

Distance and Midpoint

8th Grade

Two formulas for the coordinate plane — one is Pythagoras in disguise.

Distance uses Pythagoras on the horizontal and vertical gaps. Midpoint is simply the average of the coordinates.

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

(1,2) to (4,6)

$\sqrt{(9 + 16)}$.

d = 5

Midpoint of (1,2),(4,6)

Average the x's, average the y's.

(2.5, 4)

Why it works

The gaps in x and y are the two legs.

it is a right triangle

Order of subtraction

It is squared, so the sign disappears.

does not matter

Distance is a single number. Midpoint is a point, so it needs two coordinates.