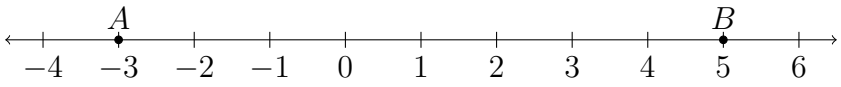
6.1 Classwork: Midpoint formula

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

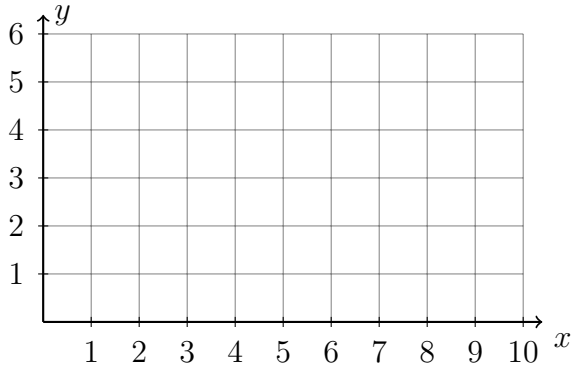


   (d) Dr. Huson's commute is from 80th Street to 164th Street. On what block is he half way?

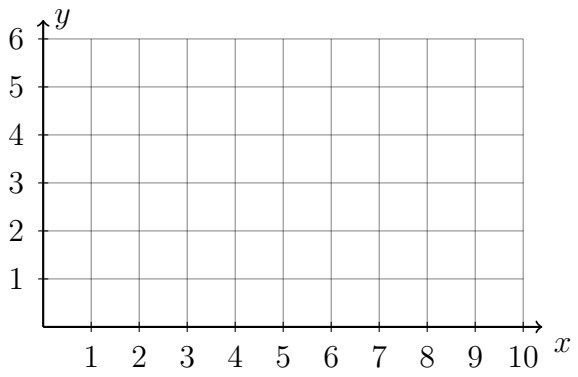
The midpoint formula

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

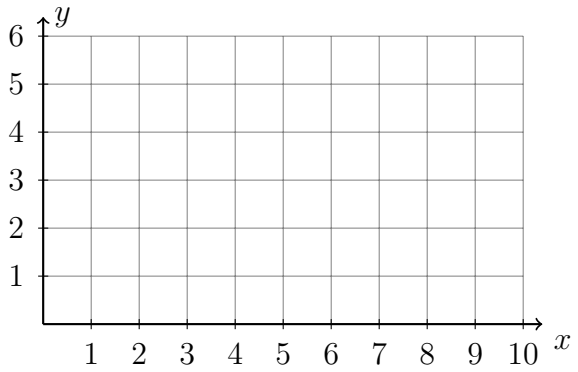
2. On the graph below, draw $\overline{AB}$, with $A(2, 3)$ and $B(8, 5)$, labeling the end points. Determine and state the coordinates of the midpoint M of $\overline{AB}$ and mark and label it on the graph.



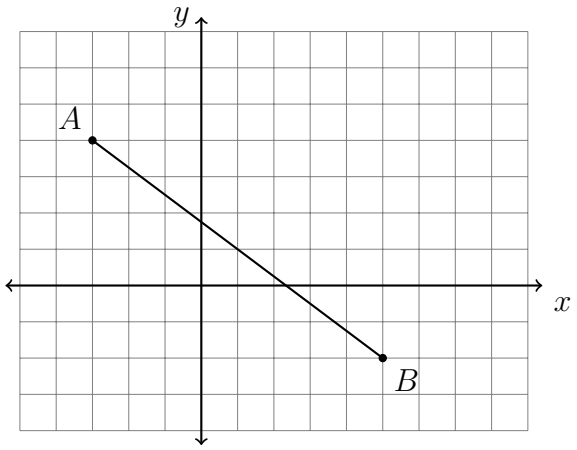
3. On the graph below, draw $\overline{AB}$, with $A(1,2)$ and $B(7,4)$, labeling the end points. Determine and state the coordinates of the midpoint M of $\overline{AB}$ and mark and label it on the graph.



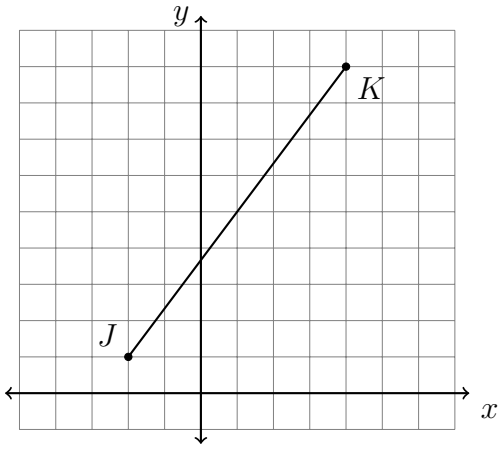
4. On the graph below, draw $\overline{EF}$, with $E(3,5)$ and $F(9,1)$, labeling the end points. Determine and state the coordinates of the midpoint M of $\overline{EF}$ and mark and label it on the graph.



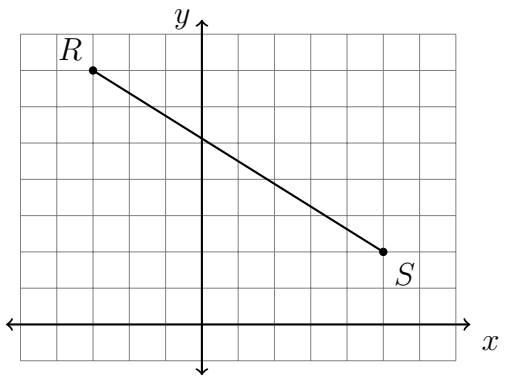
5. In the diagram below, $\overline{AB}$ has endpoints with coordinates $A(-3, 4)$ and $B(5, -2)$.
   (a) Find the coordinates of the midpoint M of $\overline{AB}$. Mark and label it on the graph.
   (b) Find the length AB



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.