) = (a + b)(a^2 - ab + b^2)$**
- **$(a^3 - b^3) = (a - b)(a^2 + ab + b^2)$**
- **$(a^3 + b^3 + c^3 - 3abc) = (a + b + c)(a^2 + b^2 + c^2 - ab - bc - ac)$**
- **If $a + b + c = 0$,**
  then $a^3 + b^3 + c^3 = 3abc$.

BODMAS Rule:

The rule is basically a sequence of operations to follow for solving and finding the correct value of the given arithmetic expression.

Here, BODMAS is an acronym depicting the correct sequence of operations to follow. It stands for -:

B – Bracket

O – Of

D – Division

M – Multiplication

A – Addition

S – Subtraction

Quantitative Aptitude Formulas: Trigonometry

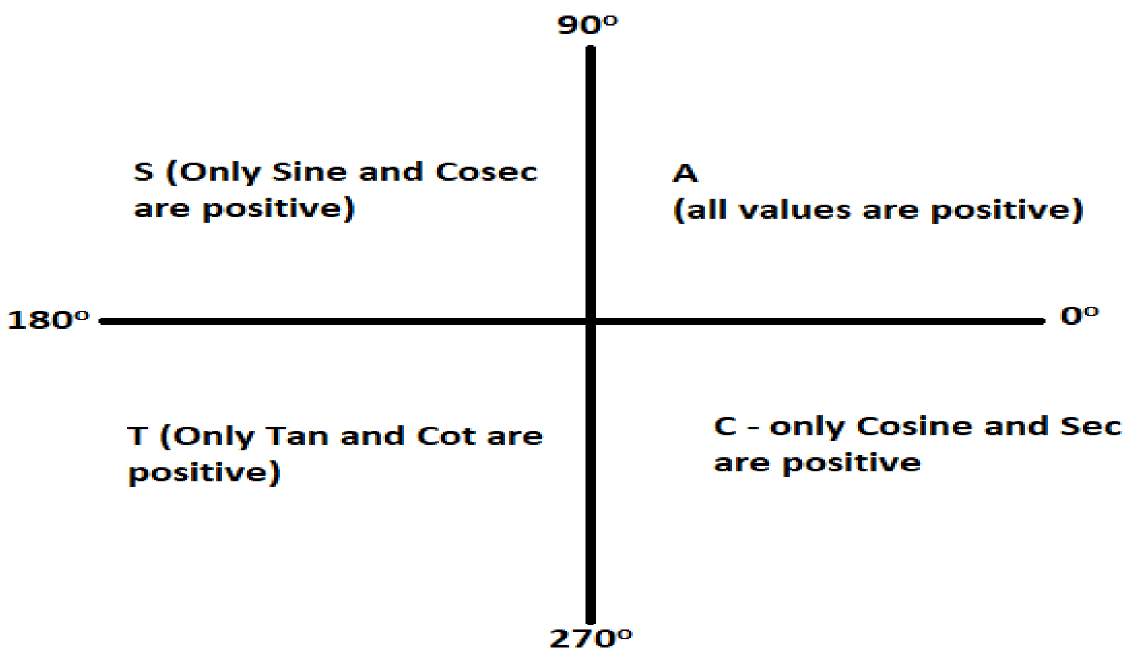
- $\cos^2 x + \sin^2 x = 1$
- $\sin^2\theta = 1 - \cos^2\theta$
- $\cos^2\theta = 1 - \sin^2\theta$
- $1 + \tan^2 x = \sec^2 x$
- $1 + \cot^2 x = \mathrm{cosec}^2 x$
- $\sin\theta \times \mathrm{cosec}\theta = 1$
- $\cos(x\pm y) = \cos(x).\cos(y) \pm \sin(x).\sin(y)$
- $\sin(x\pm y) = \sin(x).\cos(y) \pm \cos(x).\sin(y)$
- $\sin(2x) = 2\sin(x).\cos(x)$
- $\cos(2x) = 2\cos^2(x) - 1$
- $\sin(2x) = \cos^2(x) - \sin^2(x)$
- $\cos(2x) = 1 - 2\sin(x)$
- $\tan(x\pm y)= [\tan(x) \pm \tan(y)]/[1 \pm \tan(x).\tan(y)]$
- $\sin(x) \times \sin(y) = 1/2[\cos(x-y) - \cos(x+y)]$
- $\cos(x) \times \cos(y) = 1/2[\cos(x-y) + \cos(x+y)]$
- $\sin(x) \times \cos(y) = 1/2[\sin(x+y) + \sin(x-y)]$
- $\cos(x) \times \sin(y) = 1/2 [\sin(x+y) - \sin(x-y)]$

Quantitative Aptitude Formulas: Trigonometry

Important Trigonometric Values:

	0	$30^0 = \frac{\pi}{6}$	$45^0 = \frac{\pi}{4}$	$60^0 = \frac{\pi}{3}$	$90^0 = \frac{\pi}{2}$
sin	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1
cos	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0
tan	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	undefined
csc	undefined	2	$\sqrt{2}$	$\frac{2}{\sqrt{3}}$	1
sec	1	$\frac{2}{\sqrt{3}}$	$\sqrt{2}$	2	undefined
cot	undefined	$\sqrt{3}$	1	$\frac{1}{\sqrt{3}}$	0

Four Quadrant Rule -: All – Sine – Tan – Cosine. (Also known as All Students Take Calculus Rule) to find the values of any trigonometric angle.



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