

$$\textcircled{1} \quad \frac{2x+3}{4} = \frac{x+2}{5}$$

$$\textcircled{2} \quad \text{Scale of map} \Rightarrow 1 \text{ in} = 24 \text{ mi} \\ 3 \text{ inches on map} = x \text{ miles?}$$

Proportions $\Rightarrow$ cross-products are equal

$$\frac{a}{b} = \frac{c}{d} \quad \therefore ab = cd$$

$$\textcircled{1} \quad \frac{2x+3}{4} = \frac{x+2}{5}$$

$$5(2x+3) = 4(x+2)$$

$$10x+15 = 4x+8$$

$$6x = -7$$

$$x = -\frac{7}{6}$$

$$\textcircled{2} \quad \frac{1}{24} = \frac{3}{x}$$

$$x = 72 \text{ mi.}$$

Homework Review: Pg 743 # 22, 23, 24

$$\begin{aligned} \textcircled{22} \quad 3y + x &= 3 \xrightarrow{(-5)} -15y - 5x = -15 \\ -2y + 5x &= 15 \xrightarrow{\quad} -2y + 5x = 15 \end{aligned}$$

$$\begin{array}{r} -17y \qquad \qquad = 0 \\ \hline 3y + x = 3 \end{array} \quad \leftarrow \quad y = \frac{0}{-17} = 0$$
$$\therefore 3(0) + x = 3$$
$$x = 3 \quad \boxed{(3, 0)}$$

$$\begin{aligned} \textcircled{23} \quad 4x - 7y &= 8 \xrightarrow{\quad} 4x - 7y = 8 \\ -2x + 5y &= -1 \xrightarrow{(2)} -4x + 10y = -2 \end{aligned}$$

$$3y = 6$$

$$\rightarrow \therefore 4x - 7y = 8 \quad \leftarrow y = 2$$

$$4x - 7(2) = 8$$

$$4x - 14 = 8$$

$$4x = 22$$

$$x = \frac{22}{4} = \frac{11}{2}$$

$$\boxed{\left(\frac{11}{2}, 2\right)}$$

$$\textcircled{24} \quad x + 3y = 6 \longrightarrow x = \textcircled{6 - 3y}$$

$$4\textcircled{x} - 2y = -32$$

$$4(6 - 3y) - 2y = -32$$

$$24 - 12y - 2y = -32$$

$$-14y = -32 - 24$$

$$\textcircled{y = \frac{-56}{-14} = 4}$$

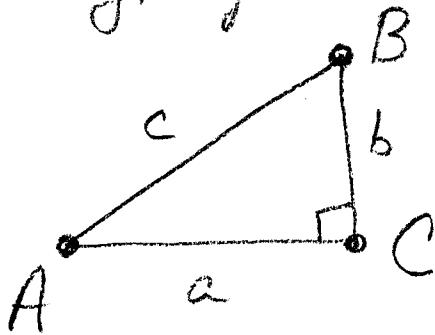
$$\therefore x = 6 - 3y$$

$$x = 6 - 3(4)$$

$$\textcircled{x = -6}$$

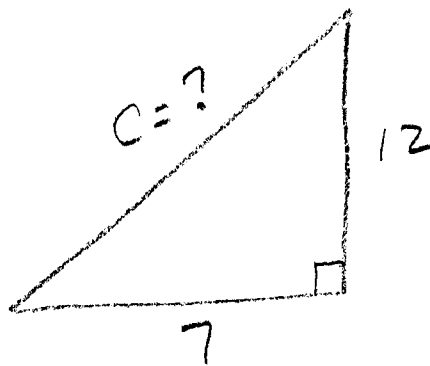
$$\boxed{(-6, 4)}$$

Pythagorean Theorem



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

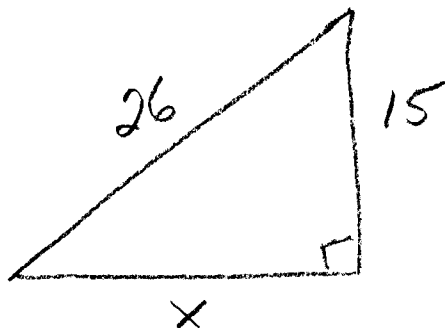
(EX)



$$c^2 = 12^2 + 7^2$$

$$c = \sqrt{144 + 49} = \boxed{\sqrt{193}} \approx 13.9 \text{ units}$$

(EX)



$$26^2 = x^2 + 15^2$$

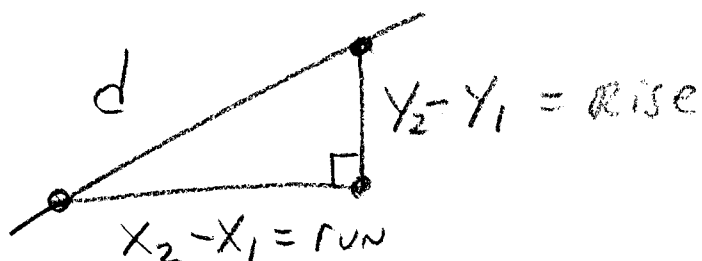
$$676 = x^2 + 225$$

$$451 = x^2$$

$$\boxed{\sqrt{451} = x}$$

$$x \approx 21.2 \text{ units}$$

Find distance between 2 points
 $(X_1, Y_1), (X_2, Y_2)$



$$d^2 = (X_2 - X_1)^2 + (Y_2 - Y_1)^2$$

$$d = \sqrt{(X_2 - X_1)^2 + (Y_2 - Y_1)^2}$$

Ex Find d : $(-3, -8), (4, 2)$

$$d = \sqrt{(4+3)^2 + (2+8)^2}$$

$$d = \sqrt{49 + 100}$$

$$d = \sqrt{149} \quad \text{or} \quad d \approx 12.2 \text{ units}$$

Midpoint of Two Points
 $(x_1, y_1), (x_2, y_2)$

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

$\uparrow$ $\uparrow$
 Avg of Avg of
 X Y

Ex Midpoint of:
 $(-2, 3), (15, 12)$

$$= \left(\frac{15 + (-2)}{2}, \frac{3 + 12}{2} \right)$$

$$\boxed{\left(\frac{13}{2}, \frac{15}{2} \right)}$$

HW

Practice Worksheet
 (evens)