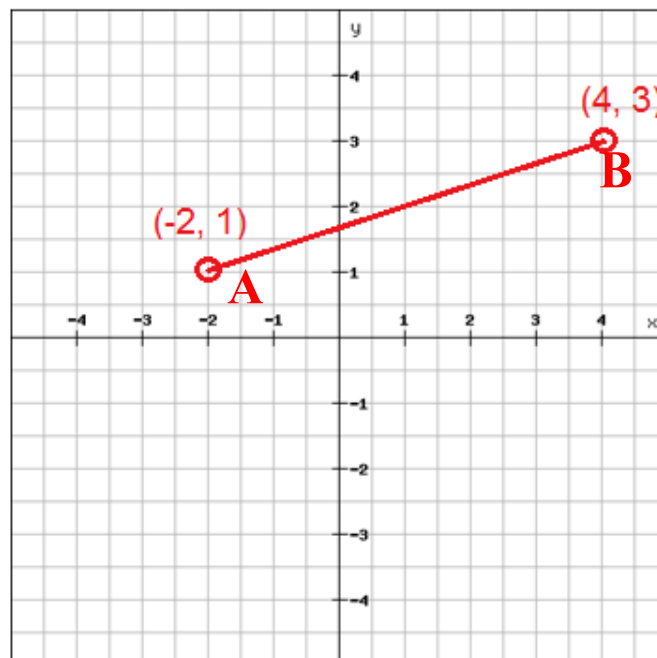
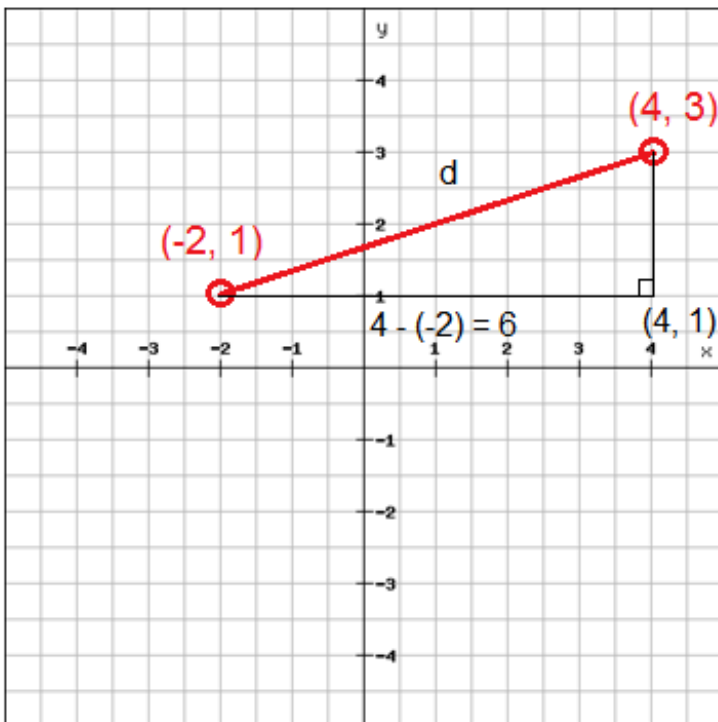


Determine the distance





Reminder!

$$3 - 1 = 2$$

$$h^2 = a^2 + b^2$$

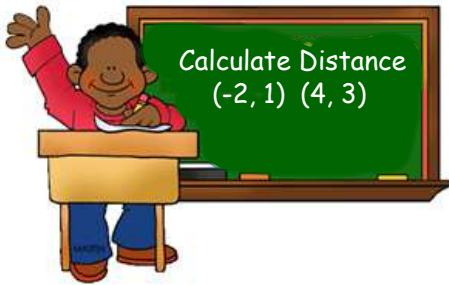
$$h^2 = 6^2 + 2^2$$

$$h^2 = 36 + 4$$

$$h^2 = 40$$

$$\sqrt{h^2} = \sqrt{40}$$

$$h = 6.3 \text{ units}$$



Distance Formula

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

Calculate the distance between $(-2, 1)$ and $(4, 3)$.

$$d = \sqrt{(4 - (-2))^2 + (3 - 1)^2}$$

$$d = \sqrt{(4 + 2)^2 + (2)^2}$$

$$d = \sqrt{(6)^2 + 4}$$

$$d = \sqrt{36 + 4}$$

$$d = \sqrt{40}$$

$$d = 6.3 \text{ units}$$

Calculate the distance
between $(-9, 4)$ and $(13, -5)$

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

$$d = \sqrt{(13 - (-9))^2 + (-5 - 4)^2}$$

$$d = \sqrt{(22)^2 + (-9)^2}$$

$$d = \sqrt{484 + 81}$$

$$d = \sqrt{565}$$

$$d = 23.8 \text{ units}$$

Find the distance between $(2, 3)$ and $(6, 8)$.

Let $x_1 = 2$, $x_2 = 6$, $y_1 = 3$, and $y_2 = 8$.

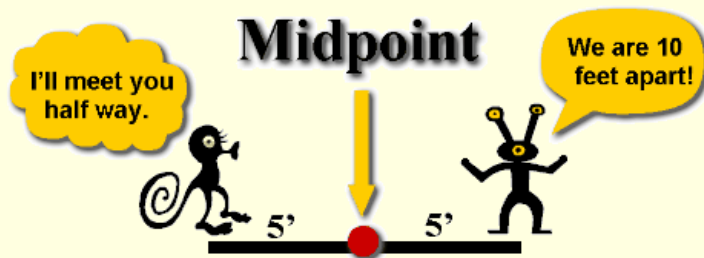
$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$d = \sqrt{(6 - 2)^2 + (8 - 3)^2}$$

$$d = \sqrt{4^2 + 5^2}$$

$$d = \sqrt{16 + 25}$$

$$d = \sqrt{41} \text{ or } 6.4 \text{ units}$$



Midpoint Formula

Calculating the midpoint
between two points.

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

Calculate the midpoint
between $(7, 3)$ & $(-2, -5)$

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

$$\left(\frac{-2 + 7}{2}, \frac{-5 + 3}{2} \right)$$

$$\left(\frac{5}{2}, \frac{-2}{2} \right)$$

$$(2.5, -1)$$

Find the midpoint of $(5, 1)$ and $(-1, 5)$.
Let $x_1 = 5, x_2 = -1, y_1 = 1,$ and $y_2 = 5$.

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

$$\left(\frac{5 + (-1)}{2}, \frac{1 + 5}{2} \right) \quad \text{Substitute.}$$

$$\left(\frac{4}{2}, \frac{6}{2} \right) \quad \text{Add.}$$

$(2, 3)$ is the midpoint