

SLOPE FORMULA

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

DISTANCE FORMULA

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

MIDPOINT FORMULA

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

To prove that a shape is PARALLELOGRAM show the following is true:

1. Opposite sides are parallel (slope)

OR

2. Opposite sides are congruent (distance)

OR

3. One pair of opposite sides are parallel and congruent (slope and distance)

To prove that a shape is RHOMBUS show the following is true:

All four sides are congruent. (Distance)

To prove that a shape is RECTANGLE show the following is true:

The adjacent sides are perpendicular. (Slope)

To prove that a shape is SQUARE show the following is true:

All four sides are congruent **and** adjacent sides are perpendicular. (Distance and slope)

To prove that a shape is TRAPEZOID show the following is true:

One pair of opposite sides are parallel and the other pair of sides are not. (Slope)



To prove that a shape is ISOSCELES TRAPEZOID show the following is true:

One pair of opposite sides are parallel, and the non-parallel sides are congruent.  
(Slope and distance)

To prove that a shape is KITE show the following is true:

Two pairs of adjacent sides are congruent. (Distance)

