

Algebra Concepts used for Coordinate Geometry

Distance Formula

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

- prove segments are same length.
- Equidistance
- prove a segment is a portion of another segment in length

Slope

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

- determine if lines are parallel or perpendicular
- determine the slope needed to make a perpendicular line
- needed for linear equation

Midpoint

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

- finds the middle of a line
- Think medians, perpendicular bisectors,

Point-Slope Form

$$y - y_1 = m(x - x_1)$$

Annotations: "slope" points to m , "known point" points to (x_1, y_1) .

- needed to create equations

Systems of Linear Equations

- needed to find points of concurrency (intersections!)

