Distance and Midpoint

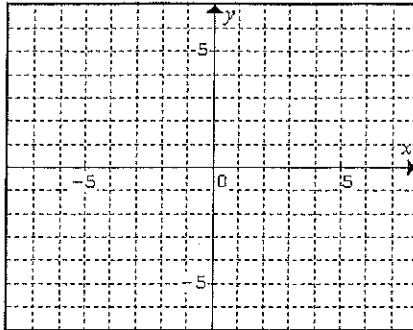**Learning Targets:**
  i.   I can calculate the distance of a line segment.

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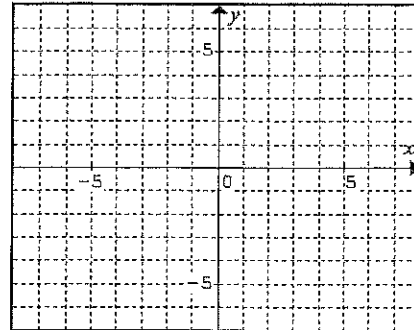$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

1. Draw $\overline{AB}$ given A(1, 2) and B(5, 6) on the graph below.

2. Draw $\overline{CD}$ given C(2, 5) and D(-2, -3) on the graph below.

Use the Distance Formula to find the length of $\overline{AB}$.

Use the Distance Formula to find the length of $\overline{CD}$.

3. Find the distance of the two points. Show your work.

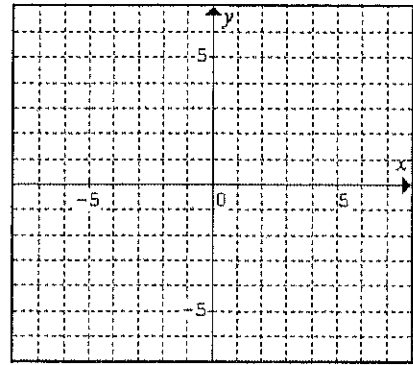a. (3, 1) and (5, 6)

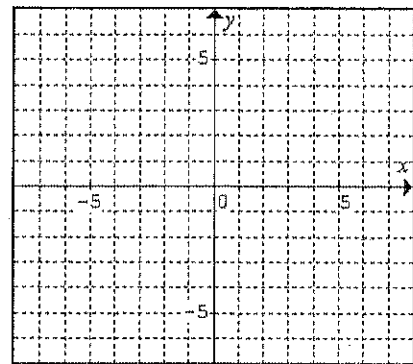b. (2, 4) and (8, 10)

c. (-2, -1) and (6, 7)

d. (-5, 8) and (1, 6)

4. Plot the points $A(1, 2)$ and $B(7, 6)$:

Find the coordinates (x, y) for the midpoint of $\overline{AB}$.
Label this point M.

Midpoint Formula:
$$(x, y) = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

5. Plot the points $C(-5, 4)$ and $D(3, 6)$:

Find the coordinates (x, y) FOR the midpoint of $\overline{CD}$.
Label this point M.

6. Find the midpoint of the two points.

a. $(-2, -4)$ and $(6, 4)$

b. $(8, -2)$ and $(-3, 6)$

7. Find the distance and midpoint of $\overline{AC}$ and $\overline{BD}$.