6.1 Classwork: Midpoint formula
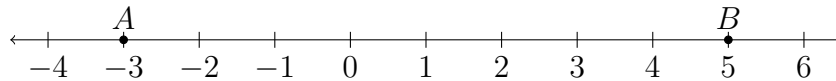
1. Given $\overleftrightarrow{AB}$ as shown on the number line, with $A = -3$ and $B = 5$.

   (a) Find the length AB, writing an equation

   (b) What is half the length?

   (c) Mark and label the midpoint M between A and B
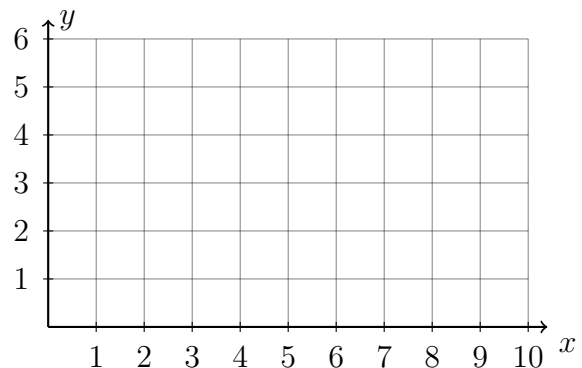

   (d) Dr. Huson's commute is from 80th Street to 164th Street. On what block is he half way?

   The midpoint formula

   Given $A(x_A, y_A)$, $B(x_B, y_B)$, midpoint $M = \left(\dfrac{x_A + x_B}{2}, \dfrac{y_A + y_B}{2} \right)$

2. On the graph below, draw $\overline{AB}$, with $A(2, 3)$ and $B(8, 5)$, labeling the end points. Determine and state the coordinates of the midpoint M of $\overline{AB}$ and mark and label it on the graph.

3. On the graph below, draw $\overline{AB}$, with $A(1,2)$ and $B(7,4)$, labeling the end points. Determine and state the coordinates of the midpoint M of $\overline{AB}$ and mark and label it on the graph.
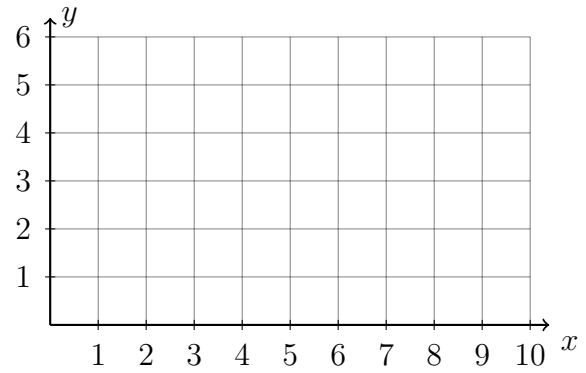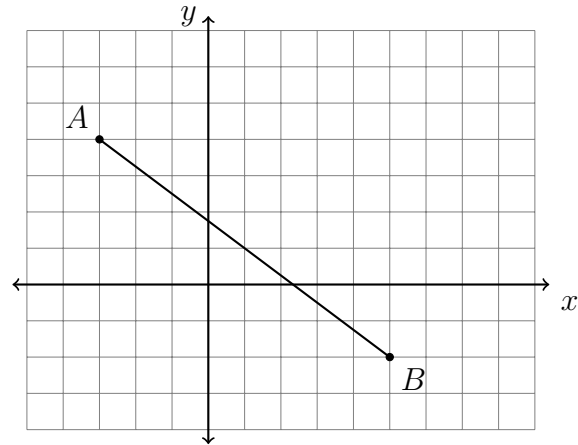
4. On the graph below, draw $\overline{EF}$, with $E(3,5)$ and $F(9,1)$, labeling the end points. Determine and state the coordinates of the midpoint M of $\overline{EF}$ and mark and label it on the graph.
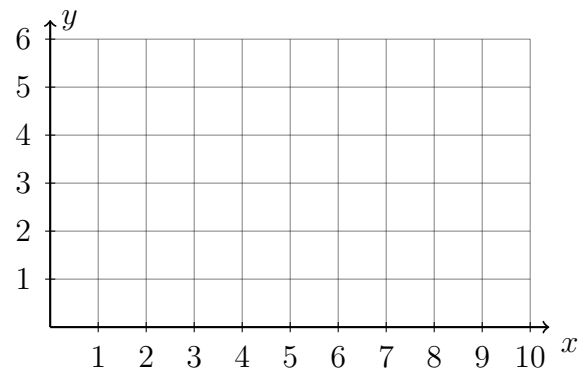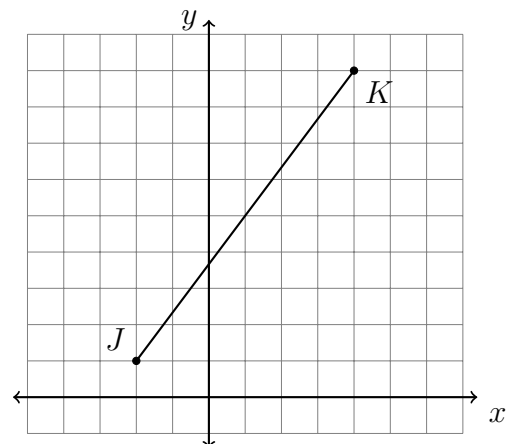
5. In the diagram below, $\overline{AB}$ has endpoints with coordinates $A(-3, 4)$ and $B(5, -2)$.

   (a) Find the coordinates of the midpoint M of $\overline{AB}$. Mark and label it on the graph.

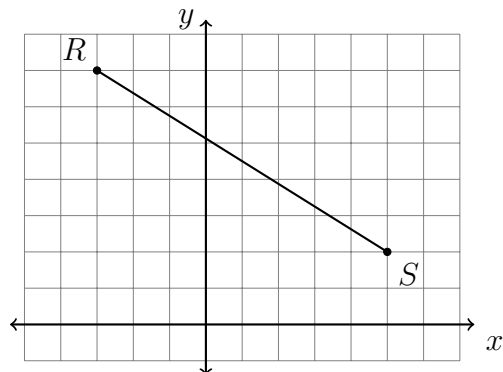   (b) Find the length AB

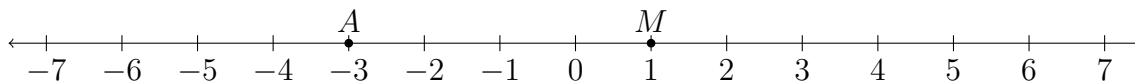6. Do Now: In the diagram below, $\overline{JK}$ has endpoints $J(-2, 1)$ and $K(4, 9)$.

   (a) Find the coordinates of the midpoint M of $\overline{JK}$. Mark and label it on the graph.
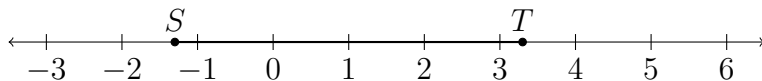
   (b) Find the length JK

7. Find the coordinates of the midpoint M of $\overline{RS}$, $R(-3, 7)$ and $S(5, 2)$. Mark and label it on the graph.

8. Given $M(1)$, the midpoint of $\overline{AB}$. Point $A = -3$, find the value of point B. Mark and label B on the graph.

9. Given $S(-1.3)$ and $T(3.3)$, as shown on the number line.

   Mark and label the midpoint M that bisects $\overline{ST}$.

10. Given $A(-2.1)$ and $M(1.8)$, as shown on the number line. The point B is such that M bisects $\overline{AB}$.

    Find the value of B. Mark and label it on the number line.