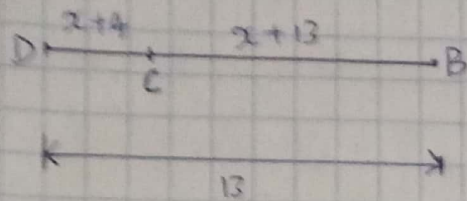


Segment Addition Algebraic

1)



solution:

$$\text{Length } DB = DC + CB = 13$$

$$DB = (2+4) + (x+13) = 13$$

$$= 2+4+x+13 = 13$$

$$= 2x + 17 = 13$$

Taking like terms together:

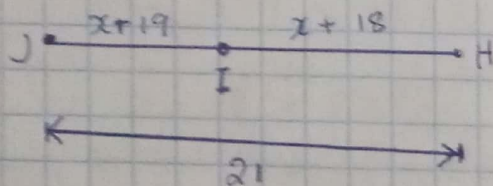
$$2x = 13 - 17$$

$$2x = -4$$

$$x = \frac{-4}{2} = -2$$

$$\underline{\underline{x = -2}}$$

2)



$$JH = (x+19) + (x+18) = 21$$

$$\Rightarrow x+19+x+18 = 21$$

$$= 2x + 37 = 21$$

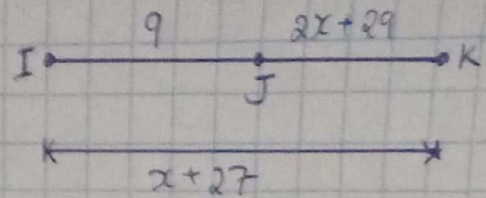
$$\Rightarrow 2x = 21 - 37$$

$$2x = -16$$

$$x = \frac{-16}{2} = -8$$

$$\underline{\underline{x = -8}}$$

3)



solution

$$IK = IJ + JK = x+27$$

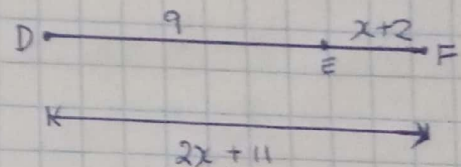
$$\Rightarrow 9 + 2x + 29 = x + 27$$

Taking right terms together we have:

$$2x - x = 27 - 9 - 29$$

$$\underline{\underline{x = -11}}$$

4)



Solution

$$DF = DE + EF$$

$$= 9 + (x+2) = 2x+11$$

$$= 9 + x + 2 = 2x + 11$$

Taking right terms together:

$$\Rightarrow x - 2x = 11 - 9 - 2$$

$$= -x = 0$$

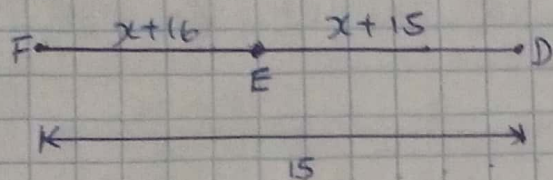
$$\text{Hence } x = 0$$

proof

$$9 + (0+2) = (2 \times 0) + 11$$

$$11 = 11$$

5)

Solution

$$FD = FE + ED = 15$$

$$= (x+16) + (x+15) = 15$$

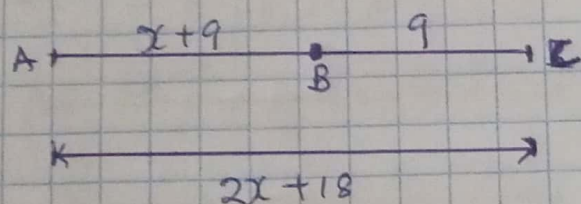
$$= x+16 + x+15 = 15$$

Taking like terms together:

$$\Rightarrow 2x = -16$$

$$x = -8$$

- 6) Find x if $AB = x+9$,
 $AC = 2x+18$, and $BC = 9$

Solution

$$AC = AB + BC$$

$$= (x+9) + 9 = 2x+18$$

$$= x+18 = 2x+18$$

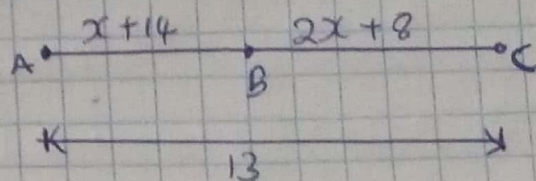
Taking like terms together:

$$\Rightarrow x - 2x = 18 - 18$$

$$= -x = 0$$

$$x = 0$$

- 7) $AC = 13$, $AB = x+14$
 and $BC = 2x+8$. Find x

Solution

$$AC = AB + BC = 13$$

$$= (x+14) + (2x+8) = 13$$

$$= 3x + 22 = 13$$

Taking like terms together:

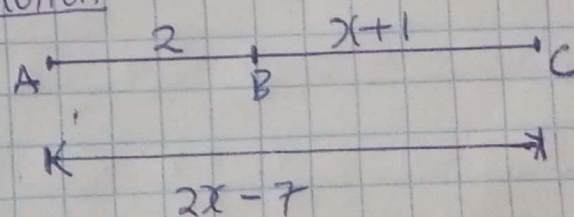
$$= 3x = 13 - 22$$

$$3x = -9$$

$$x = \frac{-9}{3} = -3$$

$$x = -3$$

- 8) Find x if $AC = 2x-7$, $BC = x+1$
 and $AB = 2$

Solution

$$AC = AB + BC = 2x-7$$

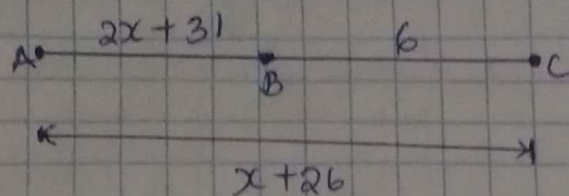
$$= 2 + (x+1) = 2x-7$$

$$\Rightarrow x - 2x = -7 - 2 - 1$$

$$= -x = -10$$

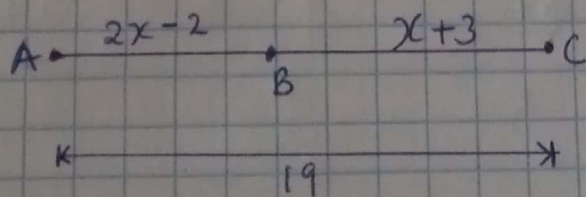
$$x = 10$$

9). Find x if $AC = x + 26$,
 $AB = 2x + 31$, and $BC = 6$.



$$\begin{aligned} AC &= AB + BC = x + 26 \\ &= (2x + 31) + 6 = x + 26 \\ &= (2x - x) = 26 - 31 - 6 \\ &= x = -11 \\ x &= -11 \end{aligned}$$

10). $AC = 19$, $AB = 2x - 2$, and
 $BC = x + 3$. Find x .



~~AC~~ =

$$AC = AB + BC = 19$$

$$= (2x - 2) + (x + 3) = 19$$

$$= 3x + 1 = 19$$

$$= 3x = 19 - 1$$

$$= 3x = 18$$

$$\frac{3x}{3} = \frac{18}{3}$$

$$x = 6$$