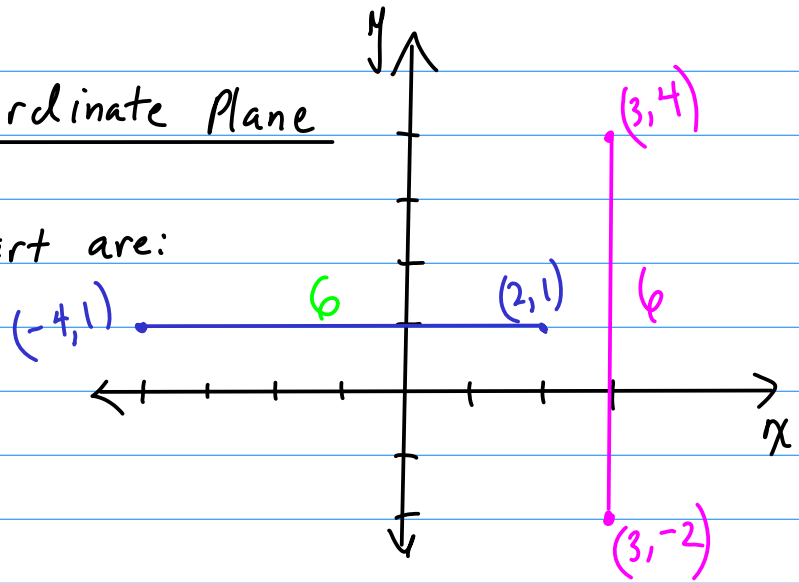


§ 9.5: Distance on a Coordinate Plane

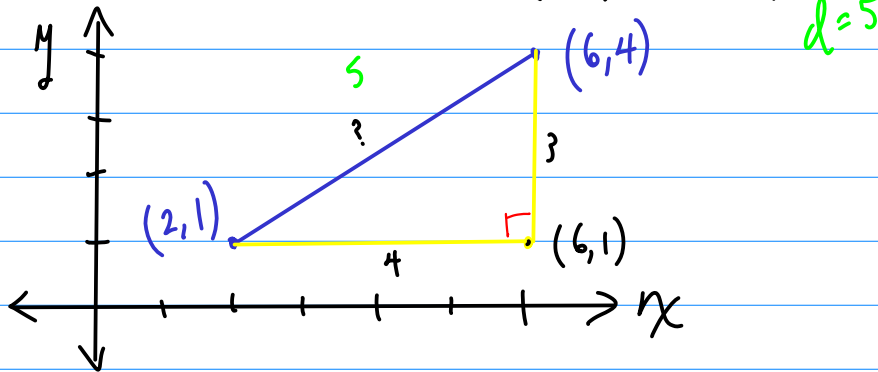
Ex: How many units apart are:

(a) $(3, -2)$ & $(3, 4)$

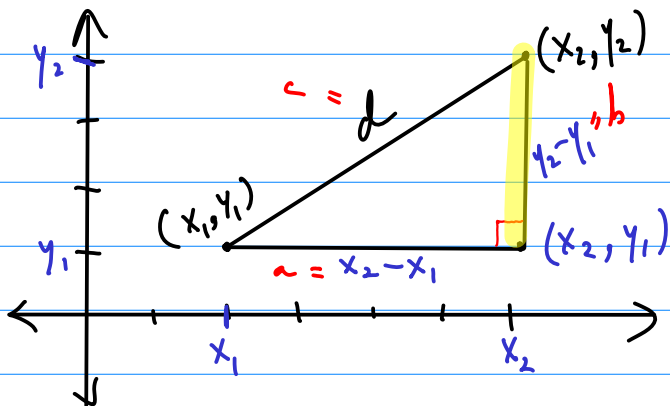
(b) $(-4, 1)$ & $(2, 1)$



Ex: Find distance btwn $(2, 1)$ & $(6, 4)$.



• Derive the Distance Formula



$$a^2 + b^2 = c^2$$

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

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

* Distance Formula:

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

Ex: Find dist. btwn $(2, 1)$ & $(6, 4)$.

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

$$d = \sqrt{(6 - 2)^2 + (4 - 1)^2}$$

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

$$= \sqrt{16 + 9}$$

$$= \sqrt{25}$$

$$= 5$$

Ex: dist. btwn $(3, -3)$ & $(15, 2)$

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

$$d = \sqrt{(15 - 3)^2 + (2 - (-3))^2}$$

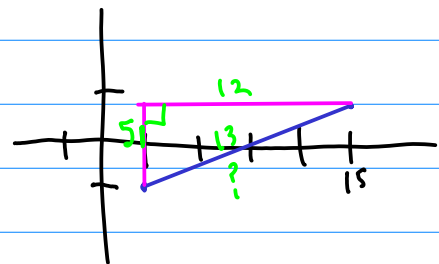
$$d = \sqrt{(12)^2 + (5)^2}$$

$$d = \sqrt{144 + 25}$$

$$d = \sqrt{169}$$

$$d = 13$$

3-4-5
5-12-13



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PENYATA

$$(-4)^2 \text{ vs } -(4^2)$$

$$-4 \cdot -4 \quad -16$$

$$+16$$

Ex: Length of \overline{GH} where $G(-4, 6)$ & $H(-3, 2)$? x_1, y_1 x_2, y_2

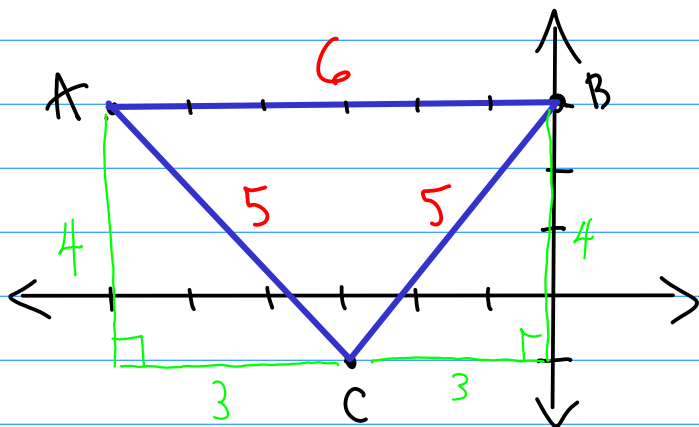
$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$= \sqrt{(-3 + 4)^2 + (2 - 6)^2}$$

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

$$= \sqrt{1 + 16} = \boxed{\sqrt{17}}$$

Ex: $\triangle ABC$ w/ vertices $A(-6, 3)$, $B(0, 3)$, & $C(-3, -1)$.
Find the \triangle 's perimeter.



$$P = 6 + 5 + 5$$

$$P = 16 \text{ u}$$