

Distance Formula

Sheet 3

Example: The distance between the points $(p, -1)$ and $(9, -6)$ is 13 units.
Find the value of p .

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

$$13 = \sqrt{(9 - p)^2 + (-6 + 1)^2}$$

$$169 = (9 - p)^2 + (-5)^2 \Rightarrow 144 = (9 - p)^2 \Rightarrow \pm 12 = 9 - p$$

$$\mathbf{p = -3 \text{ or } 21}$$

Find the unknown value with the given endpoints and distance between them.

- 1) $(w, -10), (6, -2)$, distance = 2 units

$w = \underline{\hspace{2cm}}$

- 3) $(-6, 3), (t, 8)$, distance = 1 unit

$t = \underline{\hspace{2cm}}$

- 5) $(5, -10), (z, -5)$, distance = 11 units

$z = \underline{\hspace{2cm}}$

- 7) The endpoints $(v, 4)$ and $(-3, 1)$ and the length is 9 units. Find the value of v .

$v = \underline{\hspace{2cm}}$

- 8) The length of the diameter of a circle with endpoints $(-4, -6)$ and $(m, 6)$ is 15 units. Find the value of m .

$m = \underline{\hspace{2cm}}$

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

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$$\mathbf{p = -3 \text{ or } 21}$$

Find the unknown value with the given endpoints and distance between them.

- 1) $(w, -10), (6, -2)$ _____, distance = 2 units

$$w = \underline{\mathbf{0 \text{ or } 12}}$$

- 3) $(-6, 3), (t, 8)$, distance = 1 unit

$$t = \underline{\mathbf{-18 \text{ or } 6}}$$

- 5) $(5, -10), (z, -5)$, distance = 11 units

$$z = \underline{\mathbf{5}}$$

- 7) The endpoints are $(v, -3)$ and the length is 9 units. Find the value of v .

$$v = \underline{\mathbf{1}}$$

- 8) The length of the diameter of a circle with endpoints $(-4, -6)$ and $(m, 6)$ is 15 units. Find the value of m .

$$m = \underline{\mathbf{-13 \text{ or } 5}}$$

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