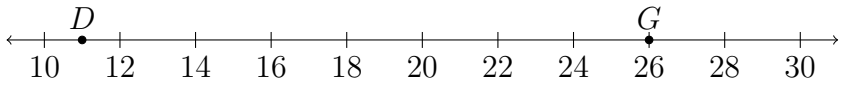
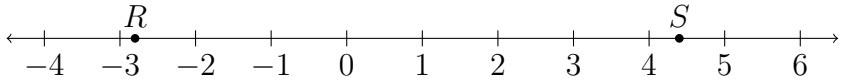
1.7 Extension Quiz: Absolute value, trisection, algebra

1. Given $\overleftrightarrow{DG}$ as shown on the number line, with $D = 11$ and $G = 26$.



Points E and F trisect $\overline{DG}$. Find the values of E and F and mark and label them on the number line $\overleftrightarrow{DG}$.

2. Given $\overleftrightarrow{RS}$ as shown on the number line, with $R = -2.8$ and $S = 4.4$.

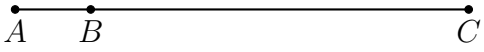


The points T and U trisect $\overline{RS}$. Find their values, and mark and label them on the number line.

3. Given $\overline{PQR}$, with $PQ = \frac{1}{2}x + 4$, $QR = x + 3$, and $PR = 2x + 5$. Find PR. Complete all the steps for full credit.

4. Given $\overline{ABC}$, $AB = \frac{2}{3}$, and $AC = 3\frac{1}{3}$.

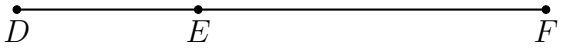
   Find BC.



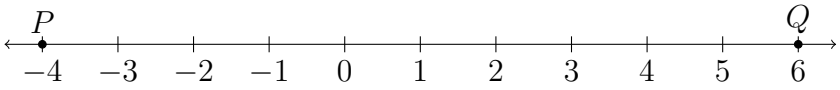
5. Given $\overline{PQR}$, with $PQ = 4x - 4$, $QR = 2x + 3$, and $PR = 5x + 9$. Find PR. Complete all the steps for full credit.

6. Given $\overline{DEF}$, $DF = 75$ and $\overline{DE}$ is half the length of $\overline{EF}$.

   Find DE.

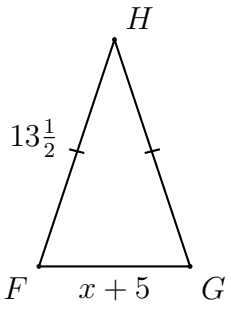


7. Given $\overleftrightarrow{PQ}$ as shown on the number line. Divide segment $\overline{PQ}$ into five congruent segments by marking and labeling the points R, S, T, and U on the numberline.

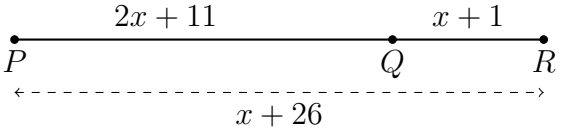


8. The perimeter of the isosceles $\triangle FGH$ is 35 with $\overline{FH} \cong \overline{GH}$. If $FG = x + 5$ and $FH = 13\frac{1}{2}$, find x.

   Show your work with an equation for full credit.



9. Given $\overline{PQR}$, $PQ = 2x + 11$, $QR = x + 1$, $PR = x + 26$. Find x.

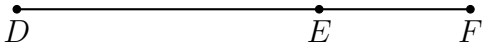


   (a) Write down an equation to represent the situation.

   (b) Solve for x.

(c) Check your answer.

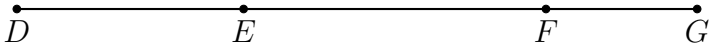
10. Given $\overline{DEF}$, $DE = 3\frac{1}{3}$, and $EF = 1$. Find DF.



11. Given $P(-2.4)$ and $Q(1.8)$, as shown on the number line. Find the length of the line segment $\overline{PQ}$.

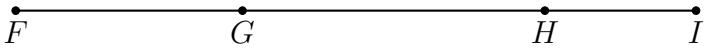
12. Given $\overline{DEFG}$, $DE = 3\frac{1}{4}$, $EF = 6\frac{1}{4}$, and $FG = 1\frac{3}{4}$. (diagram not to scale)

    Find DG, expressed as a fraction, not a decimal.

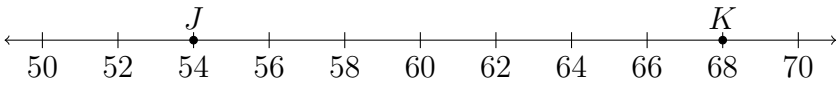


13. Given $\overline{FGHI}$, $FG = 8\frac{1}{6}$, $GH = 12\frac{1}{3}$, and $HI = 5\frac{1}{2}$. (diagram not to scale)

    Find FI.



14. Given $\overleftrightarrow{JK}$ as shown on the number line.



    What is the midpoint between the points J and K?