

### 3.2 Midpoint of a Line Segment


Complete Investigation Handout with partner

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

**Midpoint formula:**

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

Determine the coordinates of the midpoint M on the line segment joining A(9,4) and B(1,2)

$$M = \left( \frac{9+1}{2}, \frac{4+2}{2} \right) = (5, 3)$$


Bonnyville is located at the coordinates (-4,-1) and Cold Lake is located at the coordinates (2,-7). If they want to build a 7 - Eleven half way between the two what would the coordinates of the 7 - Eleven be?

One endpoint of a line segment is at (7, 6). The midpoint of the line segment is at (2, 5), find the coordinates of the other endpoint.

$$\begin{matrix} (7, 6) & (x_2, y_2) & M = (2, 5) \\ x_1 & y_1 & \end{matrix}$$

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

$$(\cancel{2}, \cancel{5}) = \left( \frac{7 + x_2}{2}, \frac{6 + y_2}{2} \right)$$

$$\frac{7 + x_2}{2} = 2$$

$$\frac{7 + x_2}{2} = 4$$

$$x_2 = -3$$

$$\frac{6 + y_2}{2} = 5$$

$$\frac{6 + y_2}{2} = 10$$

$$y_2 = 4$$

$$\underline{(-3, 4)}$$

**Assignment: Pg. 158 2 ac, 4, 5a, 9, 14, 15ac, 20**