

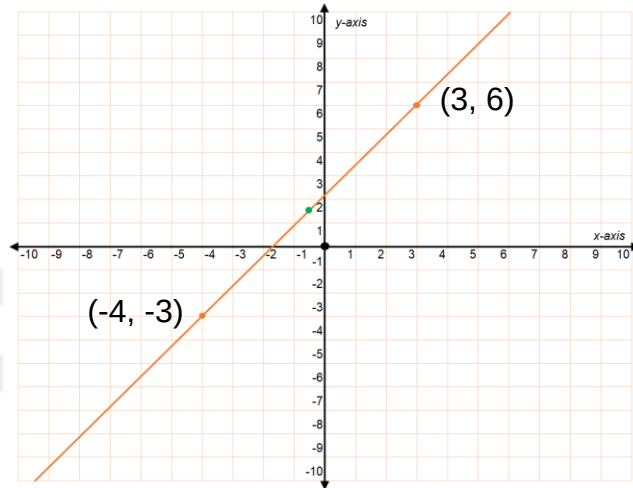


Distance & Midpoint Formulas

Midpoint Formula

Finding the midpoint or the exact halfway point between two given points can be useful. It is essentially finding the average between two positions on the Cartesian plane.

$$m = \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}$$



$$m = \frac{-4 + 3}{2}, \frac{-3 + 6}{2}$$

$$= \left(-\frac{1}{2}, \frac{3}{2}\right)$$

$= (-0.5, 1.5)$ is the midpoint

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

$$= \sqrt{7^2 + 9^2} = \sqrt{49 + 81} = \sqrt{130}$$

$= 11.4$ is the distance between the points

Distance Formula

Finding the distance between two points on the Cartesian plane can be achieved through Pythagoras' Theorem.

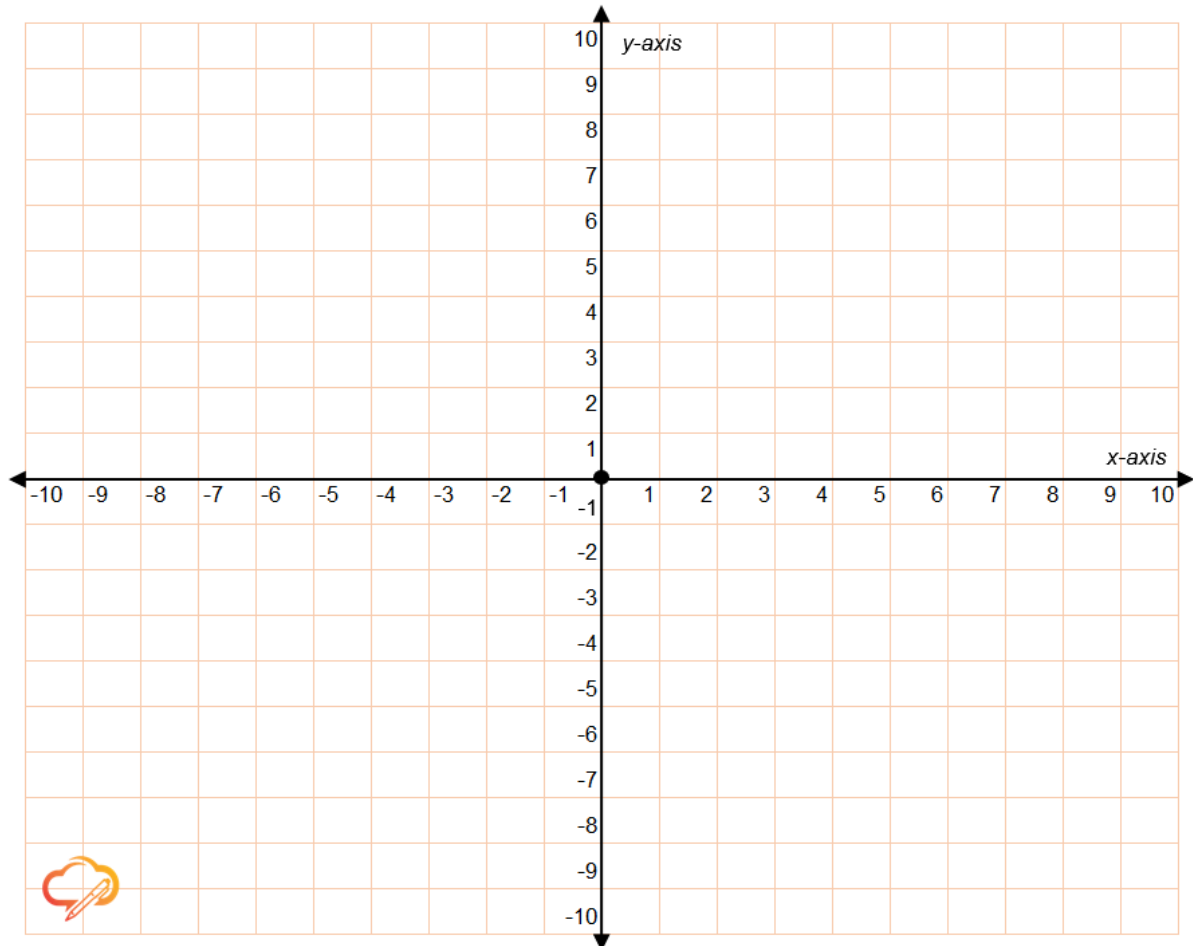
$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Coordinate Pairs

A	=	(2, 4)	(9, -6)	E	=	(3, 10)	(-4, 5)
B	=	(-5, 1)	(8, 2)	F	=	(9, 7)	(-6, -8)
C	=	(5, 5)	(-3, -7)	G	=	(0, -9)	(3, 3)
D	=	(-10, -4)	(7, -2)	H	=	(-6, -5)	(4, 7)



Instructions: Draw the coordinate pairs as line segments on the graph below. Label each segment accordingly.



Instructions: Calculate the midpoint and distance for each coordinate pair below. Round to two decimals where necessary.

1) COORDINATE PAIR A

Midpoint

Distance



2) COORDINATE PAIR B

Midpoint

Distance

3) COORDINATE PAIR C

Midpoint

Distance

4) COORDINATE PAIR D

Midpoint

Distance



5) COORDINATE PAIR E

Midpoint

Distance

6) COORDINATE PAIR F

Midpoint

Distance

7) COORDINATE PAIR G

Midpoint

Distance

8) COORDINATE PAIR H

Midpoint

Distance



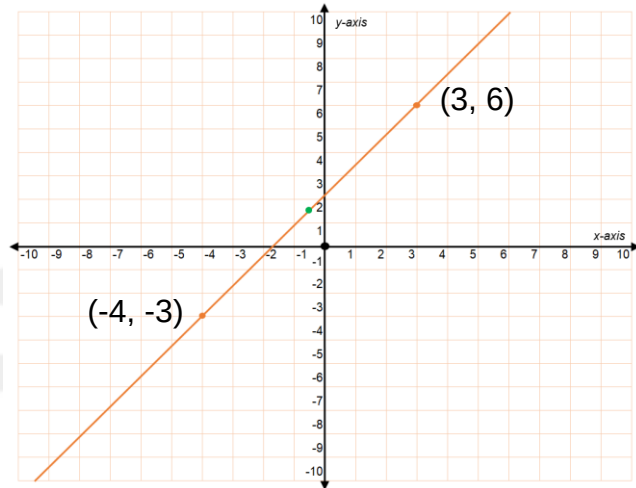


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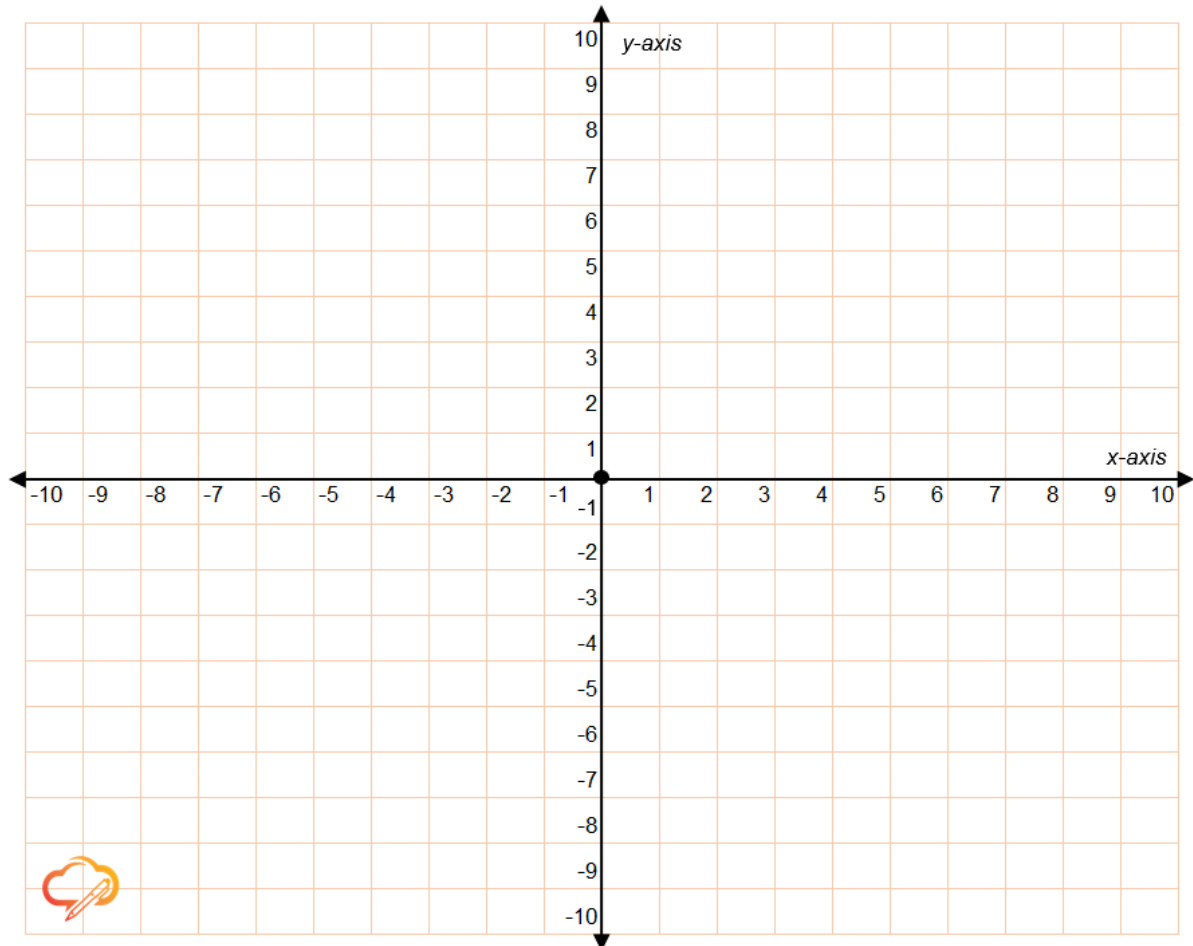
$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Coordinate Pairs

A	=	(8, 9)	(4, -6)	E	=	(1, 3)	(5, -1)
B	=	(-4, 0)	(2, 7)	F	=	(3, 6)	(7, 4)
C	=	(10, -3)	(6, -5)	G	=	(-2, -2)	(6, 6)
D	=	(2, -5)	(0, -7)	H	=	(9, 7)	(-10, -2)



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Midpoint

Distance



2) COORDINATE PAIR B

Midpoint

Distance

3) COORDINATE PAIR C

Midpoint

Distance

4) COORDINATE PAIR D

Midpoint

Distance



5) COORDINATE PAIR E

Midpoint

Distance

6) COORDINATE PAIR F

Midpoint

Distance

7) COORDINATE PAIR G

Midpoint

Distance

8) COORDINATE PAIR H

Midpoint

Distance

