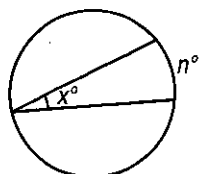


## FORMULA SHEET

Formulas that you may need to work questions in this document are found below.  
 You may use calculator  $\pi$  or the number 3.14.

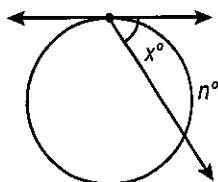
### Properties of Circles

Angle measure is represented by  $x$ . Arc measure is represented by  $m$  and  $n$ . Lengths are given by  $a$ ,  $b$ ,  $c$ , and  $d$ .



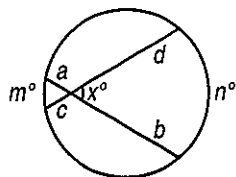
**Inscribed Angle**

$$x = \frac{1}{2}n$$



**Tangent-Chord**

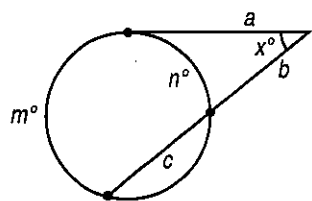
$$x = \frac{1}{2}n$$



**2 Chords**

$$a \cdot b = c \cdot d$$

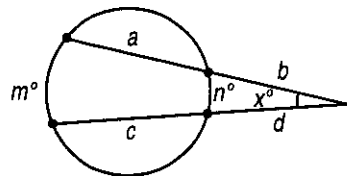
$$x = \frac{1}{2}(m + n)$$



**Tangent-Secant**

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

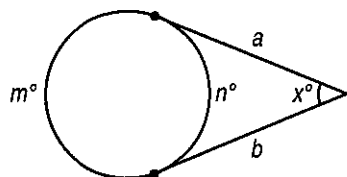
$$x = \frac{1}{2}(m - n)$$



**2 Secants**

$$b(a + b) = d(c + d)$$

$$x = \frac{1}{2}(m - n)$$

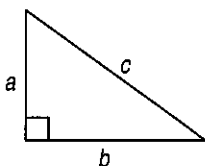


**2 Tangents**

$$a = b$$

$$x = \frac{1}{2}(m - n)$$

### Right Triangle Formulas



**Pythagorean Theorem:**

If a right triangle has legs with measures  $a$  and  $b$  and hypotenuse with measure  $c$ , then...

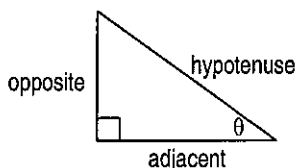
$$a^2 + b^2 = c^2$$

**Trigonometric Ratios:**

$$\sin \theta = \frac{\text{opposite}}{\text{hypotenuse}}$$

$$\cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}}$$

$$\tan \theta = \frac{\text{opposite}}{\text{adjacent}}$$



### Coordinate Geometry Properties

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

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

**Slope:**  $m = \frac{y_2 - y_1}{x_2 - x_1}$

**Point-Slope Formula:**  $(y - y_1) = m(x - x_1)$

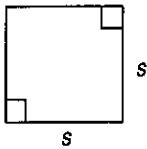
**Slope Intercept Formula:**  $y = mx + b$

**Standard Equation of a Line:**  $Ax + By = C$

**FORMULA SHEET**

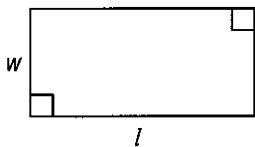
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**Plane Figure Formulas**



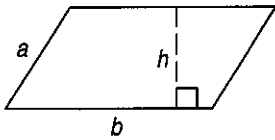
$$P = 4s$$

$$A = s \cdot s$$



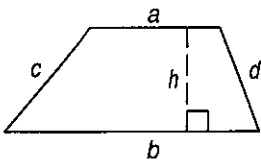
$$P = 2l + 2w$$

$$A = lw$$



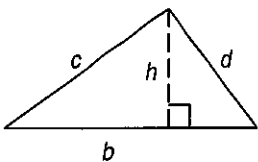
$$P = 2a + 2b$$

$$A = bh$$



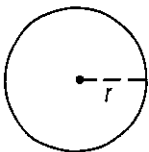
$$P = a + b + c + d$$

$$A = \frac{1}{2}h(a + b)$$



$$P = b + c + d$$

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

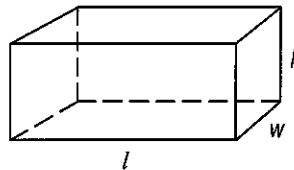


$$C = 2\pi r$$

$$A = \pi r^2$$

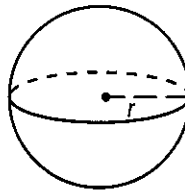
Sum of angle measures =  $180(n - 2)$ ,  
 where  $n$  = number of sides

**Solid Figure Formulas**



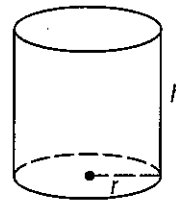
$$SA = 2lw + 2lh + 2wh$$

$$V = lwh$$



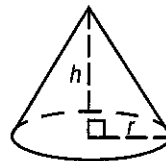
$$SA = 4\pi r^2$$

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



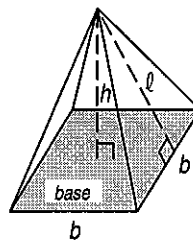
$$SA = 2\pi r^2 + 2\pi rh$$

$$V = \pi r^2 h$$



$$SA = \pi r^2 + \pi r\sqrt{r^2 + h^2}$$

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



$$SA = (\text{Area of the base}) + \frac{1}{2}(\text{number of sides})(b)(l)$$

$$V = \frac{1}{3}(\text{Area of the base})(h)$$

**Euler's Formula for Polyhedra:**

$$V - E + F = 2$$

vertices minus edges plus faces = 2