

1 - 3

Distance and Midpoint

Formulas

Distance

The distance "d" between two points with coordinates (x_1, y_1) and (x_2, y_2) is given by the formula below:

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

** Distance is always positive. The length of an object can never be negative.*

Midpoint

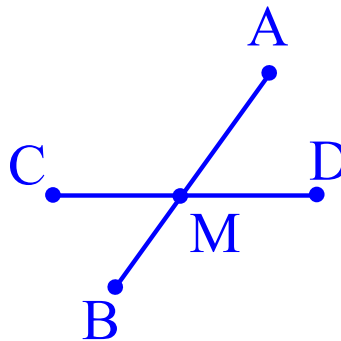
The coordinates of the midpoint of a segment with endpoints (x_1, y_1) and (x_2, y_2) can be found using the formula below:

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

TerminologySegment Bisector

- Any segment, line, or plane that intersects a segment at its midpoint, creating two congruent segments.

Segment AB bisects segment CD at point M.



Since AB bisects CD, segment CM is now congruent to segment MD.

Sample

Find the length and coordinates of the midpoint of segment AB if the coordinates of A are (3, 8) and the coordinates of B are (-5, 2)

Sample #2

Find the coordinates of the missing endpoint given that A is the midpoint of segment BC. The coordinates of A are (-2, 6) and the coordinates of C are (5, -2)