

Math Facts for the SHSAT

Formulae

Euclidean Geometry

Perimeter, P

<i>triangle</i>	$P = s_1 + s_2 + s_3$	s = side l = length w = width
<i>rectangle</i>	$P = 2(l + w)$	
<i>square</i>	$P = 4s$	
<i>regular polygon of n sides</i>	$P = ns$	

Circumference, C

<i>circumference</i>	$C = 2\pi r$	r = radius	$\pi \approx 3.14$ or $\frac{22}{7}$
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Area, A

<i>circle</i>	$A = \pi r^2$		<i>rectangle</i>	$A = lw$	
<i>triangle</i>	$A = \frac{bh}{2}$	b = base; h = height	<i>rhombus</i>	$A = \frac{pq}{2}$	p = diagonal ₁ q = diagonal ₂
<i>equilateral triangle</i>	$A = \frac{\sqrt{3}}{4} s^2$		<i>square</i>	$A = s^2$	
<i>parallelogram</i>	$A = bh$		<i>trapezoid</i>	$A = \frac{1}{2}h(s_1 + s_2)$	

Surface Area (Lateral, A_L & Total, A_T)

<i>cone (right circular)</i>	$A_L = \pi r \sqrt{h^2 + r^2}$	<i>rectangular prism</i>	$A_T = 2(lw + lh + wh)$
<i>cube (right square)</i>	$A_T = 6s^2$	<i>pyramid (right square)</i>	$A_T = \frac{1}{2}P\ell + B$ ℓ = slant height B = area of base
<i>cylinder</i>	$A_L = 2\pi rh$ $A_T = 2\pi rh + 2\pi r^2$	<i>sphere</i>	$A_T = 4\pi r^2$

Volume, V

<i>cone (right circular)</i>	$V = \frac{1}{3}\pi r^2 h$	<i>rectangular prism</i>	$V = lwh$
<i>cube (right square)</i>	$V = s^3$	<i>pyramid (right square)</i>	$V = \frac{1}{3}Bh$
<i>cylinder</i>	$V = \pi r^2 h$	<i>sphere</i>	$V = \frac{4}{3}\pi r^3$

Pythagorean Theorem

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

a & b are legs; c is hypotenuse of a *right triangle*

Pythagorean Triples

$$5^2 = 3^2 + 4^2$$

$$25 = 9 + 16$$



$$13^2 = 5^2 + 12^2$$

$$169 = 25 + 144$$

