The distance and midpoint formulas :

In this math prompt, you will learn the distance formula and the midpoint formula.

Distance formula

Two points have the coordinates (x_1, y_1) and (x_2, y_2). To find the distance, *d*, between two points with the same y-coordinate, find the absolute value of the difference of their x-coordinates. To find the distance between two points with the same x-coordinate, find the absolute value of the difference of their y-coordinates. To find the distance between two points with different x-coordinates and y-coordinates, use the distance formula.

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

Midpoint formula

The midpoint, *M*, is the point that divides a segment into two equal segments. Two points have the coordinates (x_1, y_1) and (x_2, y_2). Think of the midpoint as the average of the two endpoints. Use the following formula to find the midpoint of a segment.

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