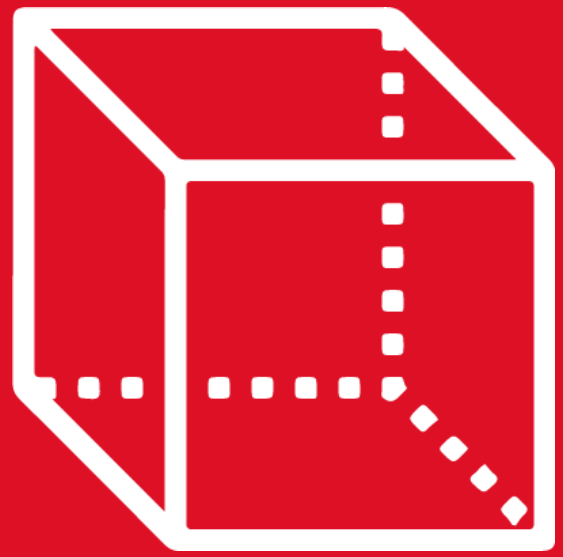
GEOMETRÍA

3rd

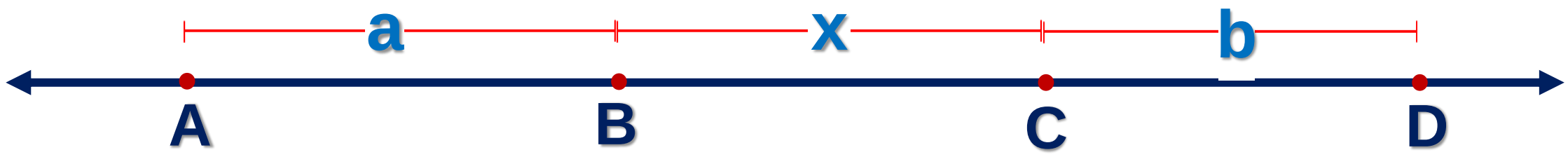
SECONDARY SESIÓN II



Asesoría 1er Bimestre

SACO OLIVEROS

1. En una recta se ubican los puntos consecutivos A, B. C y D, de modo que AB + CD = 3(BC) y AC + BD = 40. Calcule BC.



DATOS:

- $AB + CD = 3(BC)$

$$a + b = 3x$$

- $AC + BD = 40$

$$\overbrace{a + x} + \overbrace{x + b} = 40$$

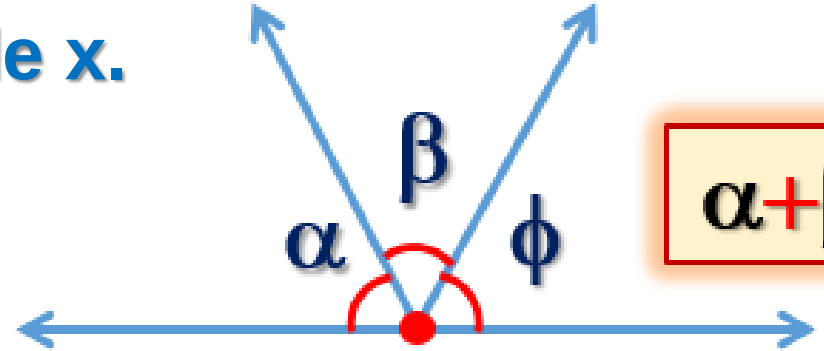
$$2x + \underbrace{a + b} = 40$$

$$2x + 3x = 40$$

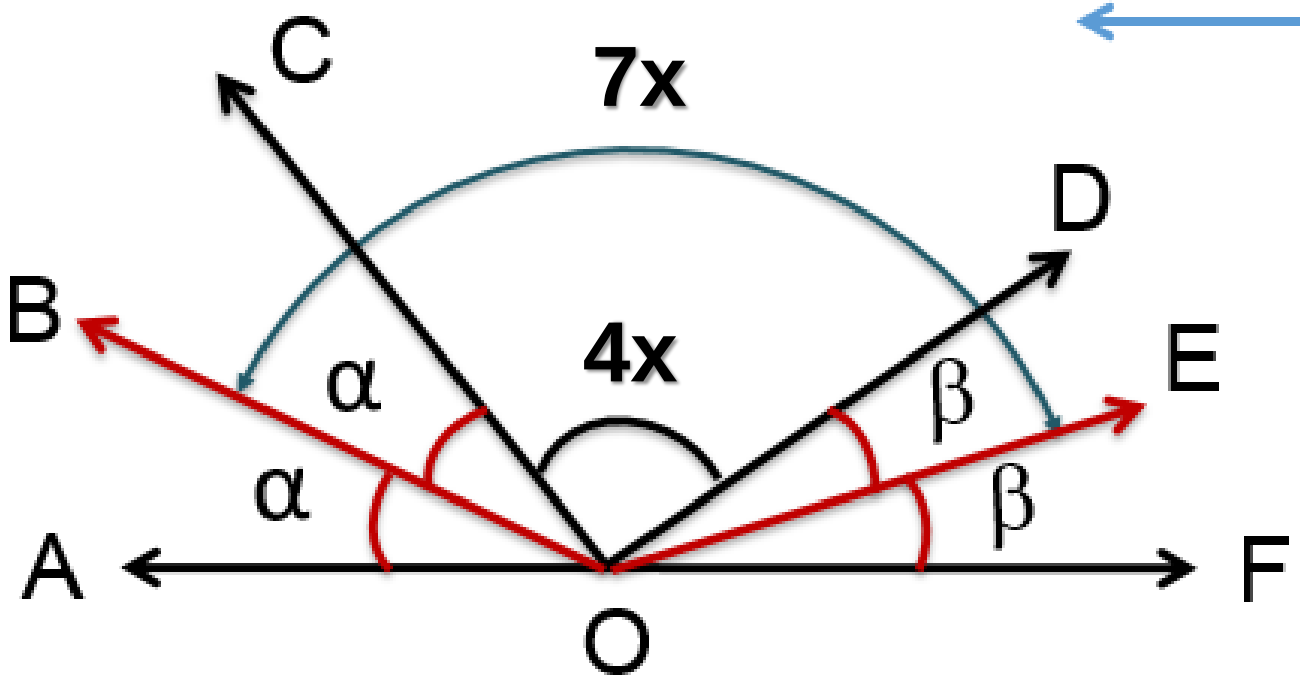
$$5x = 40$$

$$x = 8$$

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



$$\alpha+\beta+\phi = 180°$$



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

$$\alpha + \beta = 3x$$

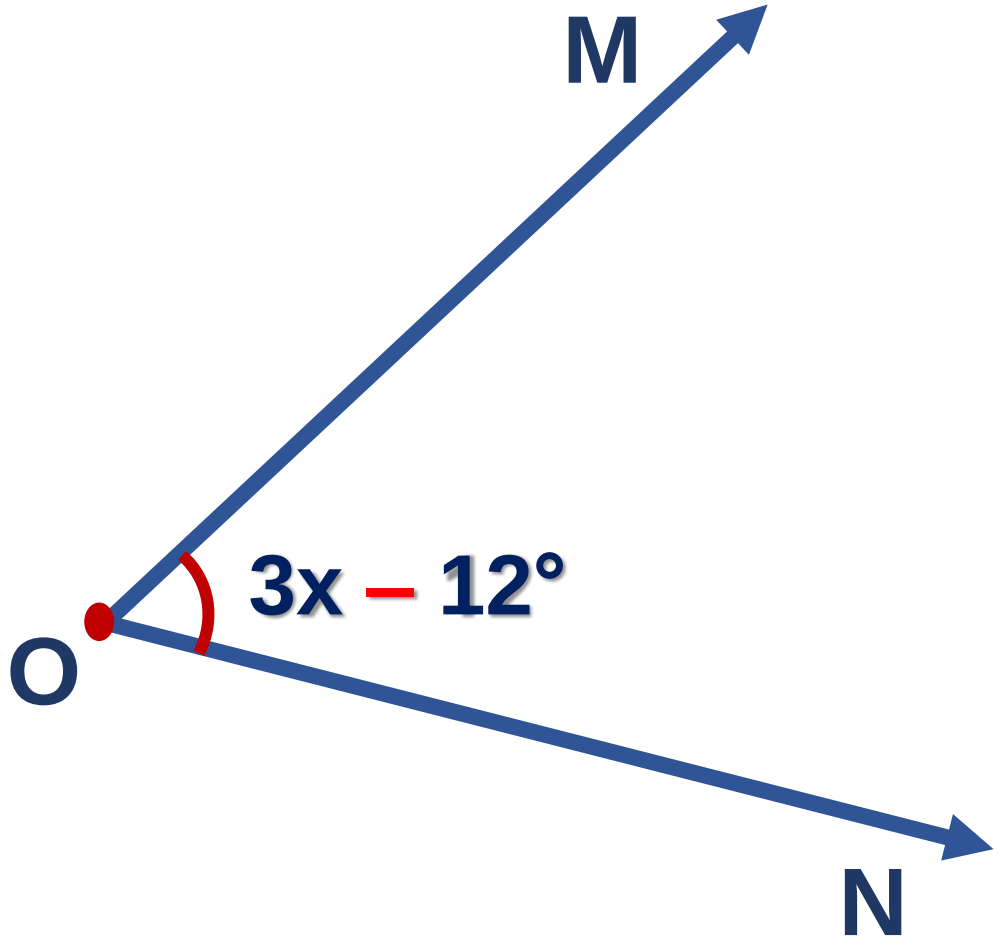
$$7x + \alpha + \beta = 180°$$

$$\underbrace{\alpha + \beta}_{3x} = 180°$$

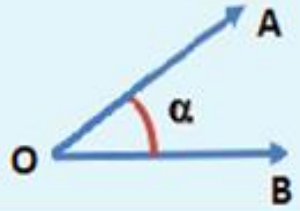
$$10x = 180°$$

$$x = 18°$$

3. En la figura, el ángulo MON es agudo. Hallar el mínimo valor entero de x.



Por definición de ángulo agudo:



$0^\circ < \alpha < 90^\circ$

$$0^\circ < 3x - 12^\circ < 90^\circ$$

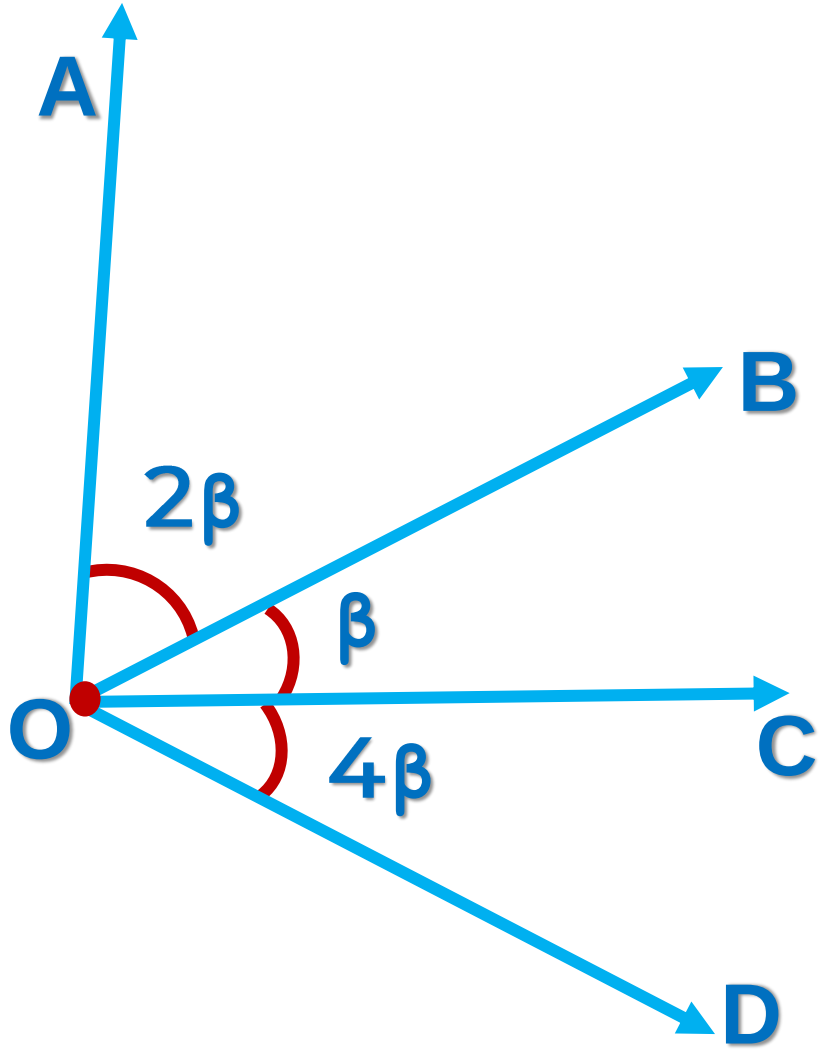
$$0 < 3x - 12^\circ$$
$$12^\circ < 3x$$
$$4^\circ < x$$

$$3x - 12^\circ < 90^\circ$$
$$3x < 102^\circ$$
$$x < 34^\circ$$

$$x = 5^\circ, 6^\circ, 7^\circ \ldots 32^\circ, 33^\circ$$

$$x_{mín} = 5^\circ$$

4. Si los ángulos BOC y BOD son suplementarios, calcule m∢AOB.



$$m\measuredangle BOC + m\measuredangle BOD = 180°$$

$$(\beta) + (\beta + 4\beta) = 180°$$

$$6\beta = 180°$$

$$\beta = 30°$$

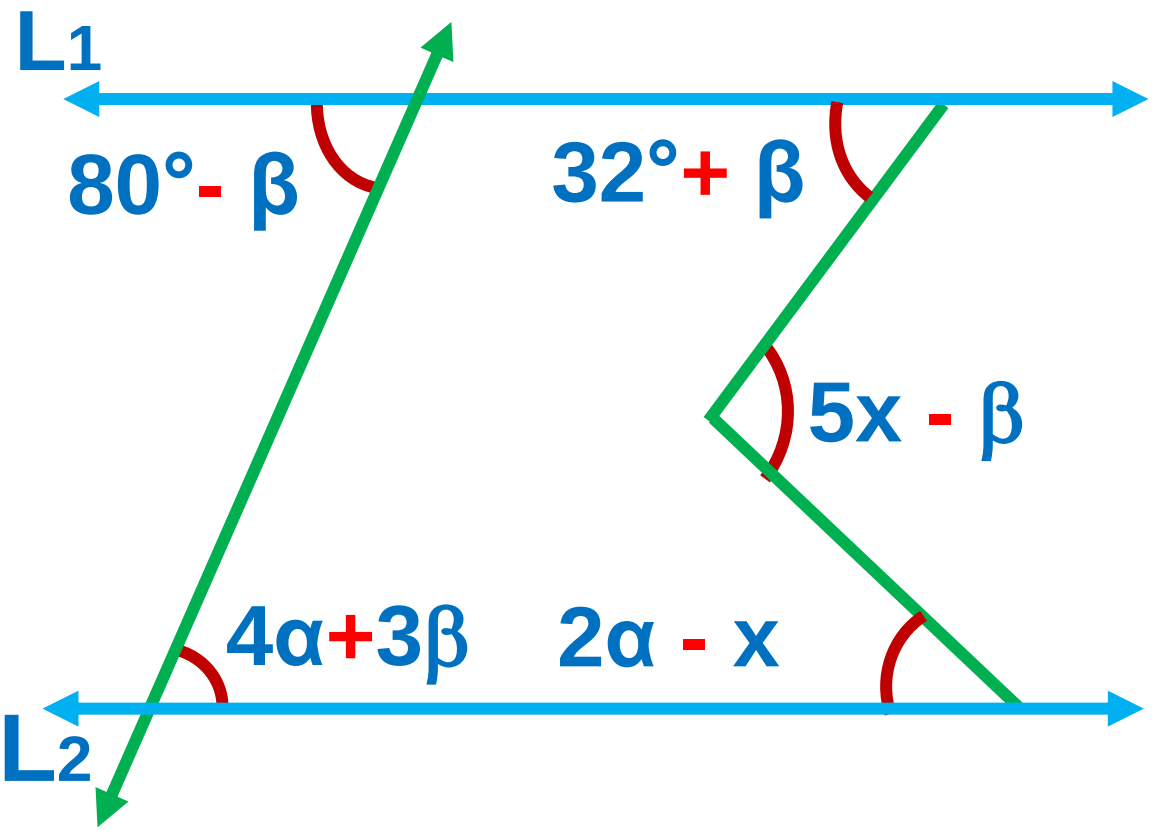
Nos piden:

$$m\measuredangle AOB = 2(\beta)$$

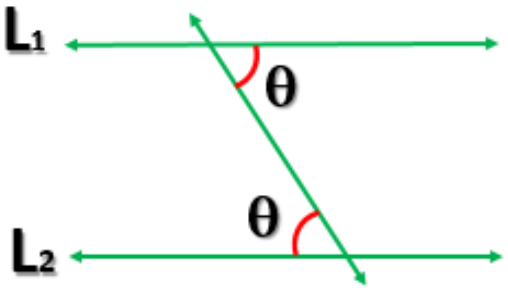
$$30°$$

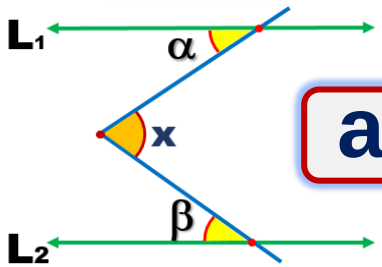
$$\boxed{m\measuredangle AOB = 60°}$$

5. Si $\overleftrightarrow{L_1}$ // $\overleftrightarrow{L_2}$, halle el valor de x.



Ángulos alternos internos





a + b = x

- $80° - \beta = 4\alpha + 3\beta$

  $80° = 4\alpha + 4\beta$

  $20° = \alpha + \beta$

- $5x - \beta = 2\alpha - x + 32° + \beta$

  $6x = 2\alpha + 2\beta + 32°$

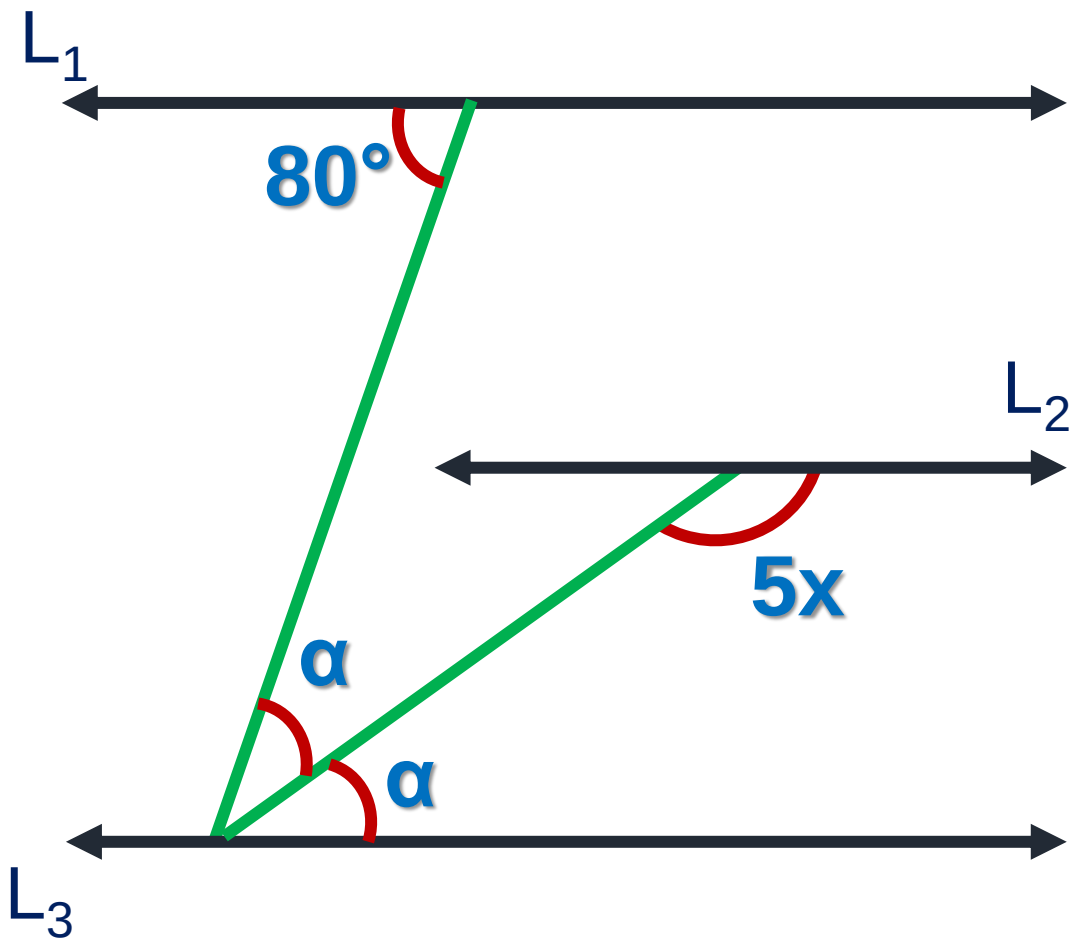
  $3x = (\alpha + \beta) + 16°$

  $3x = (20°) + 16°$

  $3x = 36°$

x = 12°

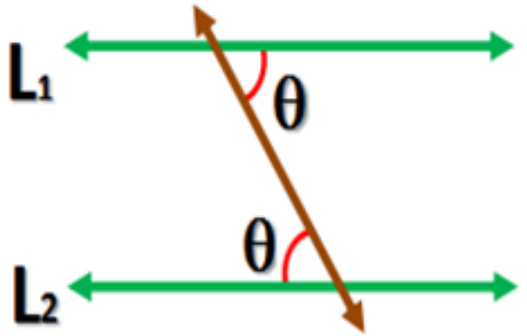
6. Si $\overleftrightarrow{L_1} \parallel \overleftrightarrow{L_2} \parallel \overleftrightarrow{L_3}$, halle el valor de x.



$2\alpha = 80°$

$\alpha = 40°$

ÁNGULOS ALTERNOS INTERNOS



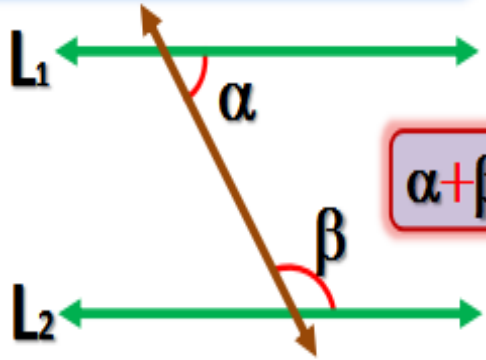
$\alpha + 5x = 180°$

$40° + 5x = 180°$

$5x = 140°$

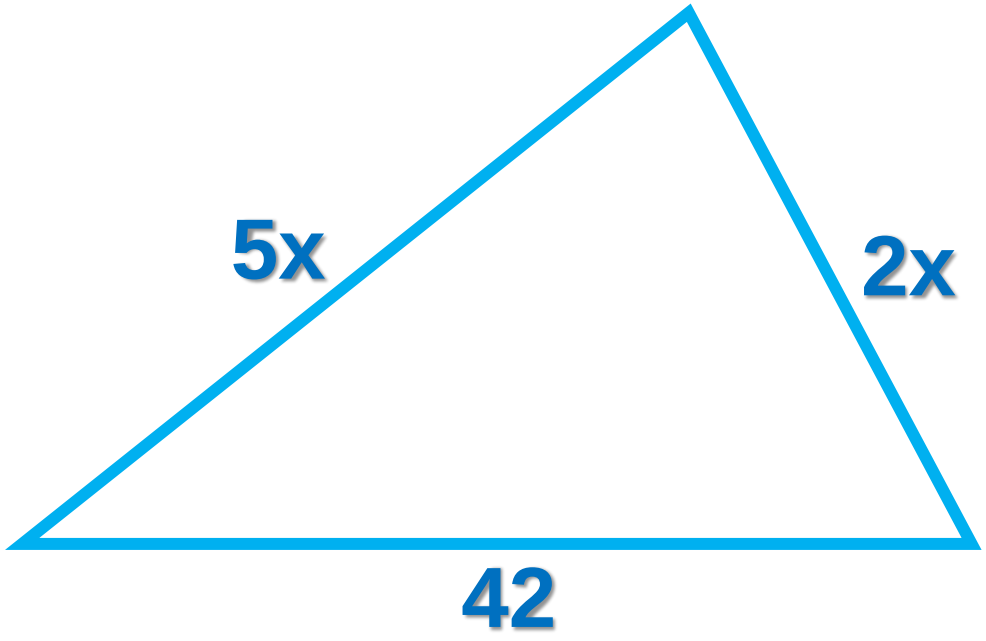
$x = 28°$

ÁNGULOS CONJUGADOS



$\alpha + \beta = 180°$

7. Si los lados de un triangulo miden 5x , 2x y 42, halle la suma de los valores enteros que puede tomar x.



$$5x - 2x < 42 < 5x + 2x$$

$$3x < 42 < 7x$$

$$3x < 42 \qquad | \qquad 42 < 7x$$

$$x < 14 \qquad\qquad 6 < x$$

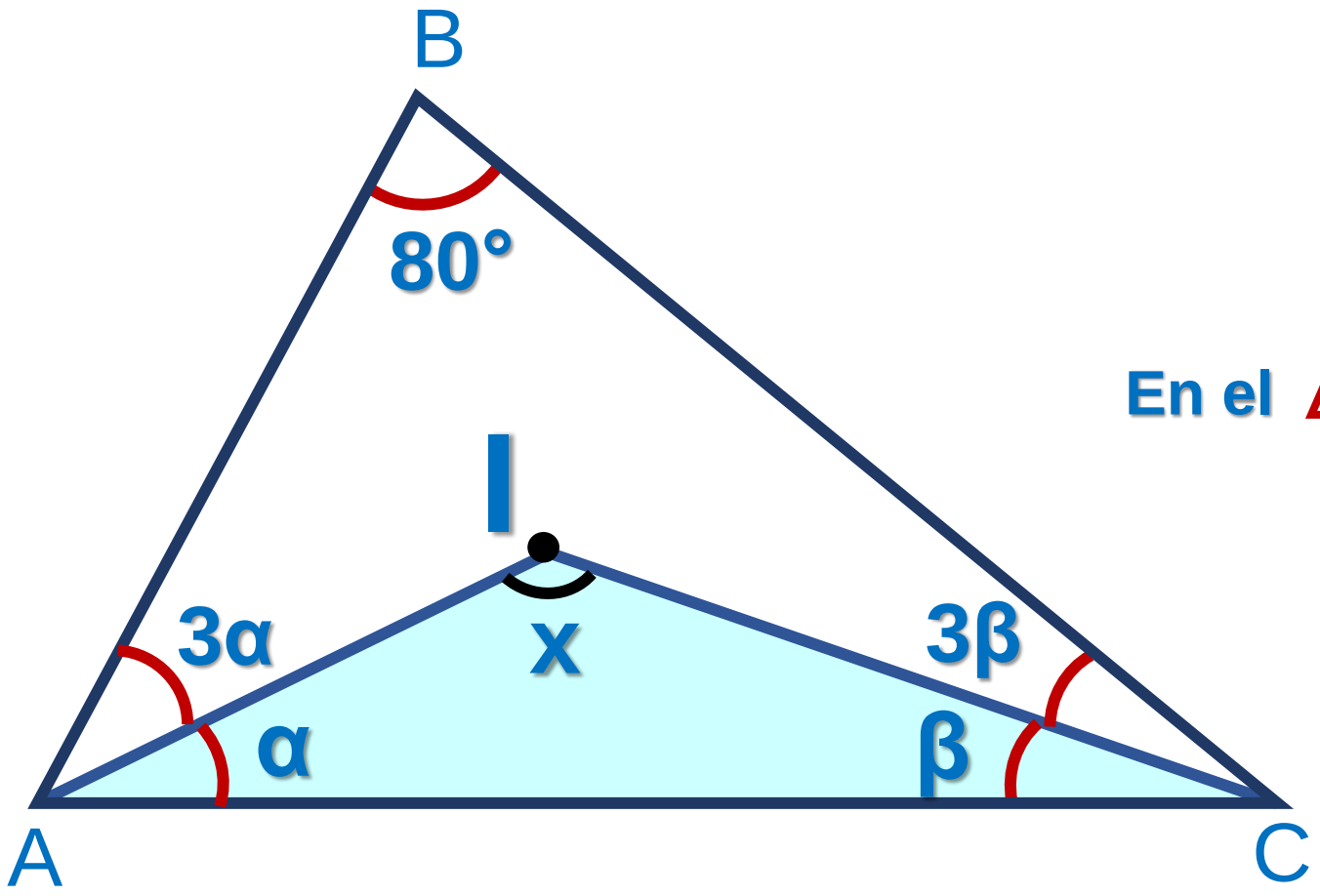
$$6 < x < 14$$

$$x = 7 ; 8 ; 9 ; 10 ; 11 ; 12 ; 13$$

Nos piden:

$$7 + 8 + 9 + 10 + 11 + 12 + 13 = 70$$

8. En la figura, hallar el valor de x.



En el $\triangle ABC$

$$4\alpha + 4\beta + 80° = 180°$$

$$4\alpha + 4\beta = 100°$$

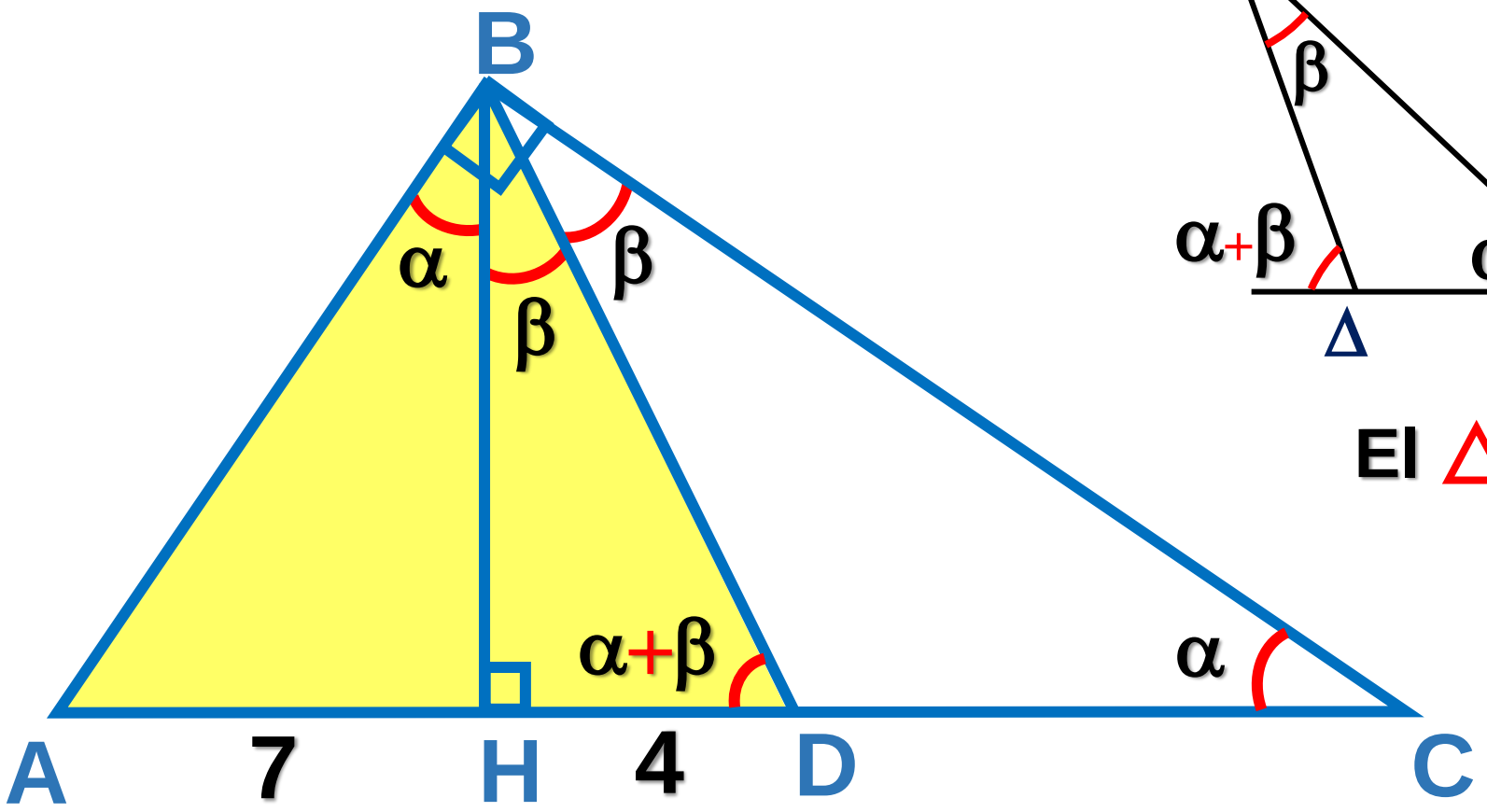
$$\alpha + \beta = 25°$$

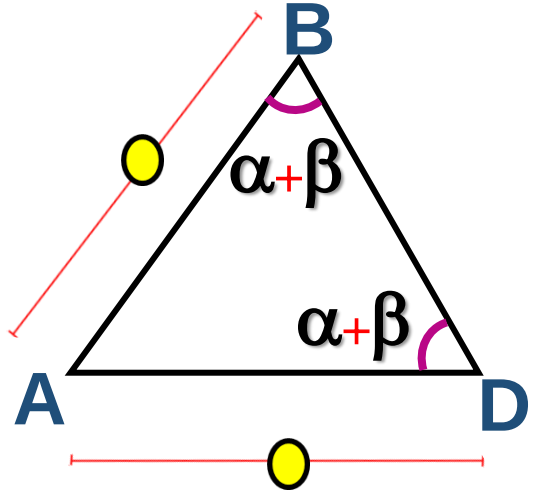
En el $\triangle AIC$

$$x + \underbrace{\alpha + \beta}_{25°} = 180°$$

$$x = 155°$$

9. En un triángulo rectángulo ABC, recto en B, se traza la altura $\overline{BH}$ y la bisectriz $\overline{BD}$ del ∡HBC. Si AH = 7 y HD = 4, halle AB.



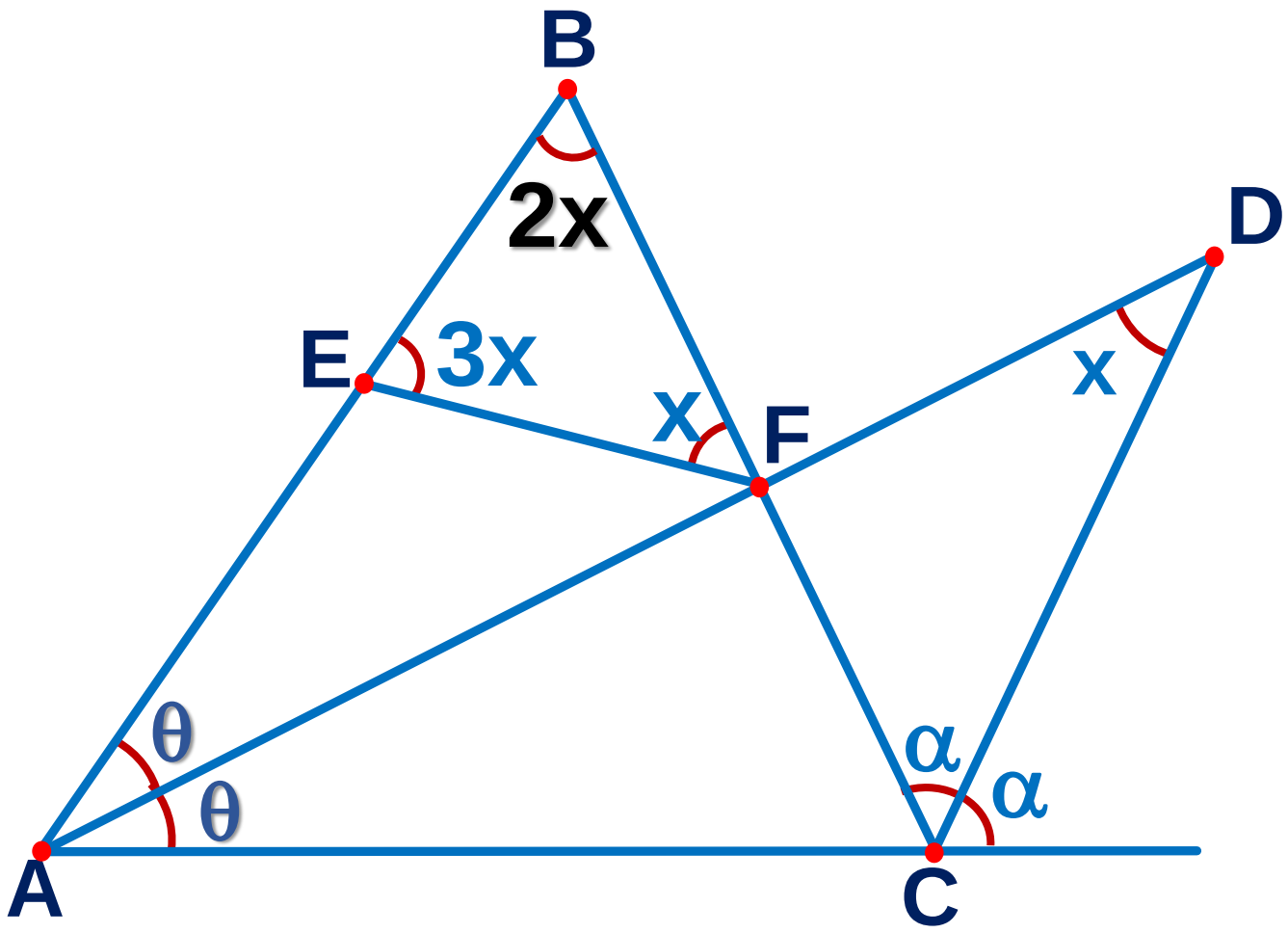


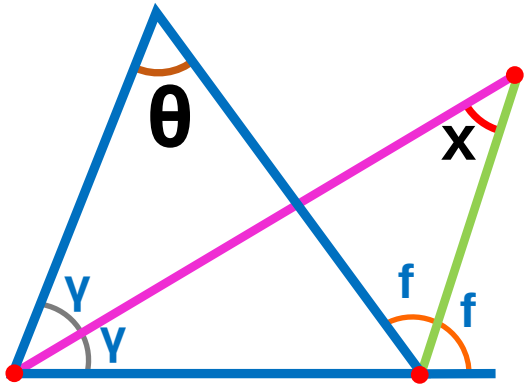
El △BAD : Isósceles

AB = AD = 7 + 4

AB = 11

10. En la figura, calcular el valor de x.





Por teorema:

$$x = \frac{\theta}{2}$$

Entonces:

$m\measuredangle ABC = 2x$

En el ΔEBF:

$$3x + 2x + x = 180°$$

$$6x = 180°$$

$$x = 30°$$