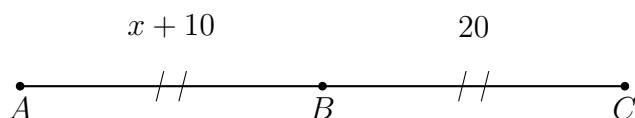


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8.3 Classwork: Partitioning a line segment

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} , $AM = 4x + 3$, $MB = 19$.

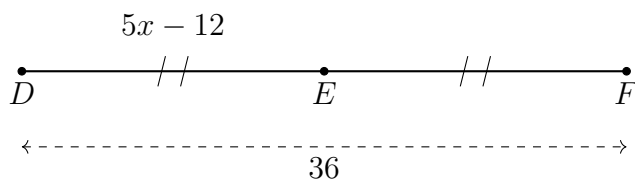
(a) Mark the diagram with the values and tick marks

(b) Write an equation and solve for x

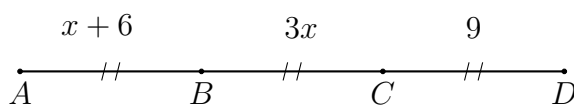
(c) Check your result



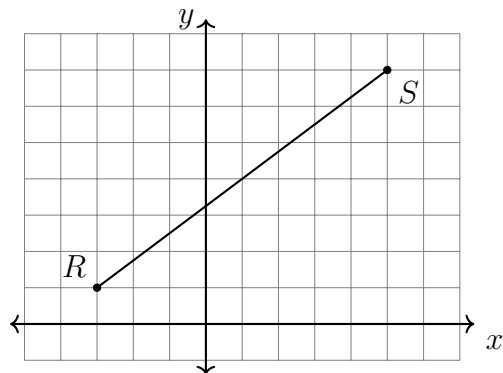
3. Point E bisects \overline{DF} and $DE = 5x - 12$, $DF = 36$. Find x . (show check)



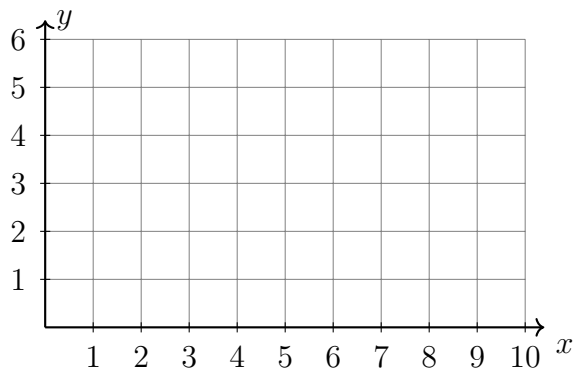
4. Points B and C trisect segment \overline{AD} with segment lengths as shown. Find x .



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.

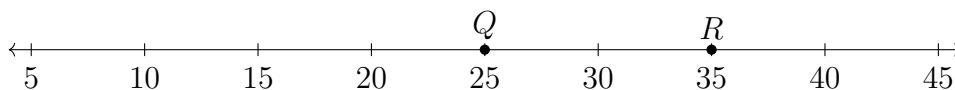


6. On the graph below, draw \overline{AB} , with $A(2, 1)$ and $B(8, 4)$, labeling the end points. Determine and state the coordinates of the midpoint M of \overline{AB} and mark and label it on the graph.



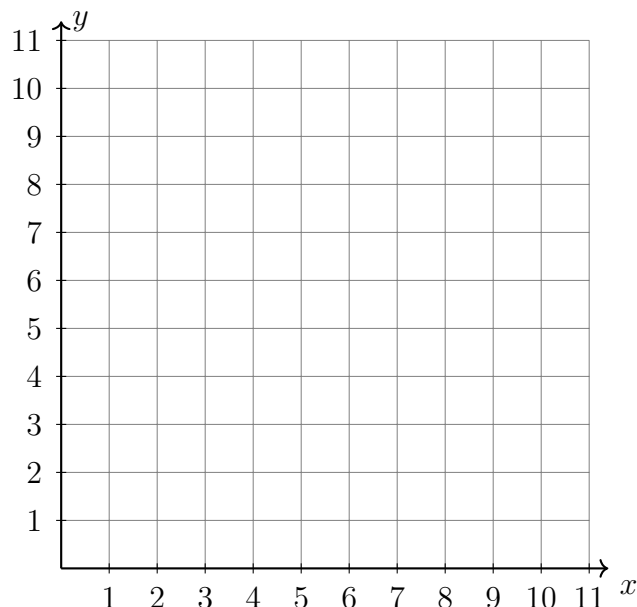
7. Find the midpoint of \overline{AB} , with $A(12, -3)$ and $B(5, 13)$.

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.

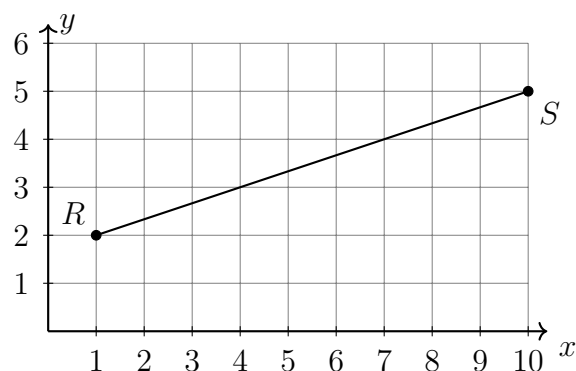


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9. Given the midpoint $M(5, 7)$ of \overline{AB} with $A(1, 4)$. Find the coordinates of point B . Mark and label all three points and segment \overline{AB} the grid below.



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 \overline{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 \overline{ABC} are $A(-8, 7)$ and $C(7, -13)$. If $AB : BC = 3 : 2$, what are the coordinates of B ?
13. Directed line segment \overline{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 \overline{PQ} are $P(-7, -5)$ and $Q(5, 3)$. If \overline{PQ} is divided into a ratio of 1:3, what are the coordinates of point A ?