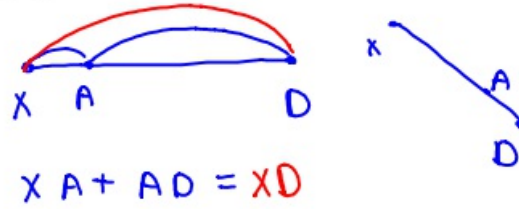


8-21-18 5<sup>th</sup> Geo

## Betweenness of Points

A is between X and D.



- ① If C is between X and Y with  $YC = 6$  and  $XY = 10$ , what is  $XC$ ?



$$XC + CY = XY$$

↓ ↓

$$XC + 6 = 10$$

$$\underline{-6 \quad -6}$$

$$XC = 4$$

- ② If D is between A and B with  $AD = 5x$ ,  $BD = 10$ , and  $AB = 30$ , what is  $x$ ?



$$AD + DB = AB$$

↓ ↓

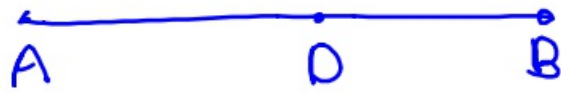
$$5x + 10 = 30$$

$$\underline{-10 \quad -10}$$

$$5x = 20$$

$$x = 4$$

- ③ If  $O$  is between  $A$  and  $B$  with  $AO = 5n$ ,  $BO = 2n - 10$ , and  $AB = 39$ , what is  $BO$ ?



$$AO + OB = AB$$

$$\begin{array}{ccc} \downarrow & \downarrow & \\ 5n & + & 2n - 10 = 39 \end{array}$$

$$\begin{array}{r} 7n - 10 = 39 \\ + 10 \quad + 10 \\ \hline 7n = 49 \\ n = 7 \end{array}$$

$$\begin{aligned} \therefore BO &= 2n - 10 \\ BO &= 2 \cdot 7 - 10 \\ BO &= 4 \end{aligned}$$

- ④ If  $C$  is between  $X$  and  $Y$  with  $CX = 4n - 4$  and  $CY = n + 10$ , what is  $XY$ ?

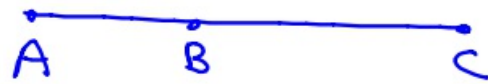


$$XC + CY = XY$$

$$\begin{array}{ccc} \downarrow & \downarrow & \downarrow \\ 4n - 4 & + & n + 10 = XY \end{array}$$

$$5n + 6 = XY$$

- ⑤ B is between A and C with  
 $AB = 3n + 8$  and  $AC = 5n + 11$ .  
 Find BC.



$$AB + BC = AC$$



$$\begin{array}{r} \textcircled{3n+8} + BC = 5n+11 \\ \underline{-3n-8} \quad \quad \quad \underline{-3n-8} \end{array}$$

$$BC = 2n + 3$$

- ⑥ M is between C and P.  
 $CM = 8n - 1$  and  $CP = 10n - 8$ .  
 What is MP?



$$CM + MP = CP$$



$$\begin{array}{r} 8n-1 + MP = 10n-8 \\ \underline{-8n+1} \quad \quad \quad \underline{-8n+1} \end{array}$$

$$MP = 2n - 7$$

- ⑦ C is between F and T.  
If  $CF = 3n - 80$  and  
 $FT = 5n - 60$ , what is  $CT$ ?



$$FC + CT = FT$$



$$\begin{array}{r} \textcircled{3n-80} + CT = 5n-60 \\ \text{\color{red}-3n+80} \qquad \qquad \qquad \text{\color{red}-3n+80} \end{array}$$

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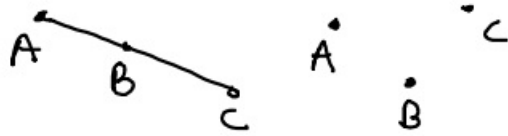
$$CT = 2n + 20$$

Congruent  $\cong$

means the same (equal)

8-21-18 6<sup>th</sup> Geo

Betweeness of Points



$$AB + BC = AC$$

- ① If C is between X and Y with  $XY = 16$  and  $CY = 4$ , what is  $CX$ ?

$$\begin{array}{r} \overline{XC} + \overline{CY} \\ x \quad C \quad Y \\ XC + CY = XY \\ \downarrow \quad \downarrow \\ XC + 4 = 16 \\ \underline{-4 \quad -4} \\ XC = 12 \end{array}$$

- ② If D is between A and B with  $AD = 4x$ ,  $DB = 5x$ , and  $AB = 18$ , what is  $x$ ?



$$\begin{array}{r} AD + DB = AB \\ \downarrow \quad \downarrow \quad \downarrow \\ 4x + 5x = 18 \\ 9x = 18 \\ x = 2 \end{array}$$

- ③ If D is between A and B with  $AD = 4n$ ,  $BD = 5n + 2$ , and  $AB = 11n - 8$ , what is AD?



$$AD + DB = AB$$

↓       ↓       ↓

$$4n + 5n + 2 = 11n - 8$$

$$9n + 2 = 11n - 8$$

$$\begin{array}{r} -9n \quad -9n \\ \hline 2 = 2n - 8 \end{array}$$

$$\begin{array}{r} 2 = 2n - 8 \\ +8 \quad \quad +8 \\ \hline 10 = 2n \end{array}$$

$$10 = 2n$$

$$n = 5$$

$$AD = 4n$$

$$\therefore AD = 20$$

- ④ If D is between A and B with  $AD = 4n + 1$  and  $AB = 6n + 8$ , what is DB?



$$AD + DB = AB$$

↓       ↓       ↓

$$4n + 1 + DB = 6n + 8$$

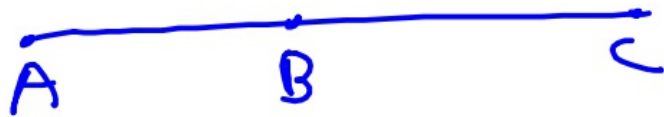
$$\begin{array}{r} -4n - 1 \quad -4n - 1 \\ \hline DB = 2n + 7 \end{array}$$

$$DB = 2n + 7$$

⑤ B is between A and C.

$$AB = 2n - 8 \text{ and } AC = 10n + 4.$$

What is BC?



$$AB + BC = AC$$

↓       ↓       ↓

$$2n - 8 + BC = 10n + 4$$

$$\begin{array}{r} -2n + 8 \qquad \qquad \qquad -2n + 8 \\ \hline \end{array}$$

$$BC = 8n + 12$$

Congruent  $\cong$