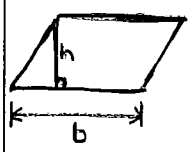
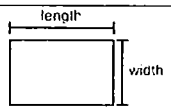
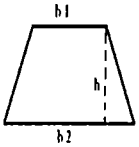
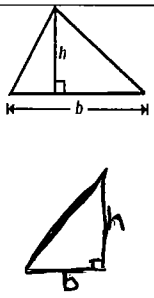
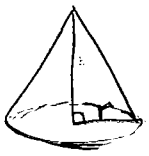
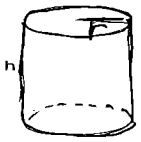
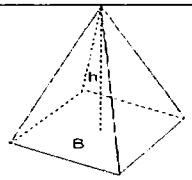
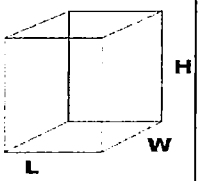
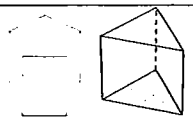
OAA/OGT Formula Sheet Explained

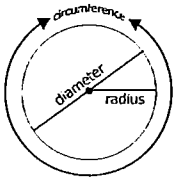
Area Formulas

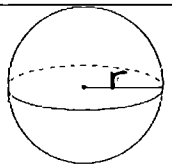
Name	Formula	Details	Picture
Parallelogram	$A = bh$	A = area b = base h = height	
Rectangle	$A = lw$	A = area l = length w = width	
Trapezoid	$A = \frac{1}{2}\, h\,(b_1 + b_2)$	A = area h = height b_1 = top base b_2 = bottom base	
Triangle	$A = \frac{1}{2}\, bh$	A = area b = base h = height	

Volume Formulas

Name	Formula	Details	Picture
Cone	$V = \frac{1}{3}\,\pi\, r^2\, h$	V = volume π = pi = 3.14 r = radius of circle h = height of cone	
Cylinder	$V = \pi\, r^2\, h$	V = volume π = pi = 3.14 r = radius of circle h = height of cylinder	
Pyramid	$V = \frac{1}{3}\, Bh$	V= volume B = area of base h = height	
Rectangular Prism	$V = lwh$	V= volume l = length w = width h = height	
Right Prism	$V = Bh$	V= volume B = area of base h = height	

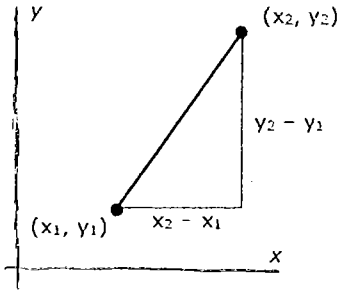
Circle Formulas

	Formula	Details	Picture
Circumference	$C = 2\,\pi\, r$	C = circumference π =pi=3.14 = $\frac{22}{7}$ r = radius	
Area	$A = \pi\, r^2$	A = area π =pi=3.14 = $\frac{22}{7}$ r = radius	

Name	Formula	Details	Picture
Sphere	$V = \frac{4}{3}\,\pi\, r^3$	V = volume r = radius (distance from exact center of sphere to outer edge)	

Distance Formula

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



OGT Only Formula Sheet Explained

Combinations

Definition	Formula	Details	Calculator Buttons
- a way of selecting several things out of a larger group. - Order DOES NOT matter	$nCr = C(n,r) = \frac{n!}{r!(n-r)!}$	n = number of things to choose from r = how many you choose ! (factorial) means multiply n by every number that comes after it (3! = 3 x 2 x 1 = 6)	What are the combinations of 5 choosing 2? [5] [PRB] [Right arrow key] [ENTER] [2] [ENTER]

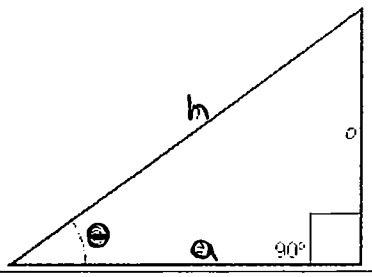
Permutations

Definition	Formula	Details	Calculator Buttons
- each of several possible ways in which a set of things can be ordered or arranged - Order DOES matter	$nPr = P(n,r) = \frac{n!}{(n-r)!}$	n = number of things to choose from r = how many you choose ! (factorial) means multiply n by every number that comes after it (3! = 3 x 2 x 1 = 6)	What are the permutations of 5 choosing 2? [5] [PRB] [ENTER] [2] [ENTER]

Quadratic Formula

Formula	Details
$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$	a, b, and c come from a quadratic equation like: $ax^2 + bx + c = 0$ Use a, b, and c from this equation to fill in the quadratic formula

Trigonometry

Formulas		Picture
Side	Example with Picture	
$\sin A = \frac{opposite}{hypotenuse}$	$\sin\theta = \frac{o}{h}$	
$\cos A = \frac{adjacent}{hypotenuse}$	$\cos\theta = \frac{a}{h}$	
$\tan A = \frac{opposite}{adjacent}$	$\tan\theta = \frac{o}{a}$	

Special Right Triangles

45-45-90 Triangle	30-60-90 Triangle