Warm Up

$\frac{k+6}{3}$ and $\frac{k-2}{5}$ represent the slope of parallel lines, calculate k.

$=$ means slopes are the same (equal)

$\frac{(k+6)}{3} \not\equiv \frac{(k-2)}{5}$

Cross multiply

$5(k+6) = 3(k-2)$

Multiply through Brackets

$5k+30 = 3k-6$

$5k^{-3k} + 30^{-30} = 3k^{-3k} - 6^{-30}$

$5k-3k = -6-30$

$2k = -36$

Solve for k

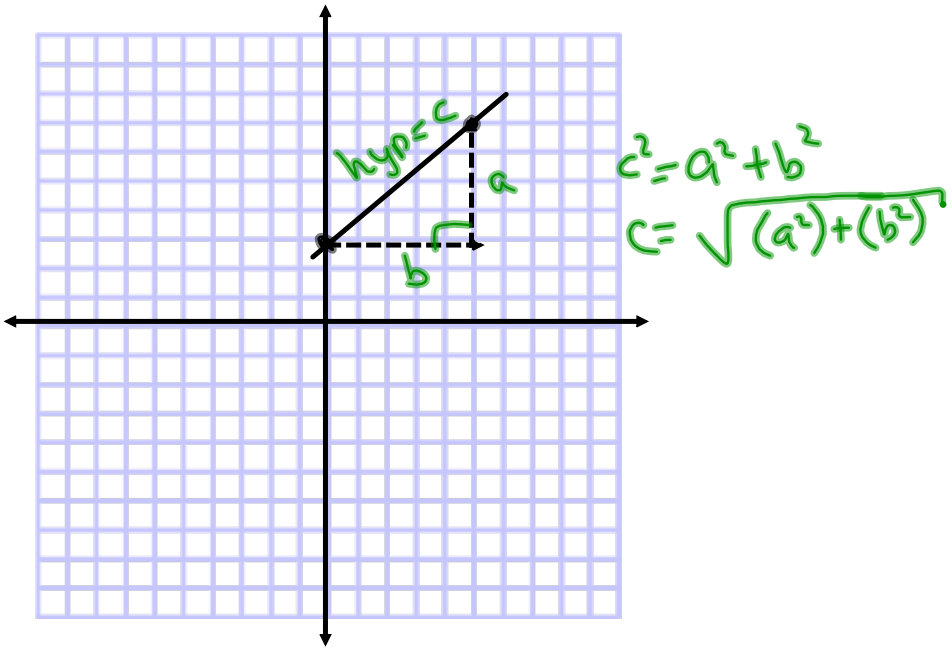
$\frac{2k}{2} = \frac{-36}{2}$

$\boxed{k = -18}$

Distance Between Two Points

To find the distance between two points when the coordinates of the two points are given, we use the following formula:

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



Example 1

Find the length of the line segment joining C(2, -3) to D(2, 1).

x_1, y_1 $\quad$ x_2, y_2

Solution

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

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

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

Do Brackets first

$$= \sqrt{(0)^2 + (4)^2}$$

Do exponents

$$= \sqrt{0+16}$$

$$= \sqrt{16}$$

$$D_{CD} = 4$$

Example 2

Calculate the distance between the points B(2, -3) and C(9, 4).

x_1 y_1 x_2 y_2

Solution

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

$$= \sqrt{(9 - 2)^2 + (4 - -3)^2}$$

$$= \sqrt{(9-2)^2 + (4+3)^2}$$

$$= \sqrt{(7)^2 + (7)^2}$$

$$= \sqrt{49 + 49}$$

$$= \sqrt{98}$$

We have to write $\sqrt{98}$ as a mixed Radical

$$= \sqrt{49(2)}$$

$$= \sqrt{49}\ \sqrt{2}$$

$$= 7\sqrt{2}$$

$1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144$

$1^2\ 2^2\ 3^2\ 4^2\ 5^2\ 6^2\ \ldots\ 12^2$

$169, 196, 225, 256 \ldots$

$13^2, 14^2, 15^2, 16^2$

Entire Radical
↳ # under Radical sign

$\sqrt{200}$

$\sqrt{100(2)}$

$\sqrt{100}\ \sqrt{2}$

Mixed Radical
→ coefficient with a radical

$10\sqrt{2}$

Worksheet → Distance Between Two Points (1)

(x,y)

#1 c $P(2,3)$ $Q(-1,-1)$

#2 c

#4

#6

#8