

# FORMULAS

You will not be given any formulas on the ACT. That means you need to memorize the formulas that are most helpful. The following formulas and properties are typically tested on the ACT:

$$r^2 = (x - h)^2 + (y - k)^2$$

*Equation of a Circle\*\**

$$= \frac{1}{2}(\text{base})(\text{height})$$

*Area of a triangle*

$$= (\text{base})(\text{height})$$

*Area of a Square/Rectangle*

$$= (\text{length})(\text{width})(\text{height})$$

*Volume of a Rectangular Solid*

$$= \pi r^2$$

*Area of a Circle*

$$= 2\pi r \text{ or } \pi d$$

*Circumference of a Circle*

$$A^2 + B^2 = C^2$$

*Pythagorean Theorem\**

$$\frac{y_2 - y_1}{x_2 - x_1}$$

*Slope Formula*

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

*Distance Formula*

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

*Midpoint Formula:*

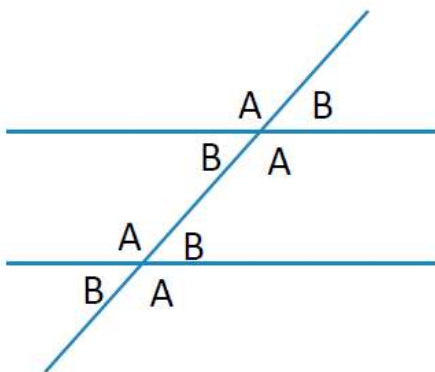
$$\text{sine} = \frac{\text{opposite}}{\text{hypotenuse}}$$

$$\text{cosine} = \frac{\text{adjacent}}{\text{hypotenuse}}$$

$$\text{tangent} = \frac{\text{opposite}}{\text{adjacent}}$$

*Trigonometric Functions*

When a third line cuts across two parallel lines, the small angles are all equal and the large angles are all equal. The sum of a small angle and a large angle is equal to  $180^\circ$ .



$$A + B = 180$$

**Perimeter = sum of all sides**

**A line is a  $180^\circ$  degree angle**

The sum of the interior angles of a triangle is  $180^\circ$ . The sum of the interior angles of a four-sided polygon is  $360^\circ$ . Add  $180^\circ$  to the sum of the interior angles for each additional side added to a polygon.

The **slope-intercept** equation of a line is  $y = mx + b$  where  $m$  is the slope and  $b$  is the  $y$ -intercept.

**Parallel lines** always have the same slope. Perpendicular lines always have opposite reciprocal slopes.

\* Used only with right triangles, where  $a$  and  $b$  are legs, and  $c$  is the hypotenuse.

\*\*  $(h,k)$  represents the center point of the circle