

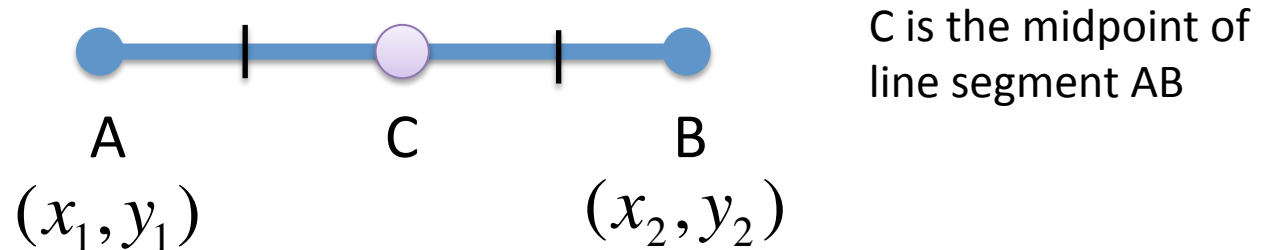
Objectives:

Students will be able to calculate the midpoint and the slope of two given points.

Students will be able to discover conclusions about parallel and perpendicular slopes.

Midpoint

A line segment's midpoint is equidistant from the segment's endpoints.



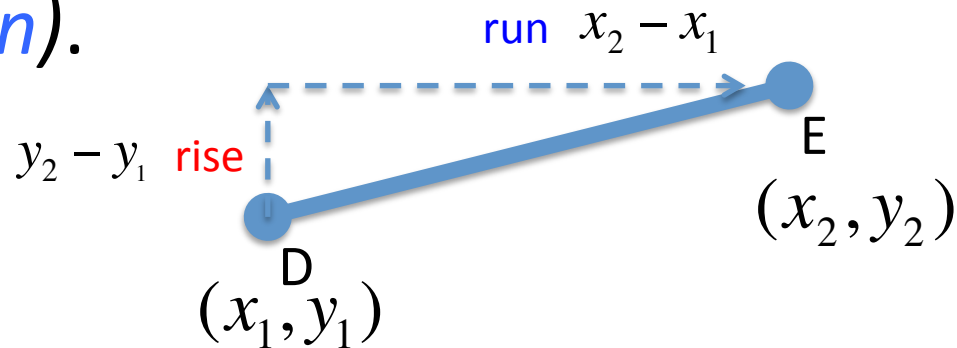
The midpoint formula gives the midpoint of a line segment:

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

Each coordinate of C is the mean of the corresponding coordinates of A and B.

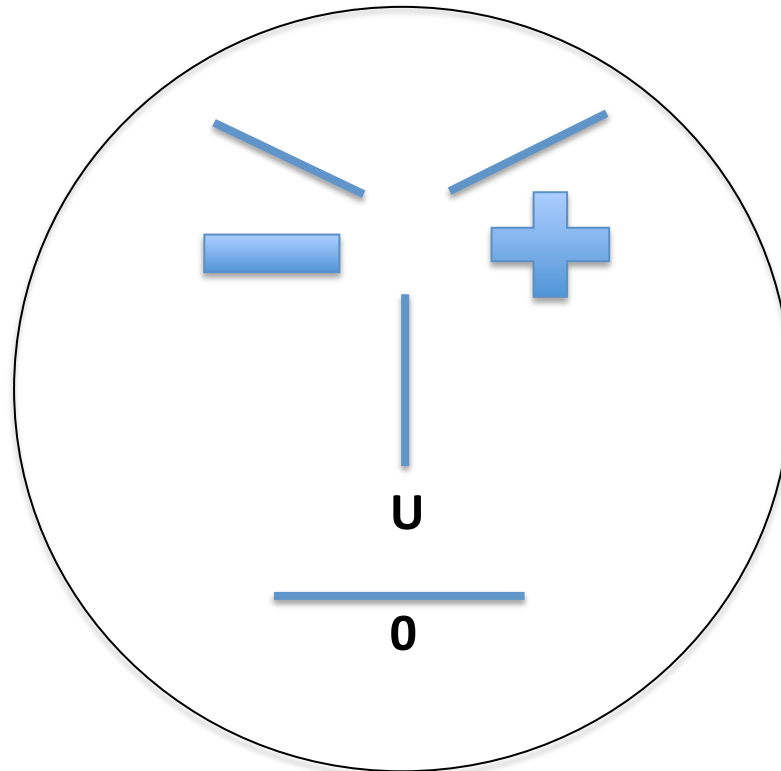
Slope

The slope m of a nonvertical line is the ratio of vertical change (*the rise*) to horizontal change (*the run*).



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

Slope Man!



Find the midpoint of the line segment joining the points $(-3, 4)$ and $(5, 6)$.

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

$$(1, 5)$$

Now, calculate the slope of these two points.

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

$$m = \frac{1}{4}$$