

### Equations of a Line

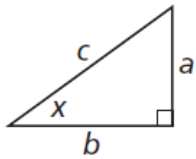
Slope-Intercept Form:  $y = mx + b$   
 where  $m = \text{slope}$  and  $b = \text{y-intercept}$

Point-Slope Form:  $y - y_1 = m(x - x_1)$   
 where  $m = \text{slope}$ ,  $(x_1, y_1) = \text{point on line}$

### Combinations and Permutations

$${}^nC_r = \frac{n!}{r!(n-r)!} \quad {}^nP_r = \frac{n!}{(n-r)!}$$

### Formulas for Right Triangles



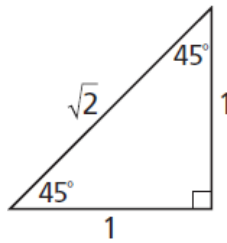
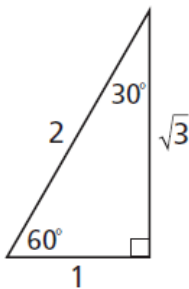
$$\sin x = \frac{a}{c} = \left( \frac{\text{opp}}{\text{hyp}} \right)$$

$$\cos x = \frac{b}{c} = \left( \frac{\text{adj}}{\text{hyp}} \right)$$

$$\tan x = \frac{a}{b} = \left( \frac{\text{opp}}{\text{adj}} \right)$$

Pythagorean Theorem:  $a^2 + b^2 = c^2$

### Special Right Triangles



### Coordinate Geometry Formulas

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

$$\text{slope} = \frac{y_2 - y_1}{x_2 - x_1} \text{ where } x_2 \neq x_1$$

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

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

### Polygon Angle Formulas

Sum of degree measures of the interior angles of a polygon:

$$180(n - 2)$$

Degree measure of an interior angle of a regular polygon:

$$\frac{180(n - 2)}{n}$$

where  $n$  is the number of sides of the polygon

### Interest Formulas

Simple Interest:  $A = P(1 + rt)$

Compound Interest:  $A = P\left(1 + \frac{r}{n}\right)^{nt}$

$A = \text{amount (including interest)}$

$P = \text{principal}$

$r = \text{interest rate (expressed as a decimal)}$

$n = \text{number of compoundings per year}$

$t = \text{number of years}$

### Quadratic Equations

Let  $ax^2 + bx + c = 0$ , where  $a \neq 0$ .

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

$$\text{x-coordinate of vertex} = -\frac{b}{2a}$$

### Distance Traveled

$$d = rt$$

distance = rate  $\times$  time