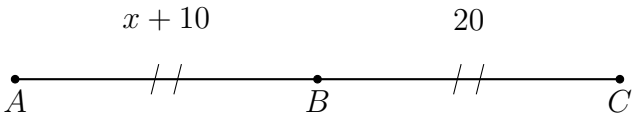
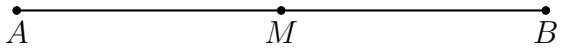
8.3 Classwork: Partitioning a line segment

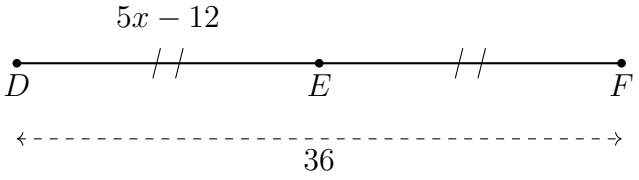
1. Point B is the midpoint of $\overline{AC}$, with $AB = x + 10$, $BC = 20$. First write an equation representing the situation, find x, then check it.



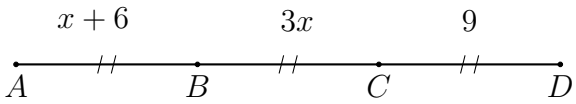
2. Given M is the midpoint of $\overline{AB}$, $AM = 4x + 3$, $MB = 19$.
   (a) Mark the diagram with the values and tick marks
   (b) Write an equation and solve for x
   (c) Check your result



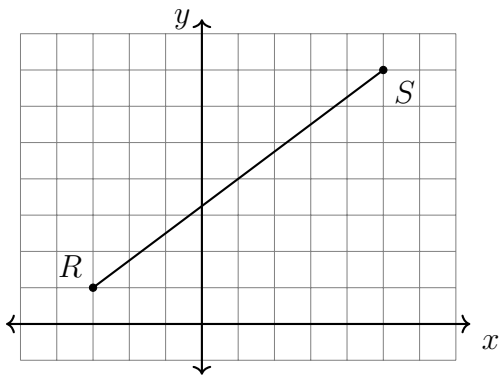
3. Point E bisects $\overline{DEF}$ and $DE = 5x - 12$, $DF = 36$. Find x. (show check)



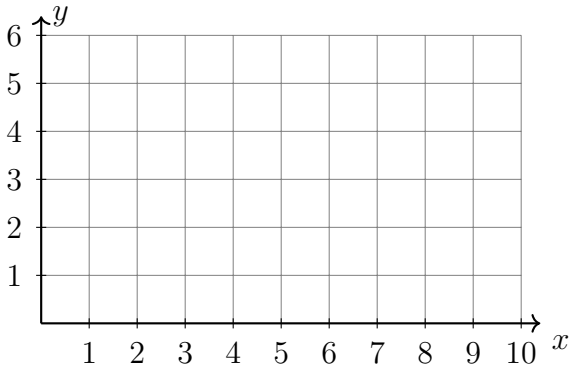
4. Points B and C trisect segment $\overline{AD}$ with segment lengths as shown. Find x.



5. Find the coordinates of the midpoint M of $\overline{RS}$, $R(-3, 1)$ and $S(5, 7)$. Mark and label it on the graph.

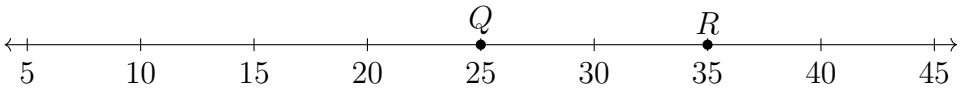


6. On the graph below, draw $\overline{AB}$, with $A(2, 1)$ and $B(8, 4)$, labeling the end points. Determine and state the coordinates of the midpoint M of $\overline{AB}$ and mark and label it on the graph.

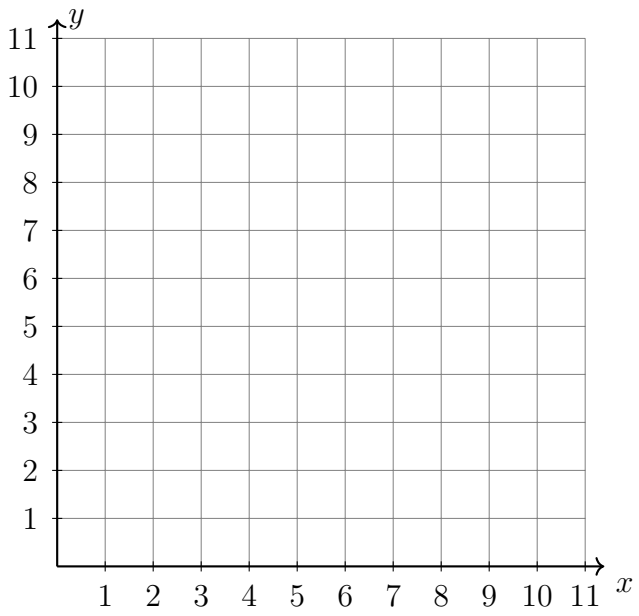


7. Find the midpoint of $\overline{AB}$, with $A(12, -3)$ and $B(5, 13)$.

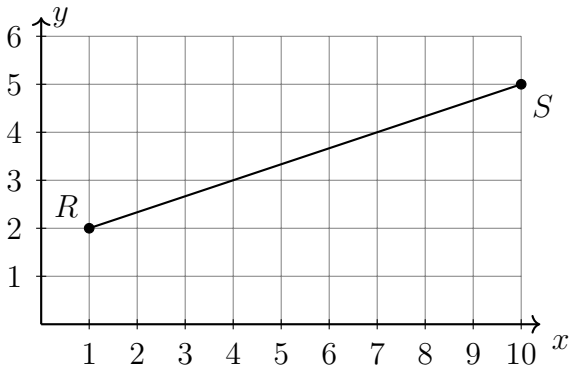
8. Given collinear points with Q the bisector of $\overline{PR}$, $Q(25)$ and $R(35)$. Find P, marking it and labeling it on the number line.



9. Given the midpoint $M(5,7)$ of $\overline{AB}$ with $A(1,4)$. Find the coordinates of point B. Mark and label all three points and segment $\overline{AB}$ the grid below.



10. Point T divides $\overline{RS}$ so that $RT : TS = 1 : 2$. If R has coordinates $(1,2)$ and S has coordinates $(10,5)$, find the coordinates of T and mark and label it on the graph.



11. The endpoints of directed line segment PQ have coordinates of $P(-7,-5)$ and $Q(5,3)$. What are the coordinates of point A, on $\overline{PQ}$, that divide $\overline{PQ}$ into a ratio of 1:3?

12. The coordinates of the endpoints of directed line segment ABC are $A(-8, 7)$ and $C(7, -13)$. If $AB : BC = 3 : 2$, what are the coordinates of B?

13. Directed line segment DE has endpoints $D(-4, -2)$ and $E(1, 8)$. Point F divides such that $DF : FE$ is $2 : 3$. What are the coordinates of F?

14. Point G divides $\overline{AB}$ so that $AG : GB = 1 : 2$. If A has coordinates $(-1, -3)$ and B has coordinates $(8, 9)$, what are the coordinates of G?

15. The coordinates of the endpoints of directed line segment PQ are $P(-7, -5)$ and $Q(5, 3)$. If PQ is divided into a ratio of 1:3, what are the coordinates of point A?