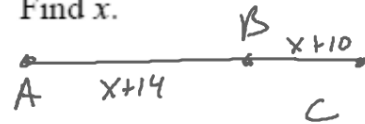


Points A, B, and C are collinear. Point B is between A and C. Solve for x .

11) $AC = 3x + 3$, $AB = -1 + 2x$, and $BC = 11$.
Find x .

12) $AC = 22$, $BC = x + 14$, and $AB = x + 10$.
Find x .



$$x+14+x+10=22$$

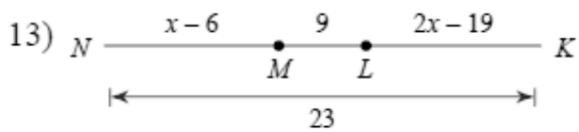
$$2x+24=22$$

$$-24 \quad -24$$

$$2x=-2$$

$$x=-1$$

Solve for x .



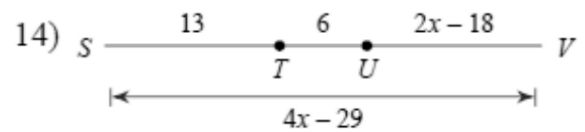
$$NM + ML + LK = NK$$

$$x - 6 + 9 + 2x - 19 = 23$$

$$3x - 16 = 23$$

$$3x = 39$$

$$x = 13$$



$$ST + TU + UV = SV$$

$$13 + 6 + 2x - 18 = 4x - 29$$

$$2x + 1 = 4x - 29$$

$$-4x \quad -4x$$

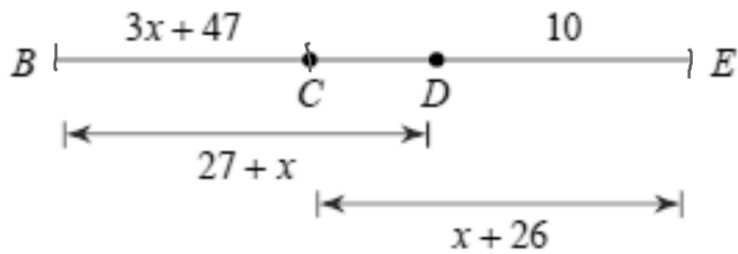
$$-2x + 1 = -29$$

$$-2x = -30$$

$$x = 15$$

Find the length indicated.

15) Find CE



$$BC = 3x+47$$

$$CD = ?$$

$$BD = 27+x$$

$$CE = x+26$$

$$DE = 10$$

$$BE = BE$$

$$BD + DE = BC + CE$$

$$27+x+10 = 3x+47+x+26$$

$$x+37 = 4x+73$$

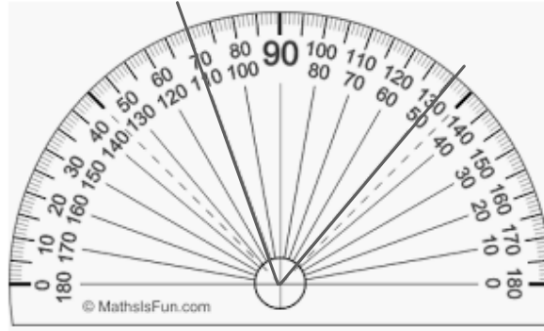
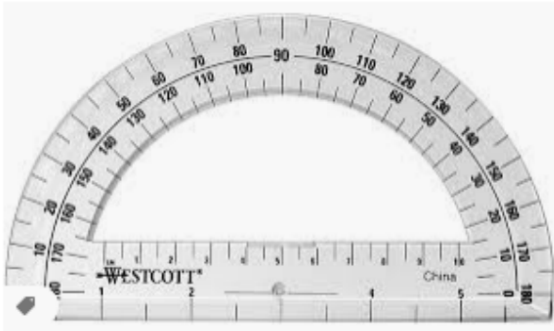
$$\begin{array}{r} 37 = 3x+73 \\ -73 \quad -73 \\ \hline \end{array}$$

$$-36 = 3x$$

$$x = -12$$

$$CE = -12+26$$

$$= 14$$

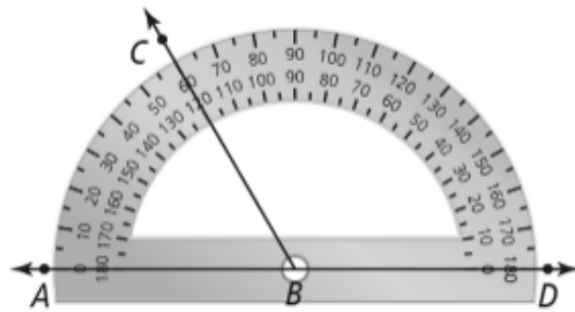


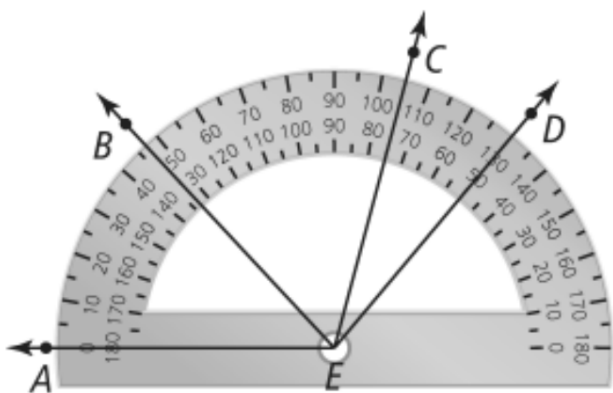
Protractor Postulate

Given \overrightarrow{BA} and a point C not on \overrightarrow{BA} , a unique real number from 0 to 180 can be assigned to \overrightarrow{BC} .

0 is assigned to \overrightarrow{BA} .

180 is assigned to \overrightarrow{BD} .





Use the diagram to find the measure of the following angles:

$$\angle AEC = 105^\circ$$

$$\angle AEB = 47^\circ$$

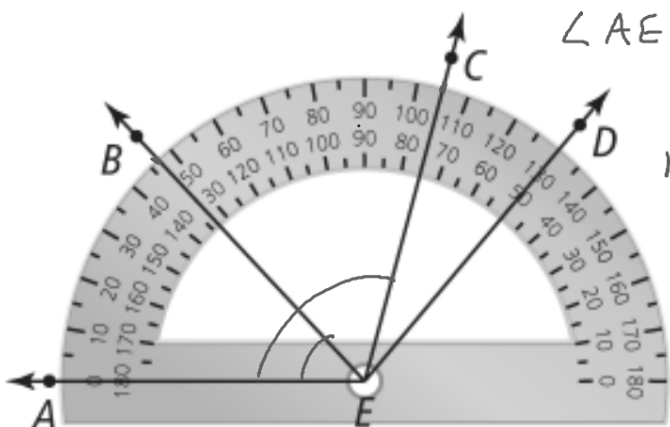
$$\angle AED = 130^\circ$$

What is $m\angle BEC$?

$$\angle AEC = 105$$

$$\angle AEB = 47$$

What is the $m\angle CED$?



$$m\angle BEC = m\angle AEC - m\angle AEB$$

$$= 105 - 47$$

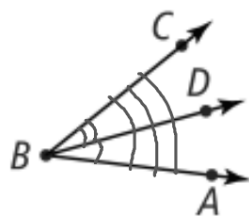
$$= 58^\circ$$

$$130 - 105$$
$$25^\circ$$

Angle Addition Postulate

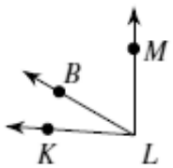
If point D is in the interior of $\angle ABC$, then
 $m\angle ABD + m\angle DBC = m\angle ABC$.

If...



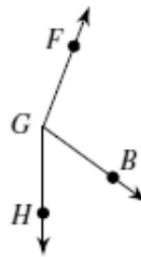
Then... $m\angle ABD + m\angle DBC = m\angle ABC$

- 1) Find $m\angle KLM$ if $m\angle KLB = 26^\circ$
and $m\angle BLM = 60^\circ$.



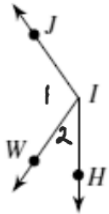
$$\begin{aligned}m\angle KLB + m\angle BLM &= m\angle KLM \\26^\circ + 60^\circ &= \\86^\circ &= m\angle KLM\end{aligned}$$

- 2) Find $m\angle FGH$ if $m\angle FGB = 105^\circ$
and $m\angle BGH = 54^\circ$.



$$\begin{aligned}m\angle FGH &= m\angle FGB \\ &\quad + m\angle BGH \\ &= 105 + 54 \\ m\angle FGH &= 159\end{aligned}$$

- 17) Find $m\angle HIW$ if $m\angle WIJ = 10x$,
 $m\angle HIJ = 145^\circ$, and $m\angle HIW = 2x + 13$.



$$m\angle WIJ + m\angle HIW = m\angle HIJ$$

$$10x + 2x + 13 = 145$$

$$12x + 13 = 145$$

$$12x = 132$$

$$x = 11$$

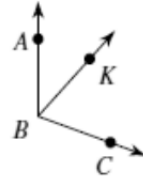
$$m\angle HIW = 2x + 13$$

$$2(11) + 13$$

$$22 + 13$$

$$35$$

- 18) $m\angle ABC = 17x + 8$, $m\angle ABK = 42^\circ$,
and $m\angle KBC = 12x - 4$. Find $m\angle ABC$.



$$m\angle ABC = m\angle ABK + m\angle KBC$$

$$17x + 8 = 42 + 12x - 4$$

$$17x + 8 = 12x + 38$$

$$\begin{array}{r} -12x \\ -12x \end{array} \quad \begin{array}{r} -12x \\ -12x \end{array}$$

$$5x + 8 = 38$$

$$5x = 30$$

$$x = 6$$

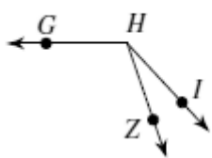
$$m\angle ABC = 17x + 8$$

$$17(6) + 8$$

$$102 + 8$$

$$110^\circ$$

- 19) $m\angle ZHG = 11x - 1$, $m\angle IHZ = 24^\circ$,
and $m\angle IHG = 12x + 13$. Find $m\angle IHG$.



$$m\angle IHG = 133$$

$$m\angle IHG = m\angle GHZ + m\angle ZHI$$

$$12x + 13 = 11x - 1 + 24$$

$$12x + 13 = 11x + 23$$

$$x = 10$$

- 20) $m\angle GFN = 4x + 10$, $m\angle NFE = 14x + 3$,
and $m\angle GFE = 157^\circ$. Find $m\angle NFE$.

