Math Facts for the SHSAT

Formulæ

Euclidean Geometry

Perimeter, P

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

Circumference, C

circumference	$C = 2\pi r$	$r = \text{radius} = \frac{D}{2}$	D = diameter	$\pi \approx 3.14$ *or* $\frac{22}{7}$

Area, A

circle	$A = \pi r^2$		*rectangle*	$A = lw$	
triangle	$A = \frac{bh}{2}$	b = base; h = height	*rhombus*	$A = \frac{pq}{2}$	p = diagonal$_1$ q = diagonal$_2$
equilateral triangle	$A = \frac{\sqrt{3}}{4}s^3$		*square*	$A = s^2$	
parallelogram	$A = bh$		*trapezoid*	$A = \frac{1}{2}h(s_1 + s_2)$	

Surface Area (Lateral, A_L & Total, A_T)

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

Volume, V

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

Pythagorean Theorem	$c^2 = a^2 + b^2$	a & b are legs; c is hypotenuse of a *right* triangle

Pythagorean Triples	$5^2 = 3^2 + 4^2$ $25 = 9 + 16$		$13^2 = 5^2 + 12^2$ $169 = 25 + 144$