

Below are the formulas you may find useful as you take the test. However, you may find that you do not need to use all of the formulas. You may refer to this formula sheet as often as needed.

## Geometry Formulas

### Perimeter

The perimeter of a polygon is equal to the sum of the length of its sides.

### Distance Formula

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

**Coordinates of point which partitions a directed line segment AB at the ratio of  $a:b$  from  $A(x_1, y_1)$  to  $B(x_2, y_2)$**

$$(x, y) = \left( \frac{bx_1 + ax_2}{b + a}, \frac{by_1 + ay_2}{b + a} \right)$$

**OR**

$$(x, y) = \left( x_1 + \frac{a}{a+b}(x_2 - x_1), y_1 + \frac{a}{a+b}(y_2 - y_1) \right)$$

### Circumference of a Circle

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

$$\pi \approx 3.14$$

### Arc Length of a Circle

$$\text{Arc Length} = \frac{2\pi r\theta}{360}$$

### Area

Triangle  $A = \frac{1}{2}bh$

Rectangle  $A = bh$

Circle  $A = \pi r^2$

### Area of a Sector of a Circle

$$\text{Area of Sector} = \frac{\pi r^2 \theta}{360}$$

## Pythagorean Theorem

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

## Trigonometric Relationships

$$\sin \theta = \frac{\text{opp}}{\text{hyp}}; \quad \cos \theta = \frac{\text{adj}}{\text{hyp}}; \quad \tan \theta = \frac{\text{opp}}{\text{adj}}$$

## Equation of a Circle

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

## Volume

Cylinder  $V = \pi r^2 h$

Pyramid  $V = \frac{1}{3} Bh$

Cone  $V = \frac{1}{3} \pi r^2 h$

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

## Statistics Formulas

### Conditional Probability

$$P(A|B) = \frac{P(A \text{ and } B)}{P(B)}$$

### Multiplication Rule for Independent Events

$$P(A \text{ and } B) = P(A) \cdot P(B)$$

### Addition Rule

$$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$$