ACT® International Subject Tests

Math 1 Reference Sheet

Lines

Standard Form	$Ax + By = C$	A, B, and C are constants, where $A \neq 0$ or $B \neq 0$.
Slope-Intercept Form	$y = mx + b$	
Point-Slope Form	$y - y_1 = m(x - x_1)$	m = slope
Slope	$m = \dfrac{y_2 - y_1}{x_2 - x_1}$	b = y-intercept
		(x_1, y_1) and (x_2, y_2) are 2 points.

Quadratics

General Form	$ax^2 + bx + c = 0$	a, b, and c are constants, where $a \neq 0$.
Quadratic Formula	$x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$	

Coordinate Geometry

Midpoint	$\left(\dfrac{x_1 + x_2}{2}, \dfrac{y_1 + y_2}{2} \right)$	(x_1, y_1) and (x_2, y_2) are 2 points.
Distance	$\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$	

Area, Volume, and Surface Area of Polygons and Solids

Triangle	$A = \frac{1}{2}bh$	A = area
Parallelogram	$A = bh$	b = base
Trapezoid	$A = \frac{1}{2}(b_1 + b_2)h$	h = height
Regular Polygon	$A = \frac{1}{2}ap$	a = apothem
		p = perimeter
Prism	$V = Bh$	V = volume
Right Prism	$SA = 2B + Ph$	B = area of base
Circular Cylinder	$V = \pi r^2 h$	SA = surface area
Right Circular Cylinder	$SA = 2\pi r^2 + 2\pi rh$	P = perimeter of base
Pyramid	$V = \frac{1}{3}Bh$	r = radius
		s = slant height
Right Pyramid	$SA = B + \frac{1}{2}Ps$	$\pi \approx 3.14$
Circular Cone	$V = \frac{1}{3}\pi r^2 h$	

Right Circular Cone $\qquad SA = \pi r^2 + \pi rs$

Sphere $\qquad V = \frac{4}{3}\pi r^3$

$\qquad SA = 4\pi r^2$


Interior Angles of Polygons

Degree Measure in a Regular Polygon	$\dfrac{180(n-2)}{n}$	n = number of sides
Sum of Degree Measures in a Polygon	$180(n-2)$	

Circles

Center-Radius Form	$(x-h)^2 + (y-k)^2 = r^2$	center (h,k)
Area	$A = \pi r^2$	r = radius
Circumference	$C = \pi d = 2\pi r$	A = area
Area of Sector	$A = \dfrac{\theta}{360}\pi r^2$	C = circumference
		d = diameter
		θ = degree measure of central angle
		$\pi \approx 3.14$

Right Triangles

Pythagorean Theorem	$a^2 + b^2 = c^2$	
Trigonometric Ratios	$\sin A = \dfrac{a}{c}$	
	$\cos A = \dfrac{b}{c}$	
	$\tan A = \dfrac{a}{b}$	
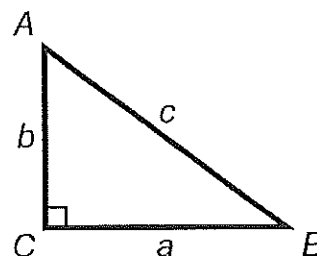
Sequence and Series

Arithmetic Sequence	$a_n = a_1 + (n-1)d$	n = term number
Arithmetic Series	$s_n = \dfrac{n}{2}(a_1 + a_n)$	a_n = nth term
		d = common difference
		s_n = sum of the first n terms

Interest

Simple Interest	$I = prt$	I = interest
Compound Interest	$A = p\left(1 + \dfrac{r}{n}\right)^{nt}$	p = principal

r = annual interest rate

t = time in years

A = amount of money after t years

n = compound periods per year

Miscellaneous

Distance, Rate, Time	$D = rt$	D = distance
Direct Variation (y varies directly with x)	$y = kx$	r = rate
		t = time
Indirect Variation (y varies indirectly with x)	$y = \dfrac{k}{x}$	k = variation constant

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Key to Symbols

$\triangle ABC$ . . . . triangle ABC

$\angle ABC$ . . . . angle ABC

$m\angle ABC$ . . . . degree measure of $\angle ABC$

$\overleftrightarrow{AB}$ . . . . line AB

$\overline{AB}$ . . . . line segment AB

AB . . . . length of $\overline{AB}$

Circle O . . . . circle with center point O

$\overparen{AB}$ . . . . arc AB

$\perp$ . . . . is perpendicular to

$\parallel$ . . . . is parallel to

$\cong$ . . . . is congruent to

$\sim$ . . . . is similar to

$\approx$ . . . . is approximately equal to