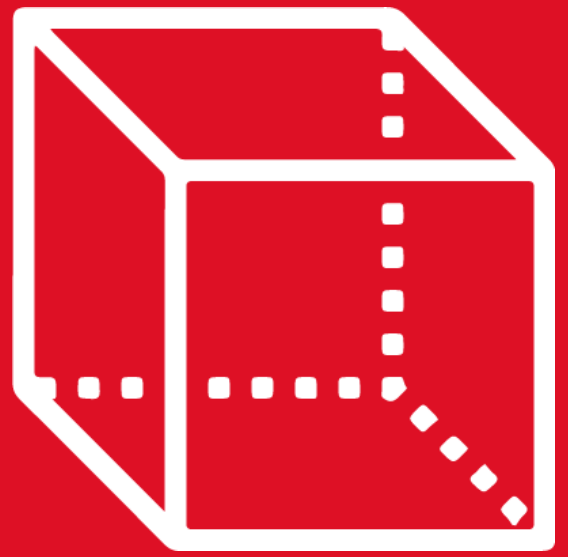
GEOMETRÍA

Asesoría



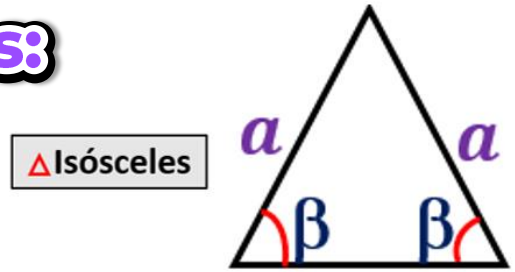
4st
SECONDARY

Tomo I

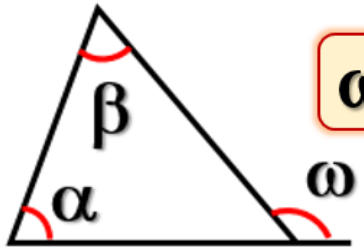
SACO OLIVEROS

1. En el gráfico, halle el valor de x , si: AB = BD = DE = CE.

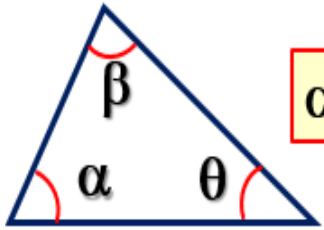
Recordemos:



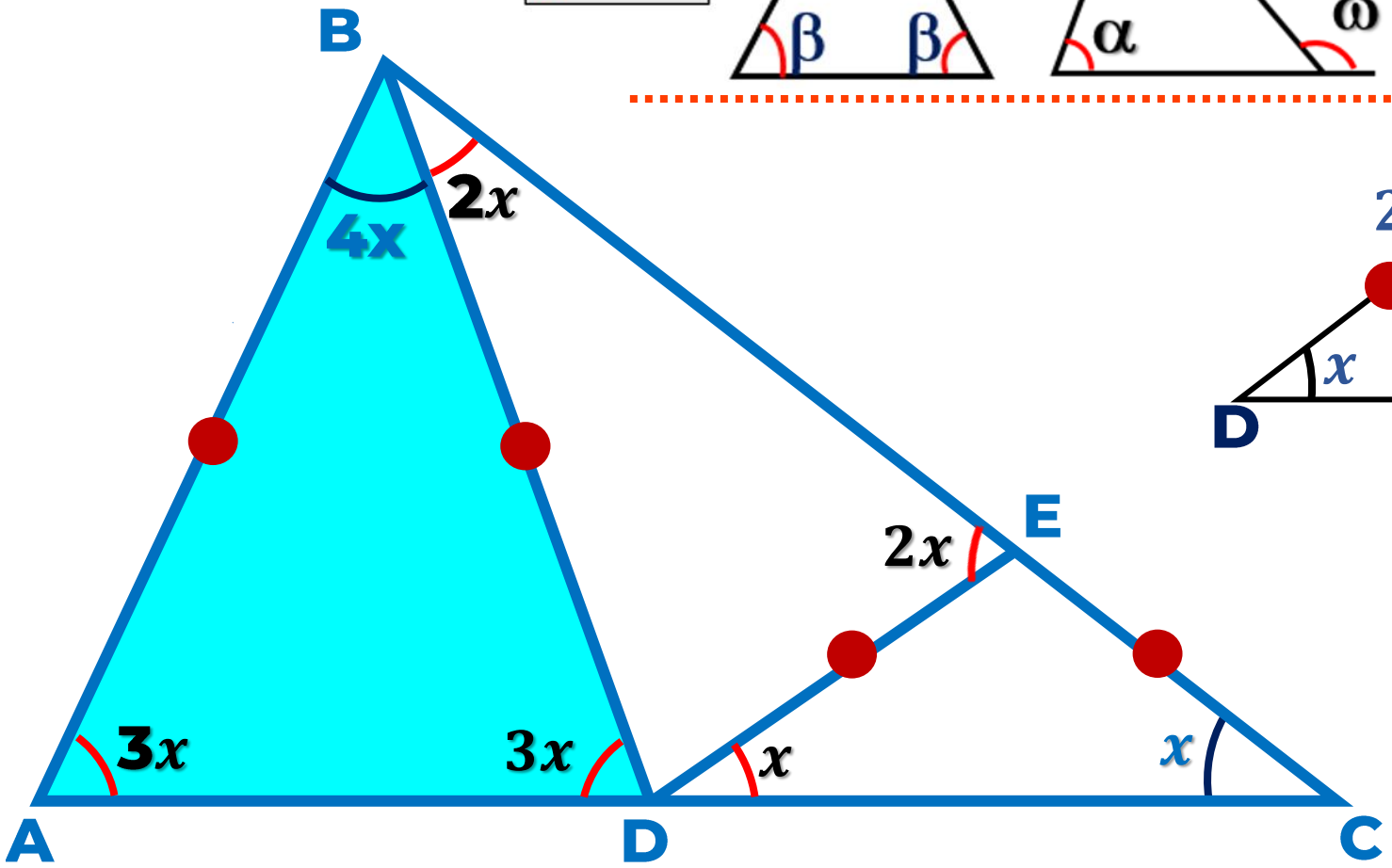
△Isósceles

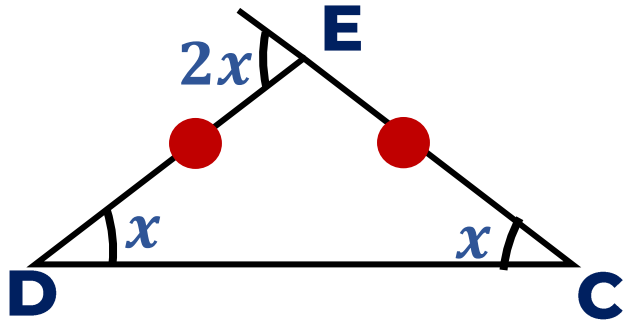


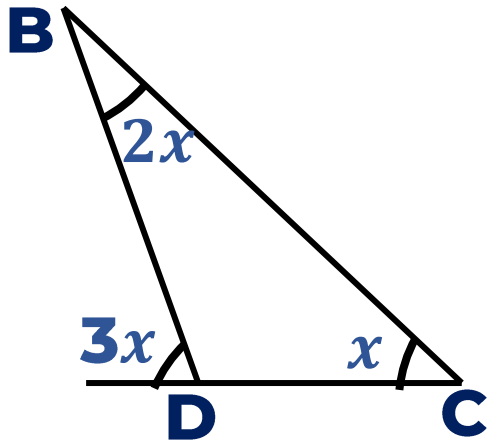
$\omega = \alpha + \beta$



$\alpha + \beta + \theta = 180°$







En el △ABD:

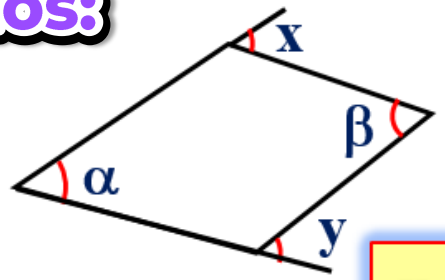
$3x + 3x + 4x = 180°$

$10x = 180°$

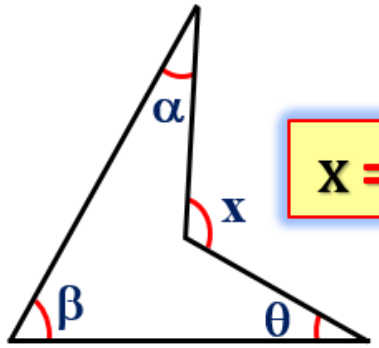
$x = 18°$

2. En la figura, halle el valor de *x*.

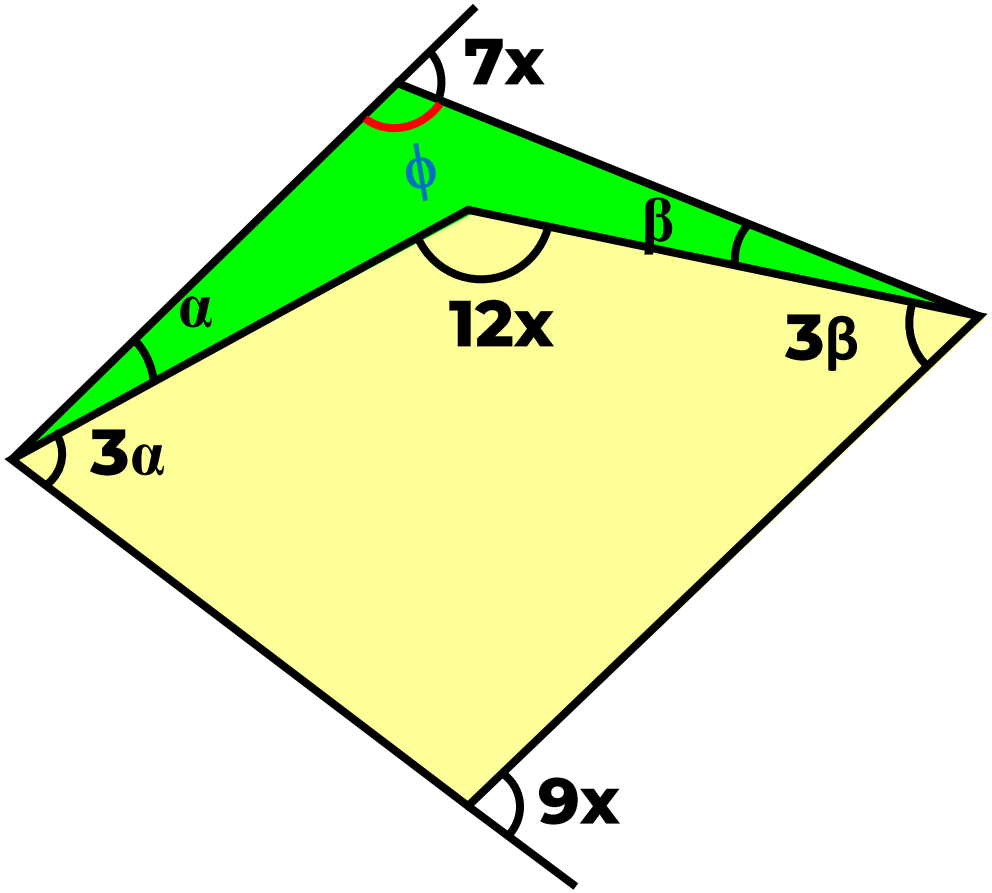
Recordemos:



$x + y = \alpha + \beta$



$x = \alpha + \beta + \theta$



- $4\alpha + 4\beta = 7x + 9x$

  ~~$4\alpha + 4\beta = 16x$~~

  $\alpha + \beta = 4x$

- $12x = \underbrace{\alpha + \beta}_{4x} + \phi$

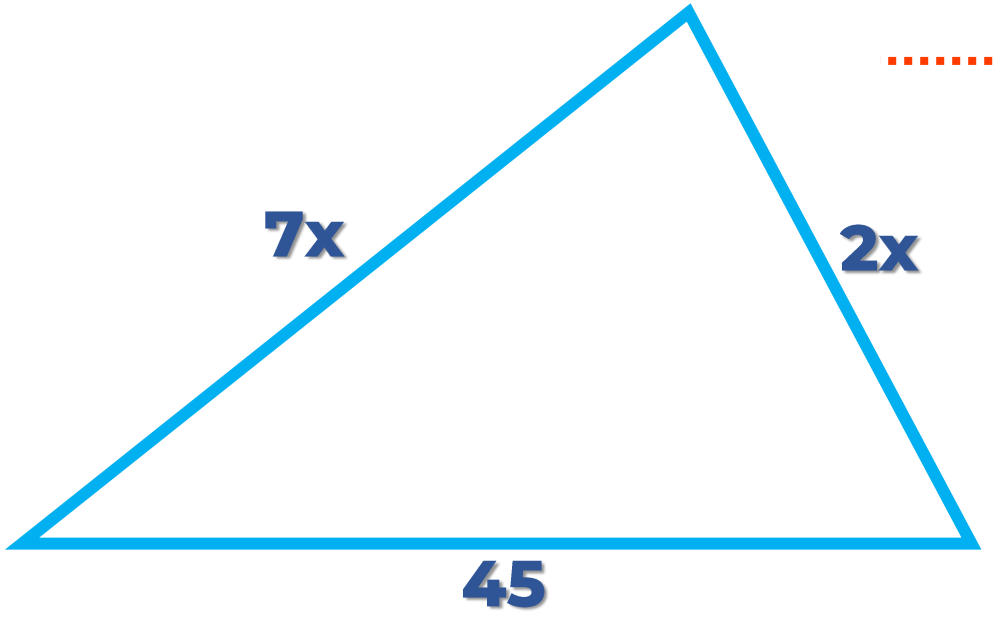
  $8x = \phi$

- $7x + \underbrace{\phi}_{8x} = 180°$

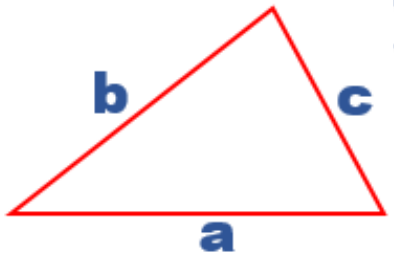
  $15x = 180°$

  $x = 12°$

3. Si los lados de un triangulo miden 7x , 2x y 45, halle la suma de los valores enteros que puede tomar x.



Recordemos:



Teorema de la existencia

$$b-c < a < b+c$$

$$7x - 2x < 45 < 7x + 2x$$

$$5x < 45 < 9x$$

- $5x < 45$; $x < 9$
- $45 < 9x$; $5 < x$

$$5 < x < 9$$

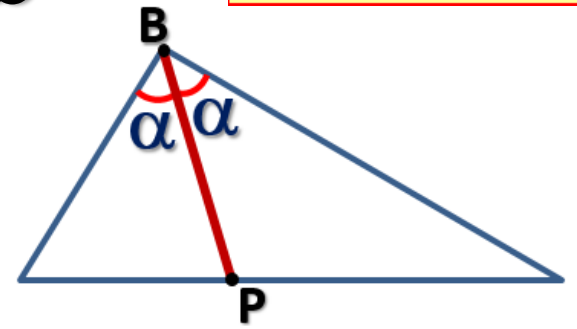
$$x = 6 ; 7 ; 8$$

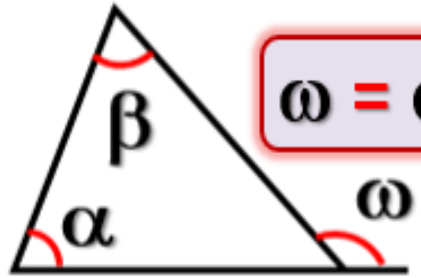
Nos piden: $6 + 7 + 8 = 21$

4. Calcule la m∢BAC, si AB = BD; además $\overline{BD}$ es bisectriz del ΔABC.

Recordemos:

$\overline{BP}$: Bisectriz Interior





$\omega = \alpha + \beta$

ABD ISÓSCELES

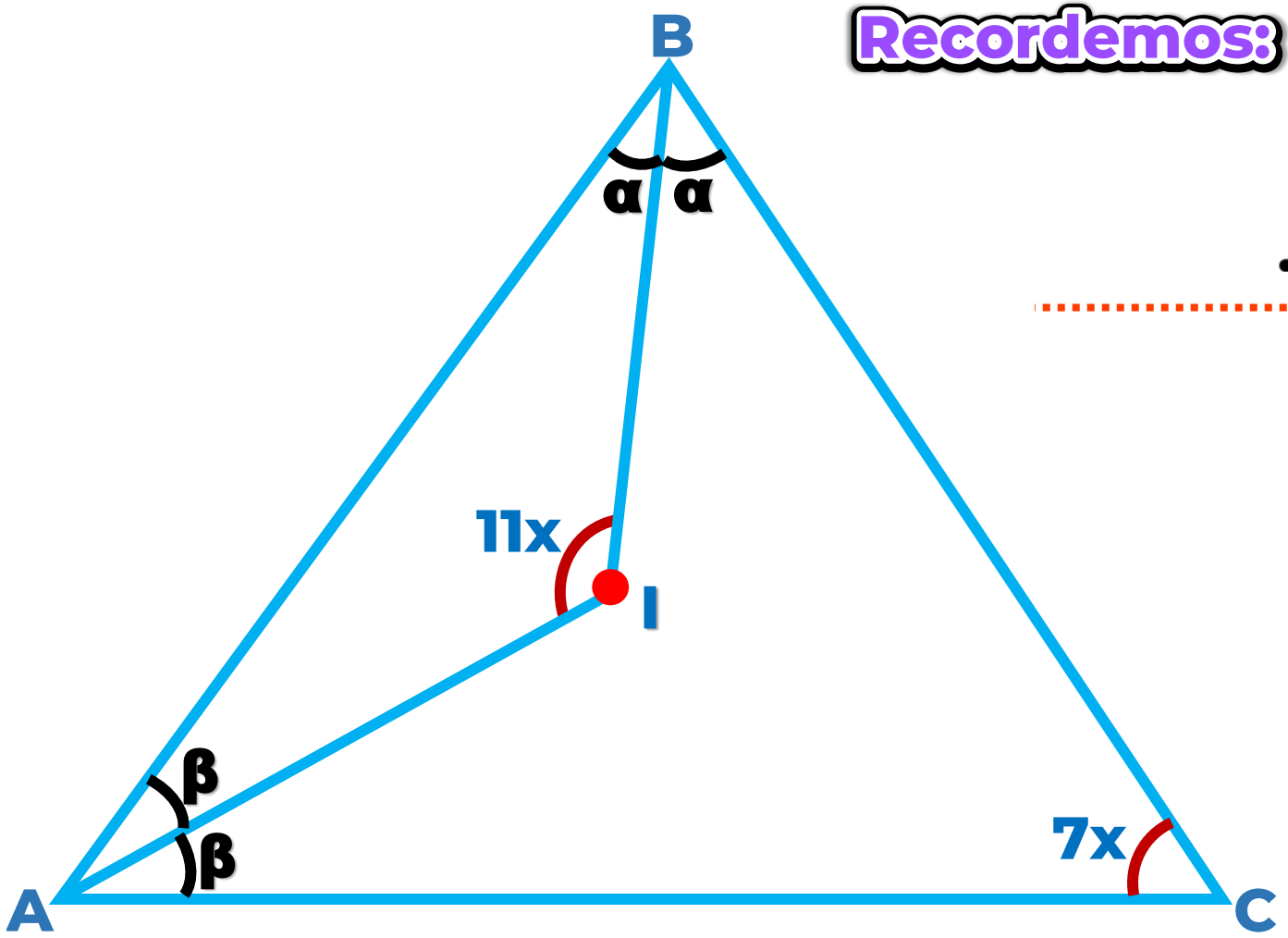
$\alpha + \alpha + 30° + \alpha + 30° = 180°$

$3\alpha = 120°$

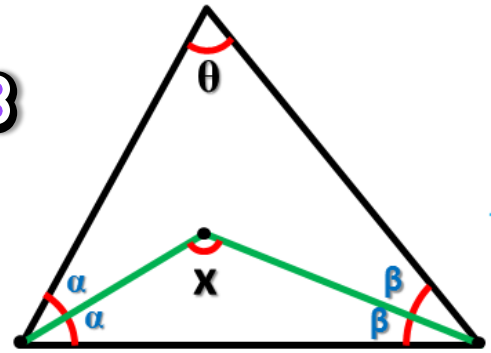
$\alpha = 40°$

m∢BAC = 70°

5. En la siguiente figura, halle el valor de *x*.



Recordemos:



$$X = 90° + \frac{\theta}{2}$$

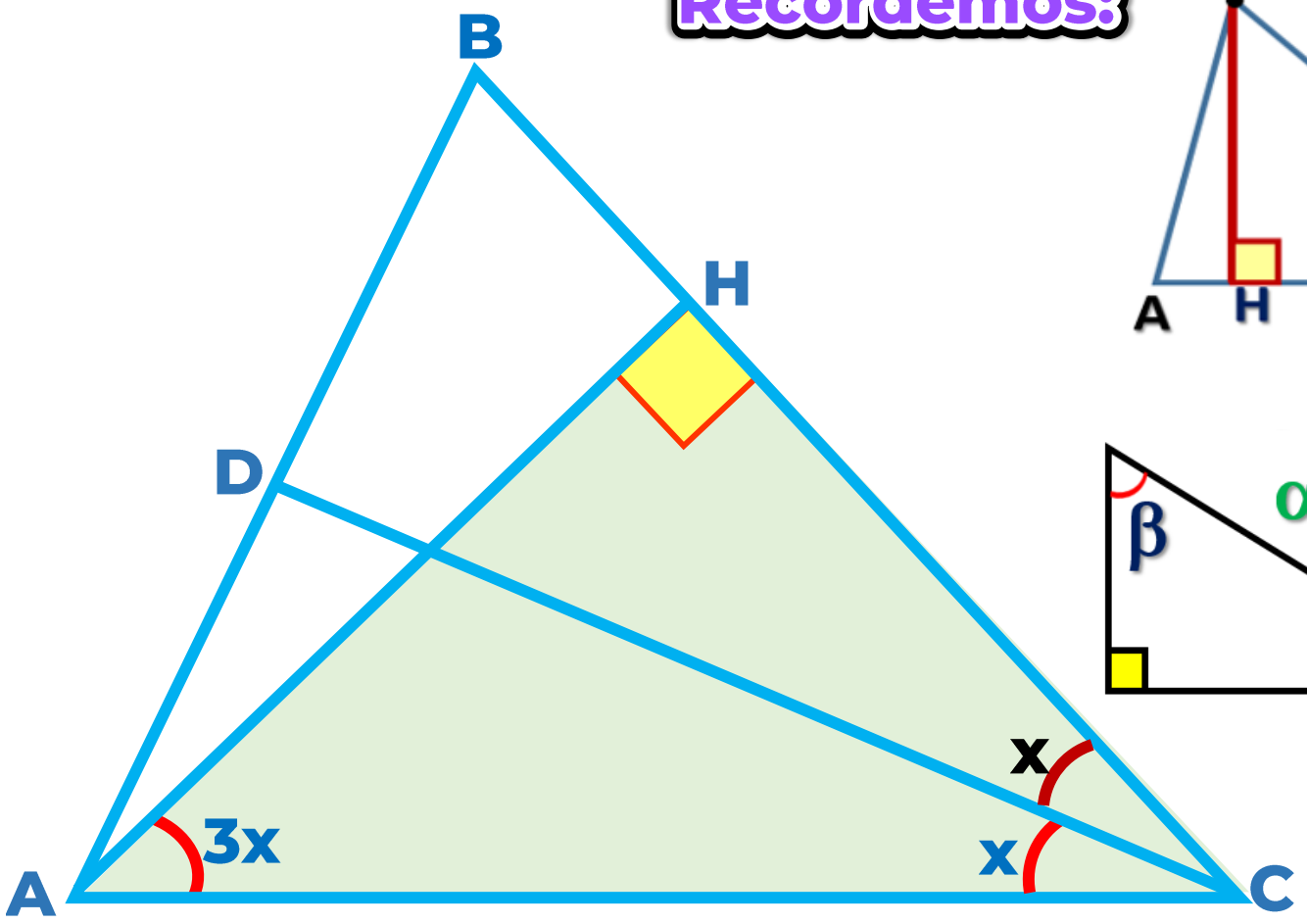
$$\left(\ 11x = 90° + \frac{7x}{2}\ \right) x2$$

$$22x = 180° + 7x$$

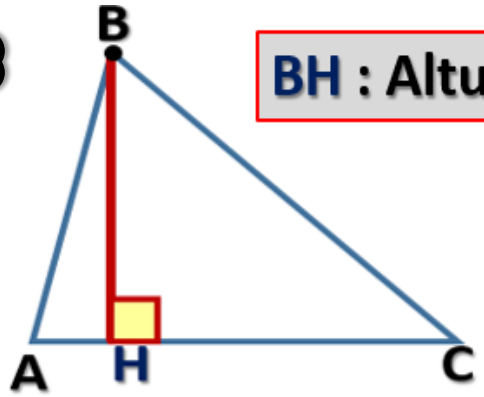
$$15x = 180°$$

$$x = 12°$$

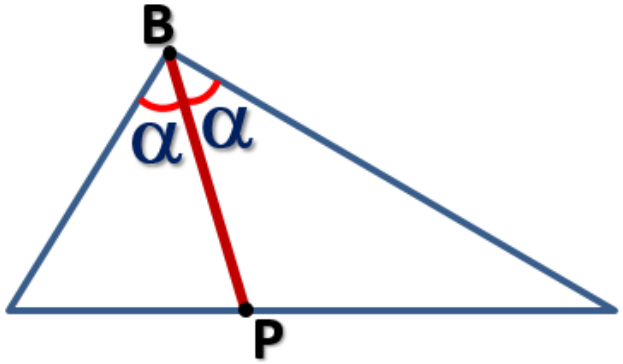
6. Halle el valor de x, si $\overline{AH}$ es altura y $\overline{CD}$ es bisectriz interior del triángulos ABC.



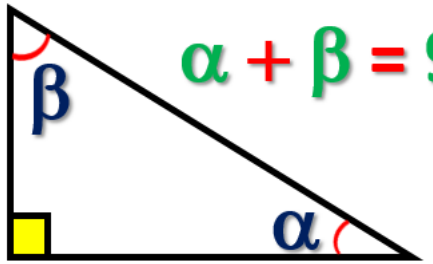
Recordemos:



BH : Altura



$\overline{BP}$: Bisectriz Interior



$\alpha + \beta = 90°$

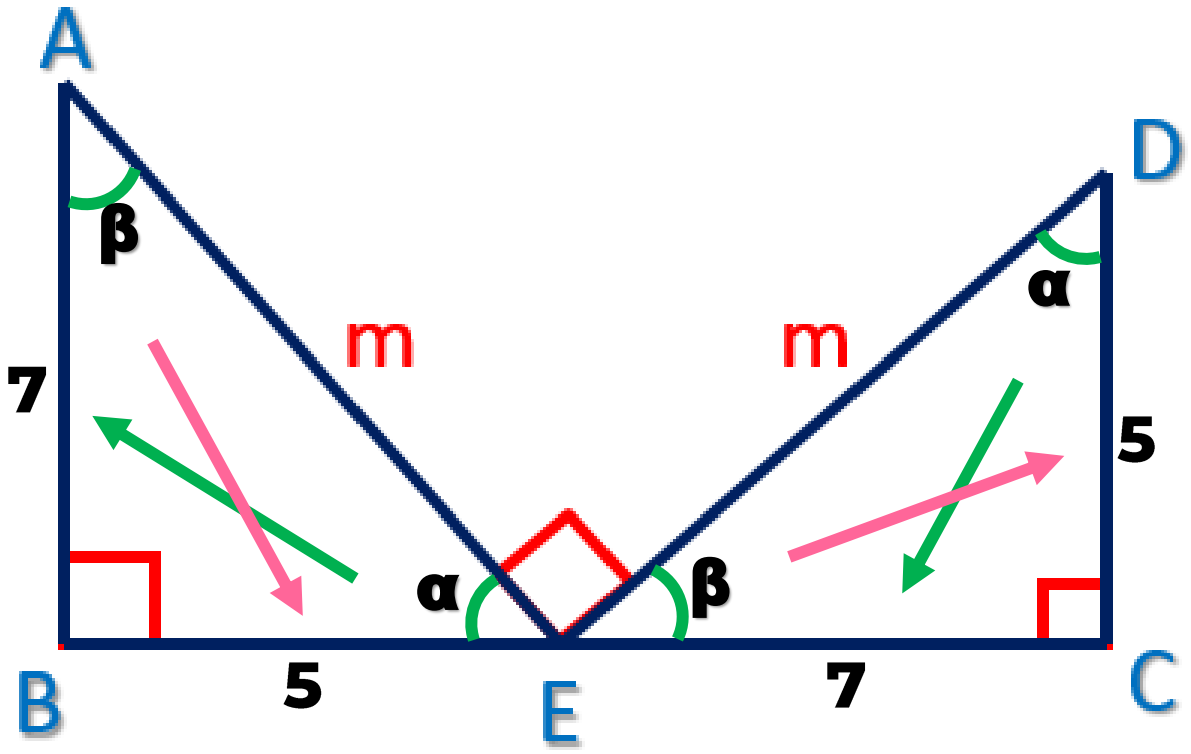
En el $\triangle AHC$:

$3x + 2x = 90°$

$5x = 90°$

$x = 18°$

7. Halle BC si AB = 7 y DC = 5.



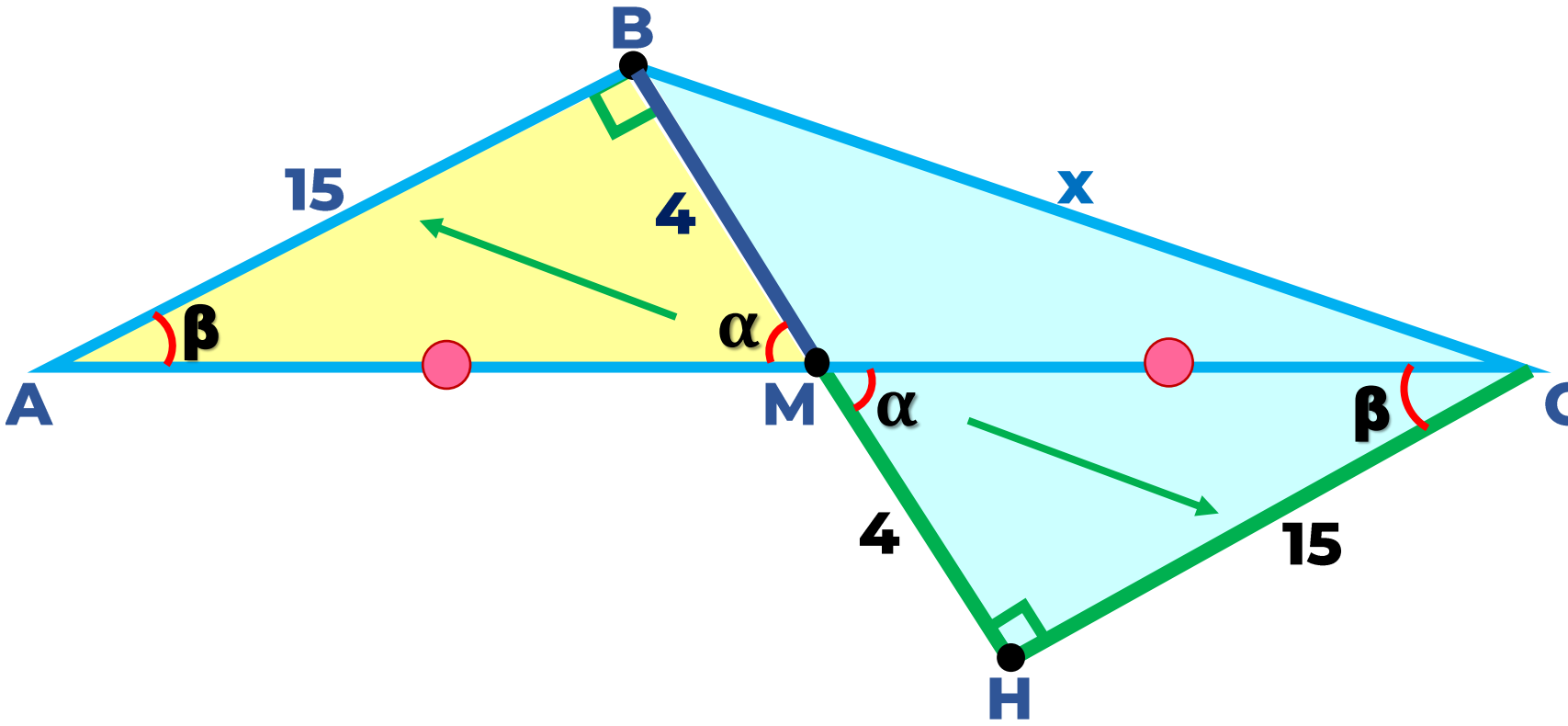
$\triangle ABE \cong \triangle CDE$

(A-L-A)

BC = 5 + 7

BC = 12

8. En un triángulo ABC, se traza la mediana $\overline{BM}$. Si BM = 4, AB = 15 y m∢ABM = 90°, halle BC.



$\alpha + \beta = 90°$

$\triangle ABM \cong \triangle CHM$

(A-L-A)

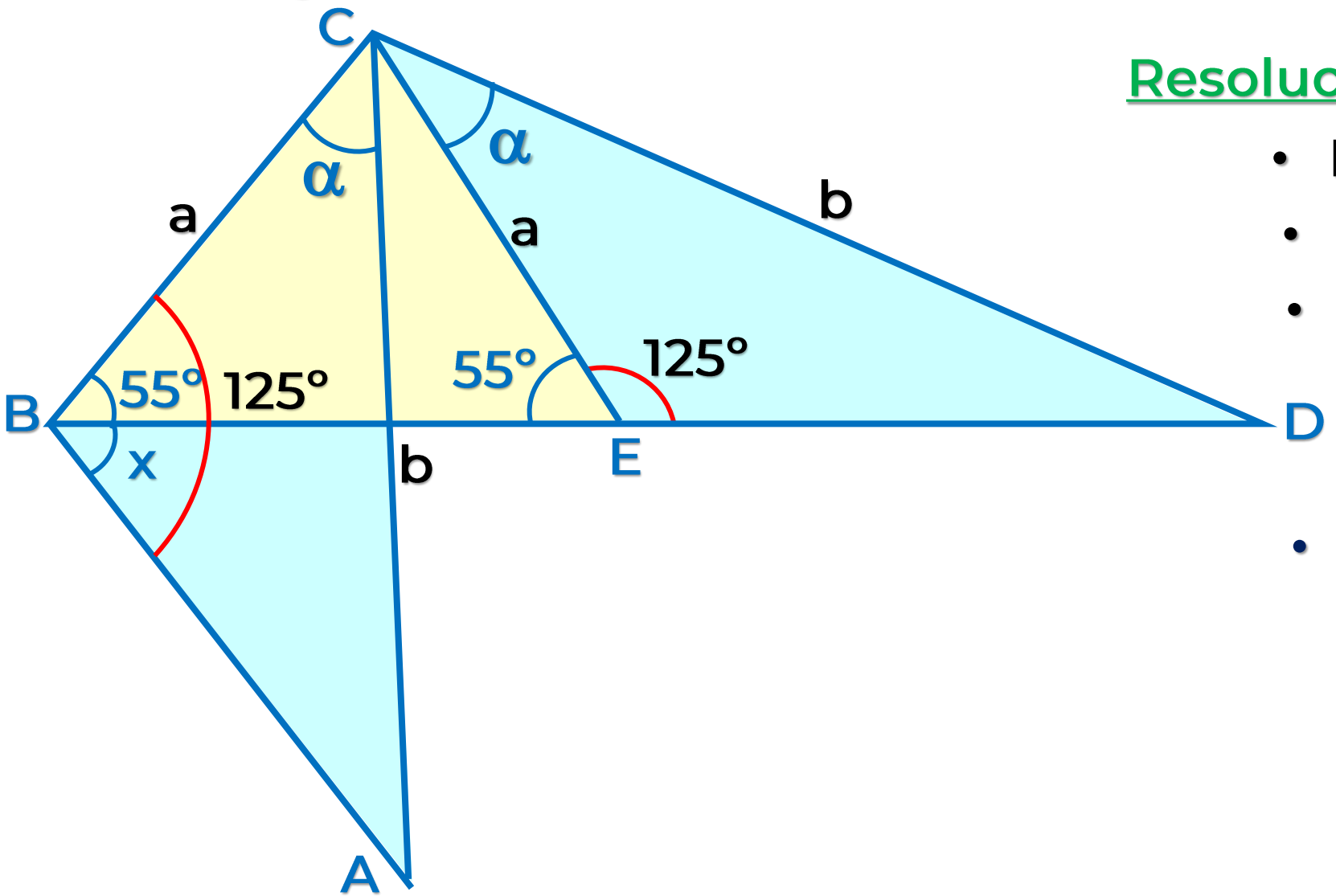
$\triangle BCH$: Pitágoras

$x^2 = 8^2 + 15^2$

$x^2 = 289$

$x = 17$

9. En la figura, AC = CD. Halle el valor de x.



Resolución

- Piden: x
- ΔBCE: Isósceles
- Δ ABC ≅ Δ DEC

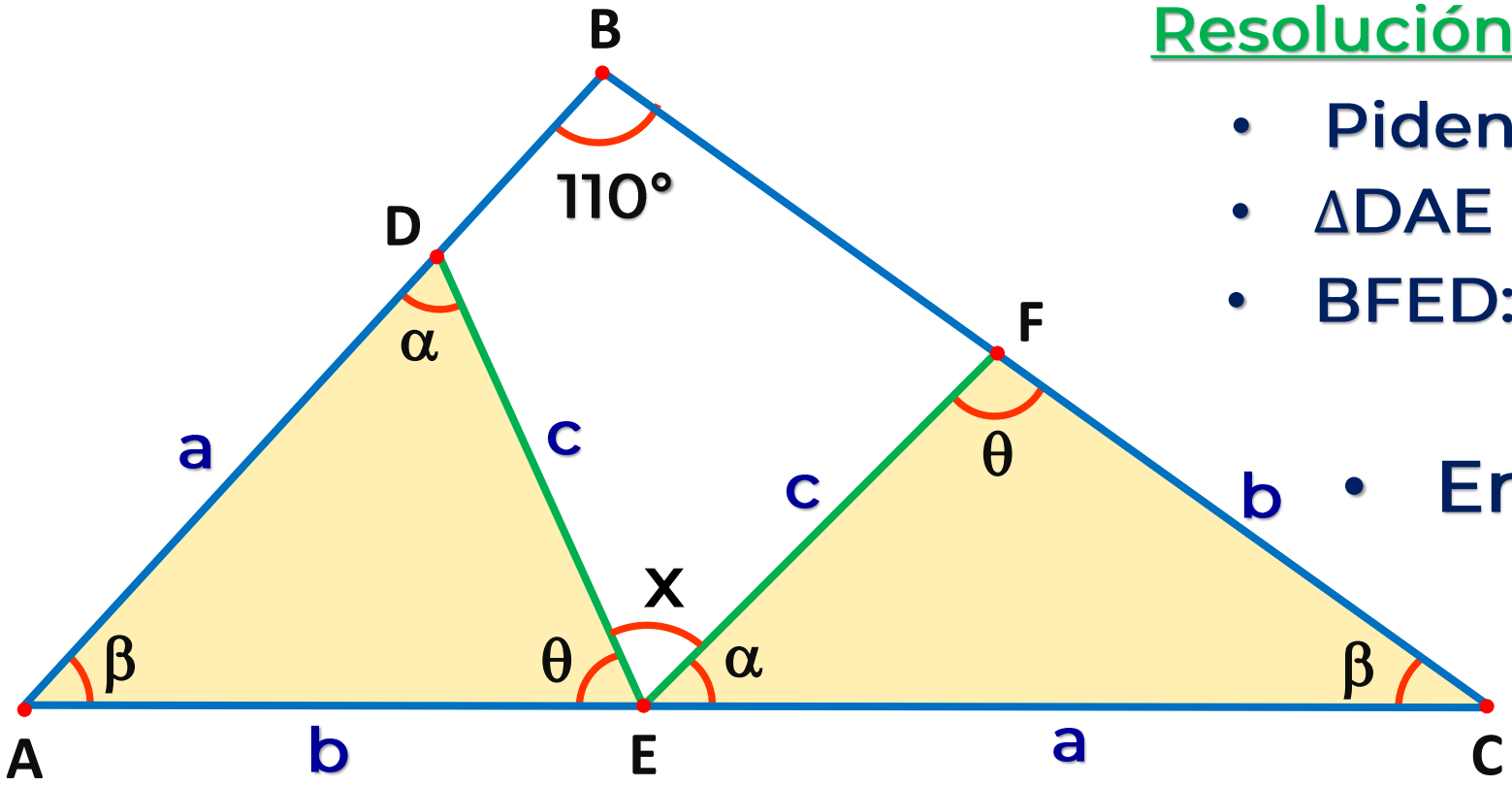
L-A-L

- Del gráfico

$x + 55° = 125°$

$x = 70°$

10. En un triángulo ABC, m∢ABC = 110°, se ubican los puntos D, E y F en los lados $\overline{AB}$, $\overline{AC}$ y $\overline{BC}$ respectivamente. Si AD = EC, AE = FC y DE = EF, calcule m∢DEF.



Resolución

- Piden: x
- $\Delta DAE \cong \Delta ECF$ (L . L . L)
- BFED: Aplicando el teorema.

$$\alpha + \theta = 110° + x$$

- En E:

$$\alpha + \theta + x = 180°$$

$$110° + x + x = 180°$$

$$2x = 70°$$

$$x = 35°$$