

# Section 12.7/8 Worksheet

Name: KEY

Find the distance between the two points.

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

1.)  $(4, 8), (4, 7)$

$$d = \sqrt{(4-4)^2 + (7-8)^2}$$

$$d = \sqrt{(0)^2 + (-1)^2}$$

$$d = \sqrt{0+1}$$

$$d = \sqrt{1}$$

$$d = \boxed{1}$$

$$d = \boxed{1}$$

3.)  $(2, 3), (-5, 0)$

$$d = \sqrt{(-5-2)^2 + (0-3)^2}$$

$$d = \sqrt{(-7)^2 + (-3)^2}$$

$$d = \sqrt{49+9}$$

$$d = \boxed{\sqrt{58}}$$

5.)  $(2, 3), (14, -2)$

$$d = \sqrt{(14-2)^2 + (-2-3)^2}$$

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

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

$$d = \sqrt{169}$$

$$d = \boxed{13}$$

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

Find the midpoint of the line segment with the given endpoints.

7.)  $(2, 5), (4, 12)$

$$\left( \frac{2+4}{2}, \frac{5+12}{2} \right)$$

$$\left( \frac{6}{2}, \frac{17}{2} \right)$$

$$\boxed{(3, 8.5)}$$

2.)  $(x_1, y_1), (x_2, y_2)$

2.)  $(8, 3), (10, 4)$

$$d = \sqrt{(10-8)^2 + (4-3)^2}$$

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

$$d = \sqrt{4+1}$$

$$d = \boxed{\sqrt{5}}$$

4.)  $(x_1, y_1), (x_2, y_2)$

4.)  $(8, 8), (-4, 2)$

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

$$d = \sqrt{(-12)^2 + (-6)^2}$$

$$d = \sqrt{144+36}$$

$$d = \boxed{\sqrt{180}}$$

6.)  $(x_1, y_1), (x_2, y_2)$

6.)  $(9, -3), (2, 4)$

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

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

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

$$d = \boxed{\sqrt{98}}$$

8.)  $(x_1, y_1), (x_2, y_2)$

8.)  $(-7, 2), (-10, 14)$

$$\left( \frac{-7+(-10)}{2}, \frac{2+14}{2} \right)$$

$$\left( \frac{-17}{2}, \frac{16}{2} \right)$$

$$\boxed{(-8.5, 8)}$$

$$9.) \begin{matrix} x_1 & y_1 & x_2 & y_2 \\ (-9, -5), & (7, -14) \end{matrix}$$

$$\left( \frac{-9+7}{2}, \frac{-5+(-14)}{2} \right)$$

$$\left( \frac{-2}{2}, \frac{-19}{2} \right)$$

$$\boxed{(-1, -9.5)}$$

$$11.) \begin{matrix} x_1 & y_1 & x_2 & y_2 \\ (20, 5), & (30, -5) \end{matrix}$$

$$\left( \frac{20+30}{2}, \frac{5+(-5)}{2} \right)$$

$$\left( \frac{50}{2}, \frac{0}{2} \right)$$

$$\boxed{(25, 0)}$$

$$10.) \begin{matrix} x_1 & y_1 & x_2 & y_2 \\ (8, -8), & (3, 5) \end{matrix}$$

$$\left( \frac{8+3}{2}, \frac{-8+5}{2} \right)$$

$$\left( \frac{11}{2}, \frac{-3}{2} \right)$$

$$\boxed{(5.5, -1.5)}$$

$$12.) \begin{matrix} x_1 & y_1 & x_2 & y_2 \\ (-11, 7), & (8, -3) \end{matrix}$$

$$\left( \frac{-11+8}{2}, \frac{7+(-3)}{2} \right)$$

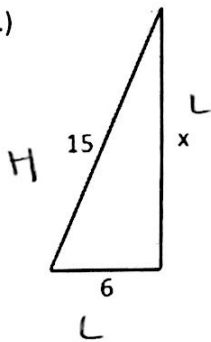
$$\left( \frac{-3}{2}, \frac{4}{2} \right)$$

$$\boxed{(-1.5, 2)}$$

## REVIEW:

Find the unknown length of the right triangle.

13.)



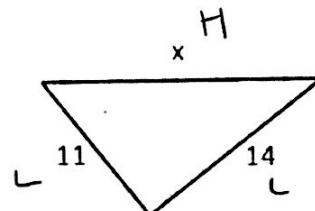
$$x^2 + 6^2 = 15^2$$

$$x^2 + 36 = 225$$

$$x^2 = 189$$

$$\boxed{x = \sqrt{189}}$$

14.)



$$11^2 + 14^2 = x^2$$

$$121 + 196 = x^2$$

$$317 = x^2$$

$$\boxed{x = \sqrt{317}}$$

Simplify the expression.

$$15.) \sqrt{6}(2\sqrt{3} - 4\sqrt{2})$$

$$2\sqrt{18} - 4\sqrt{12}$$

$$\sqrt{9}\sqrt{2} \quad \sqrt{4}\sqrt{3}$$

$$2 \cdot 3 \cdot \sqrt{2} - 4 \cdot 2 \cdot \sqrt{3}$$

$$\boxed{6\sqrt{2} - 8\sqrt{3}}$$

$$16.) 6\sqrt{2} - \sqrt{2}$$

$$\boxed{5\sqrt{2}}$$

$$17.) \sqrt{5} + \sqrt{20} - \sqrt{3}$$

$$\sqrt{4} \cdot \sqrt{5}$$

$$\sqrt{5} + 2\sqrt{5} - \sqrt{3}$$

$$\boxed{3\sqrt{5} - \sqrt{3}}$$