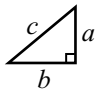
Core 40 End-of-Course Assessment Algebra I Reference Sheet

Pythagorean Theorem



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

Distance Formula

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

d = distance between points 1 and 2

Midpoint Formula

$M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$

M = point halfway between points 1 and 2

Standard Form of a Linear Equation

$Ax + By = C$

(where A and B are not both zero)

Standard Form of a Quadratic Equation

$ax^2 + bx + c = 0$

(where $a \neq 0$)

Quadratic Formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

(where $ax^2 + bx + c = 0$ and $a \neq 0$)

Simple Interest Formula

$I = prt$

where I = interest

p = principal

r = rate

t = time

Equation of a Line

Slope-Intercept Form: $y = mx + b$
where m = slope and b = y-intercept
Point-Slope Form:
$y - y_1 = m(x - x_1)$

Slope of a Line

Let (x_1, y_1) and (x_2, y_2) be two points in the plane.

$$\text{slope} = \frac{\text{change in } y}{\text{change in } x} = \frac{y_2 - y_1}{x_2 - x_1}$$

(where $x_2 \neq x_1$)

Shape	Formulas for Area (A) and Circumference (C)	
Triangle 	$A = \frac{1}{2}bh = \frac{1}{2} \times$ base $\times$ height	
Trapezoid 	$A = \frac{1}{2}(b_1 + b_2)h = \frac{1}{2} \times$ sum of bases $\times$ height	
Parallelogram 	$A = bh$ = base $\times$ height	
Circle 	$A = \pi r^2 = \pi \times$ square of radius $C = 2\pi r = 2 \times \pi \times$ radius	$\pi \approx 3.14$ or $\pi \approx \frac{22}{7}$

Figure	Formulas for Volume (V) and Surface Area (SA)	
Cube 	$SA = 6s^2 = 6 \times$ length of side squared	
Cylinder (total) 	$SA = 2\pi rh + 2\pi r^2$ $SA = 2 \times \pi \times$ radius $\times$ height $+ 2 \times \pi \times$ radius squared	$\pi \approx 3.14$ or $\pi \approx \frac{22}{7}$
Sphere 	$SA = 4\pi r^2 = 4 \times \pi \times$ radius squared $V = \frac{4}{3}\pi r^3 = \frac{4}{3} \times \pi \times$ radius cubed	
Cone 	$V = \frac{1}{3}\pi r^2 h = \frac{1}{3} \times \pi \times$ radius squared $\times$ height	
Pyramid 	$V = \frac{1}{3}Bh = \frac{1}{3} \times$ area of base $\times$ height	
Prism 	$V = Bh$ = area of base $\times$ height	