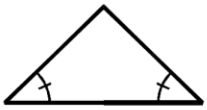
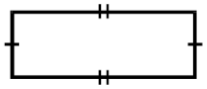
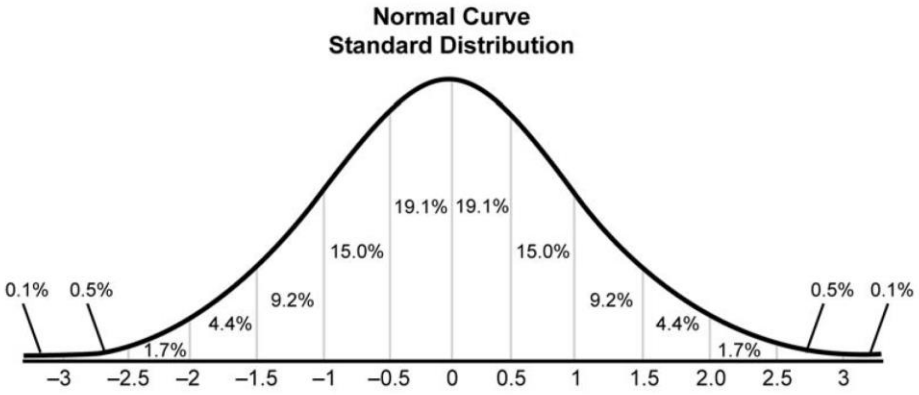
Definitions and Formulas for Middle Grades (5–8) Mathematics

Notation	Description
$\sim$	is similar to
$\cong$	is congruent to
	congruent angles
	congruent sides
	parallel lines

Formula	Description
$V = \frac{1}{3}Bh$	volume of a right cone and a pyramid
$A = 4\pi r^2$	surface area of a sphere
$V = \frac{4}{3}\pi r^3$	volume of a sphere
$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$	distance formula
$\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$	midpoint formula
$m = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1}$	slope
$y = ax^2 + bx + c$	parabola
$s = r\theta$	arc length
$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$	quadratic formula
For $f(x) = a_0 + a_1x + a_2x^2 + \ldots$	
$f'(x) = a_1 + 2a_2x + \ldots$	derivative of a polynomial
$\int x^n\,dx = \frac{1}{n+1}x^{n+1} + c$	integral of a polynomial

Formula	Description
$_nC_r = \frac{n!}{r!(n-r)!}$	combinations
$_nP_r = \frac{n!}{(n-r)!}$	permutations