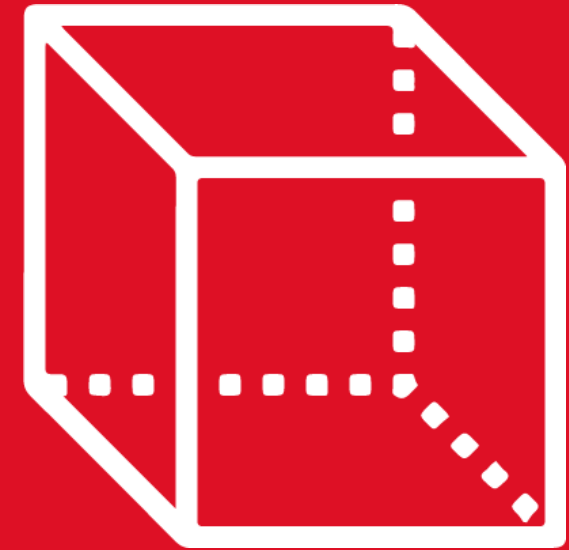




GEOMETRÍA

3rd

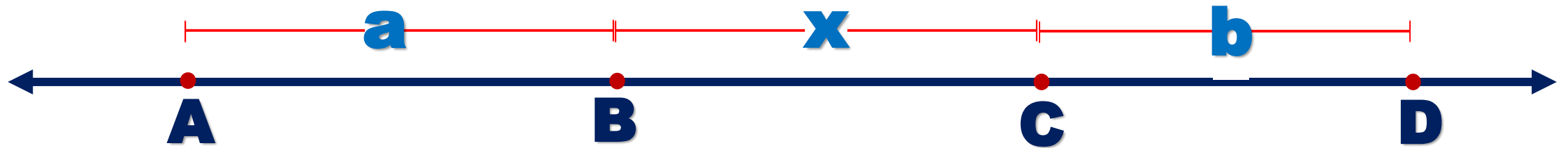
SECONDARY
SESIÓN II



Asesoría Primer
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:

- $AB + CD = 3(BC)$
 $a + b = 3x$

- $AC + BD = 40$

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

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

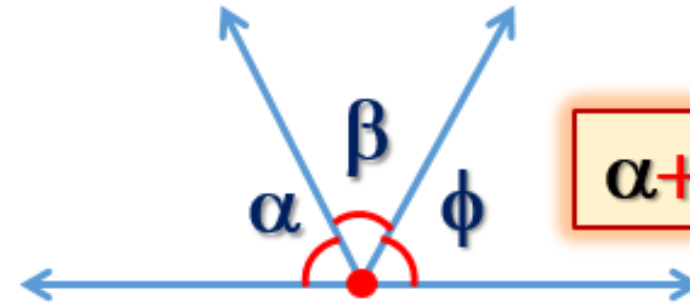
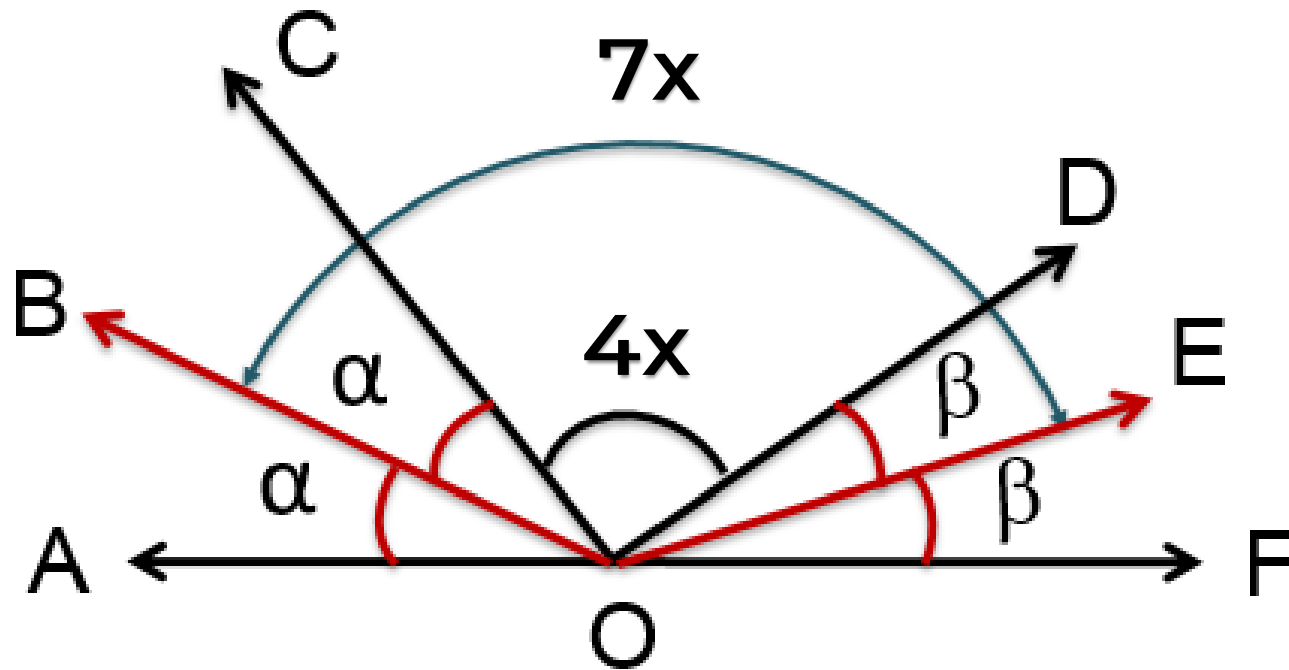
$$2x + 3x = 40$$

$$5x = 40$$

$$x = 8$$



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



$$\alpha + \beta + \phi = 180^\circ$$

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

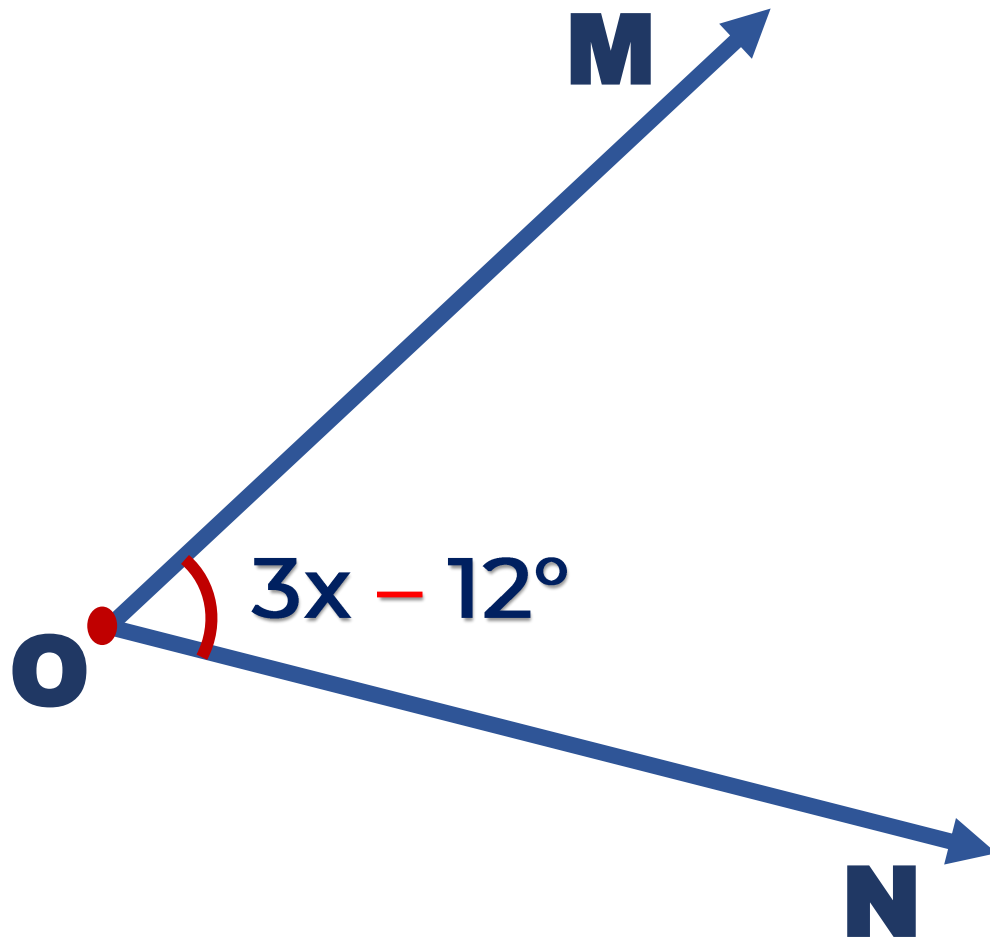
$$\alpha + \beta = 3x$$

$$7x + \underbrace{\alpha + \beta}_{3x} = 180^\circ$$

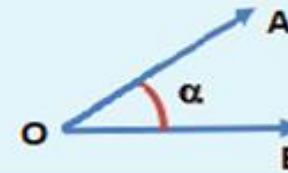
$$10x = 180^\circ$$

(Reemplazando) $x = 18^\circ$

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



Por definición de ángulo agudo:



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

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

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

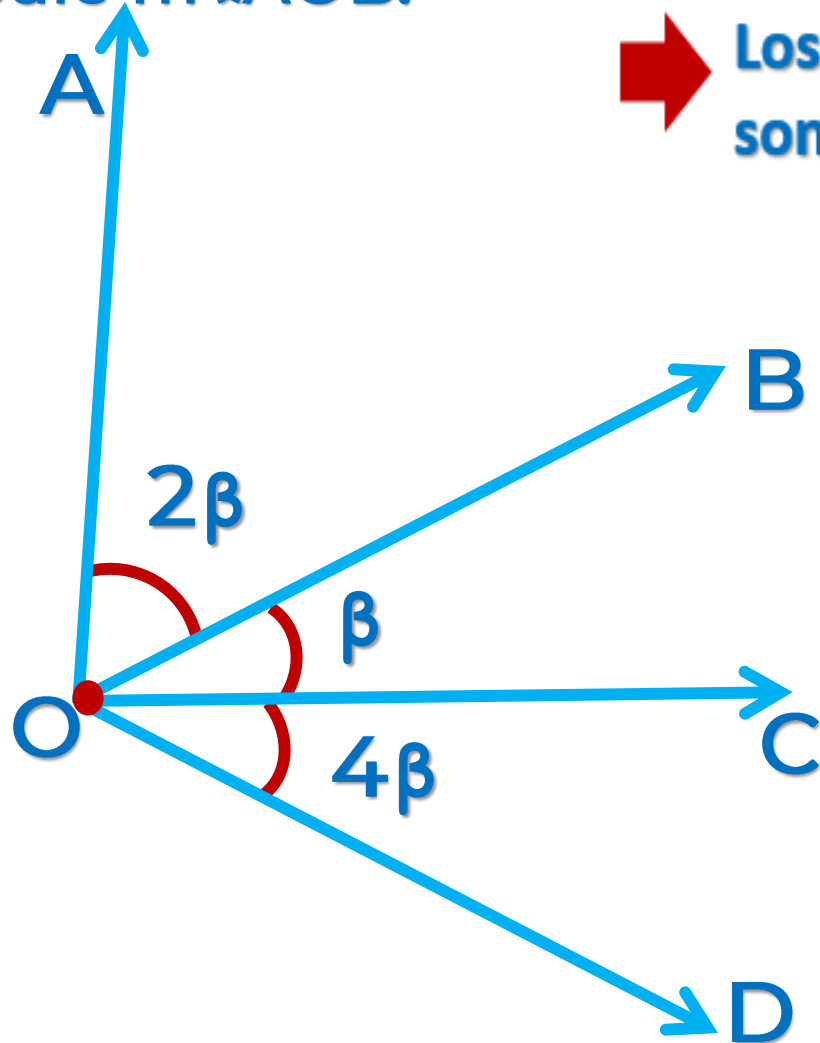
$$12^\circ < 3x < 102^\circ$$

$$4^\circ < x <$$

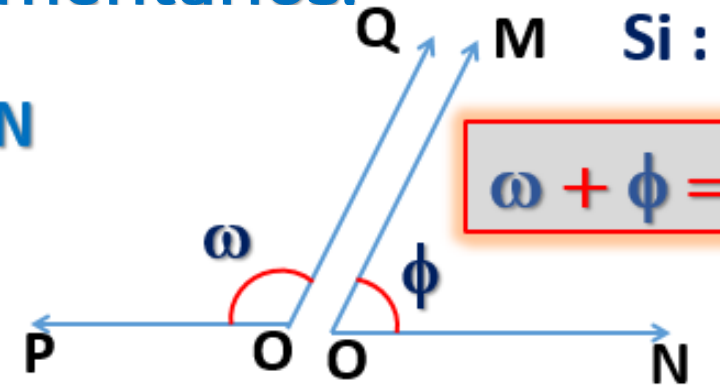
$$x = 5^\circ, 6^\circ, 7^\circ \dots 33^\circ$$

$$x_{\min} =$$

4. Si los ángulos BOC y BOD son suplementarios. calcule $m\angle AOB$.



➔ Los ángulos POQ y MON son Suplementarios



Si : $\omega + \phi = 180^\circ$

➔ $m\angle BOC + m\angle BOD = 180^\circ$

$$\underbrace{(\beta)}_{180^\circ} + \underbrace{(\beta + 4\beta)}_{180^\circ} = 180^\circ$$

$$6\beta = 180^\circ$$

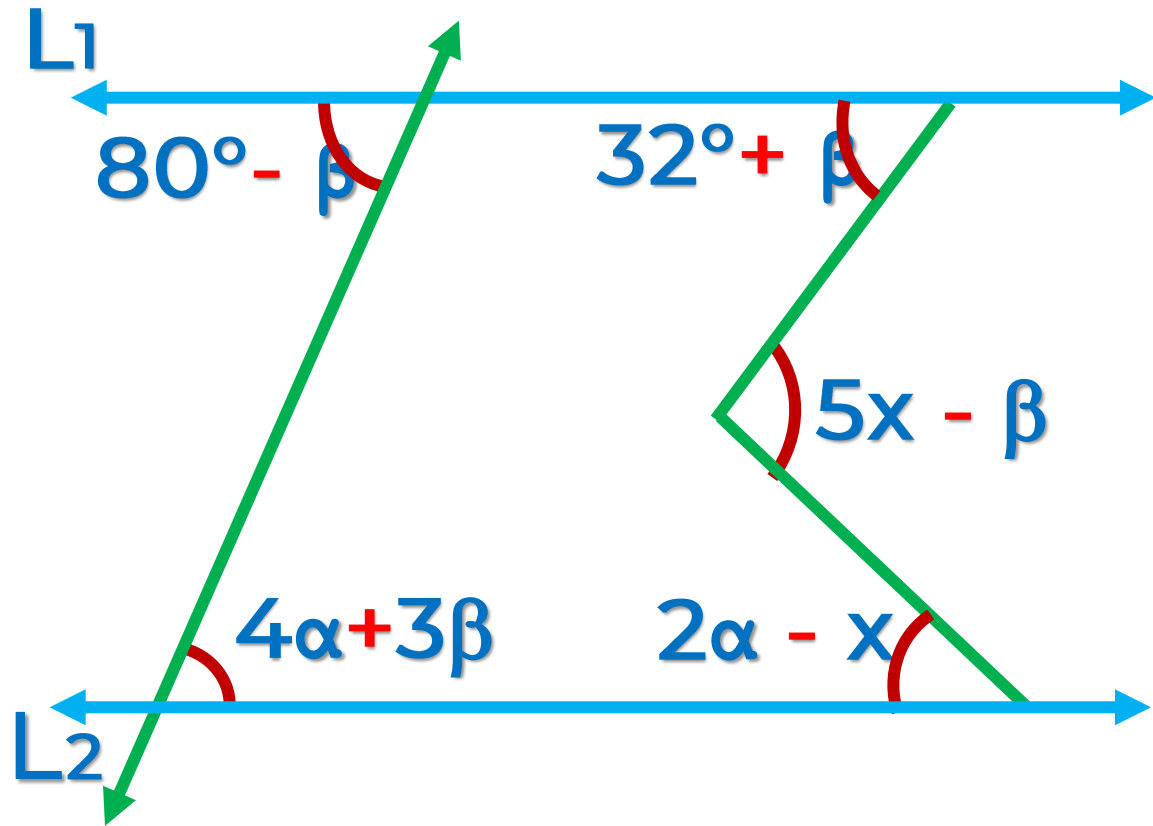
$$\beta = 30^\circ$$

Nos piden:

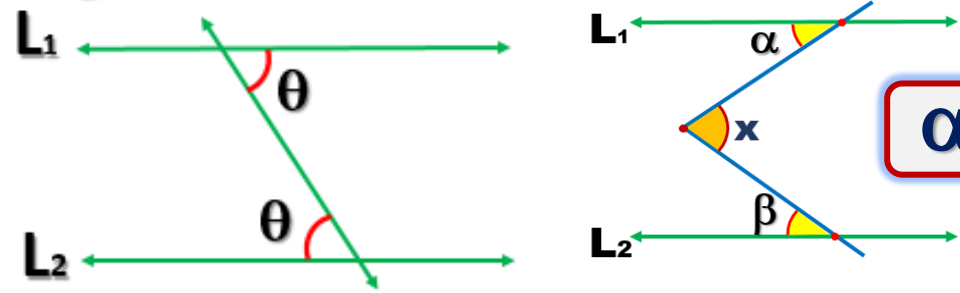
$$m\angle AOB = \underbrace{2\beta}_{30^\circ}$$

$m\angle AOB = 60^\circ$

5. Si $L_1 \parallel L_2$, halle el valor de x .



Ángulos alternos internos



$$\alpha + \beta = x$$

- $80^\circ - \beta = 4\alpha + 3\beta$

$$80^\circ = 4\alpha + 4\beta$$

$$20^\circ = \alpha + \beta$$

- $5x - \beta = 2\alpha - x + 32^\circ + \beta$

$$6x = 2\alpha + 2\beta + 32^\circ$$

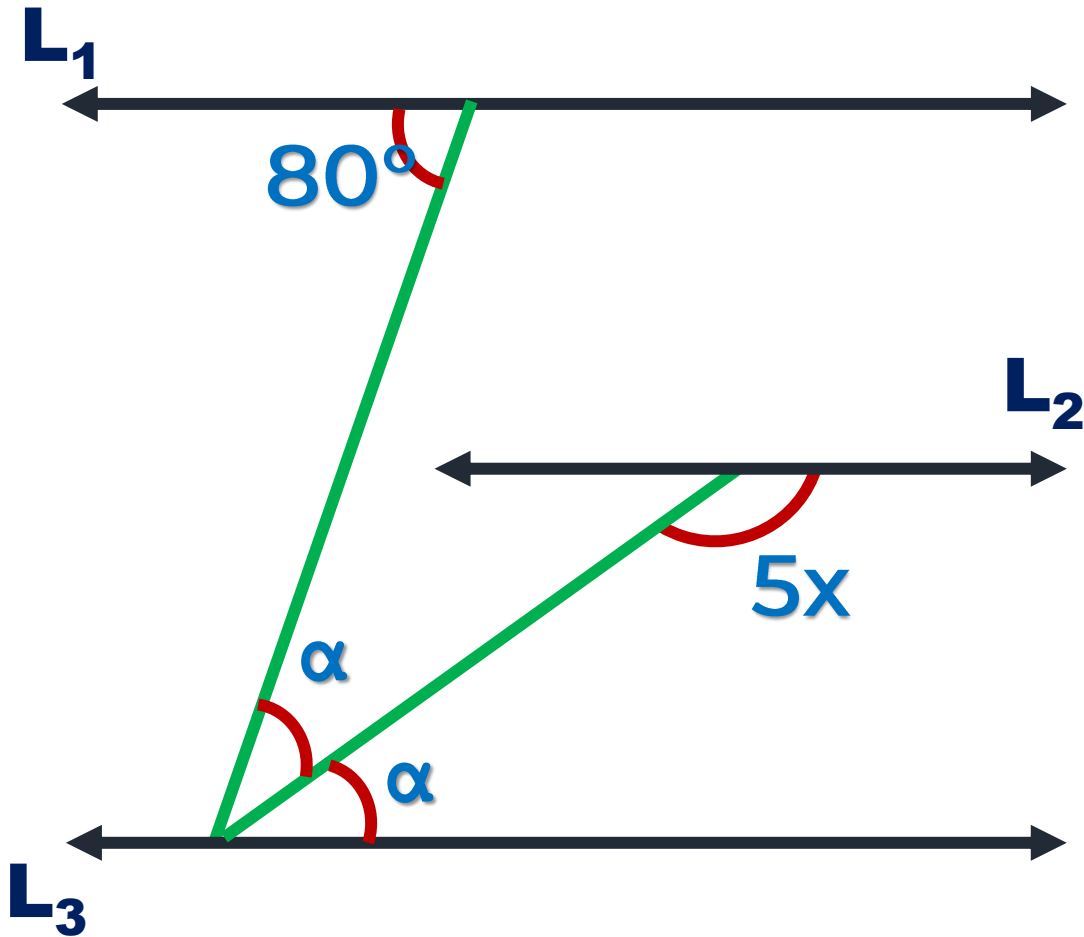
$$3x = (\alpha + \beta) + 16^\circ$$

$$3x = (20^\circ) + 16^\circ$$

$$3x = 36^\circ$$

$$x = 12^\circ$$

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



$$2\alpha = 80^\circ$$

$$\alpha = 40^\circ$$



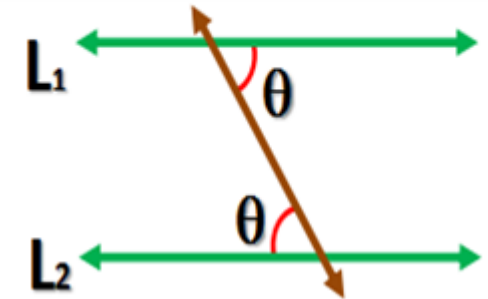
$$\alpha + 5x = 180^\circ$$

$$40^\circ + 5x = 180^\circ$$

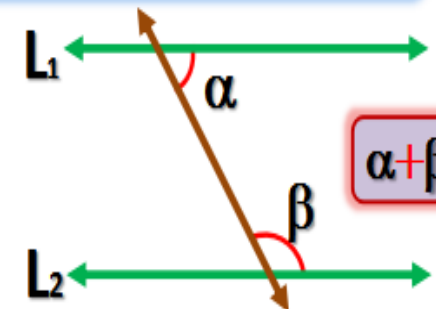
$$5x = 140^\circ$$

$$x = 28^\circ$$

ÁNGULOS ALTERNOS INTERNOS

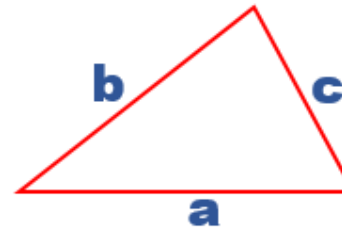
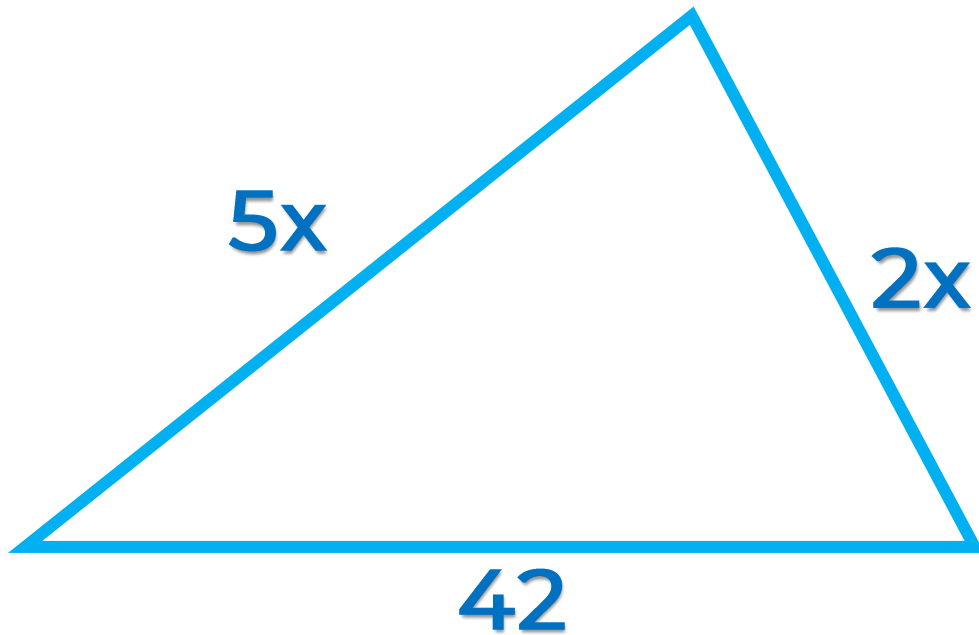


ÁNGULOS CONJUGADOS



$$\alpha + \beta = 180^\circ$$

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



Teorema de la existencia

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

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

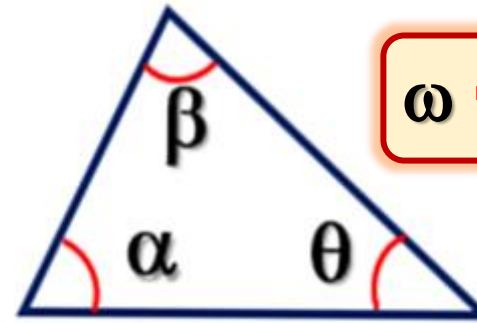
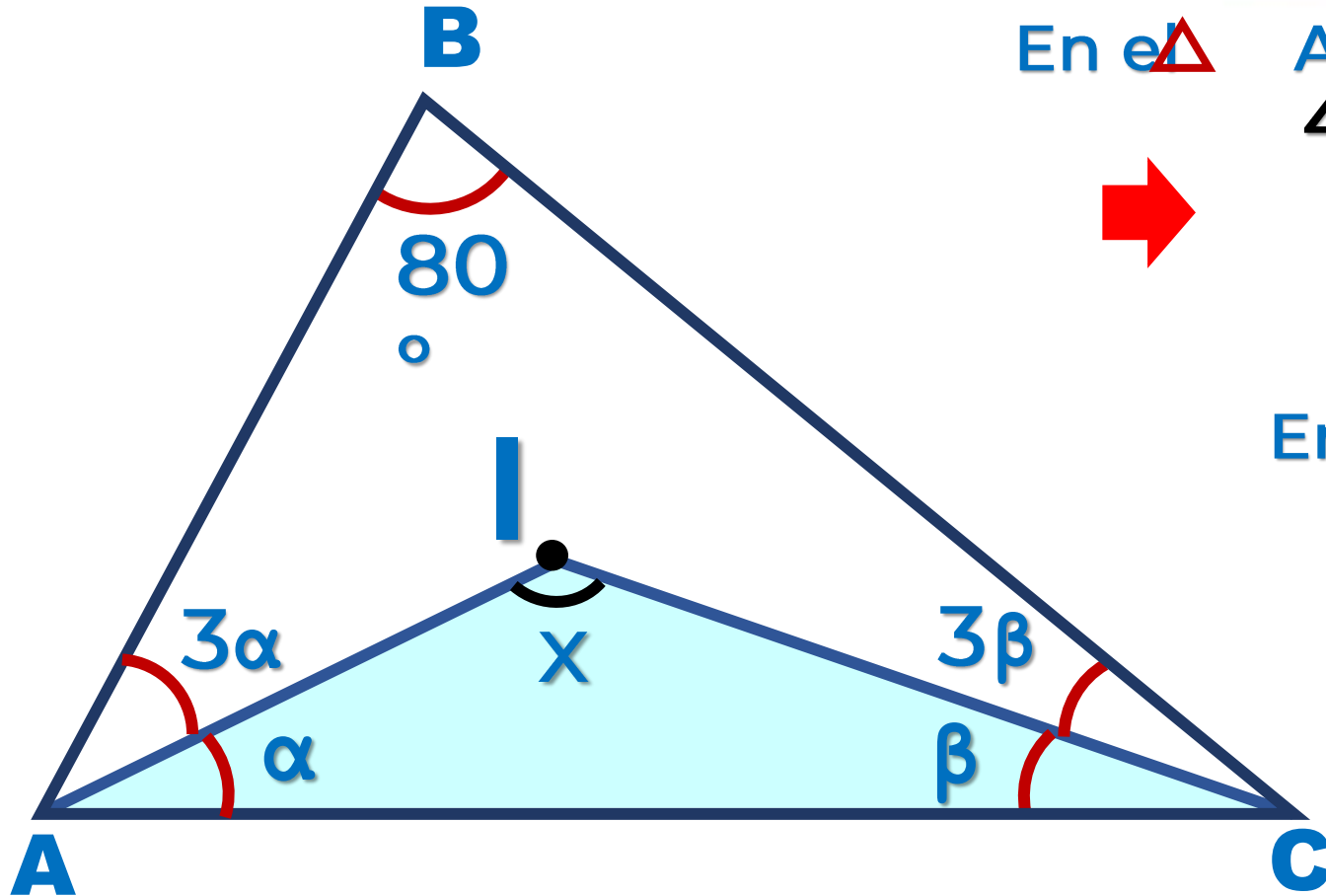
$$3x < 42 < 7x$$

$$\begin{array}{ccc} 3x & < & 42 \\ 42 & < & 7x \\ 14 & < & x < 6 \end{array}$$

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

Nos piden: $7 + 8 + 9 + 10 + 11 + 12 + 13 = 70$

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



$$\omega + \phi + \gamma = 180^\circ$$

En el $\triangle ABC$

$$4\alpha + 4\beta + 80^\circ = 180^\circ$$

$$4\alpha + 4\beta = 100^\circ$$

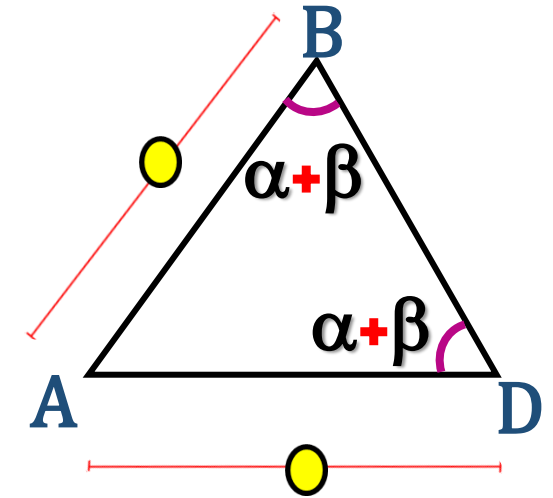
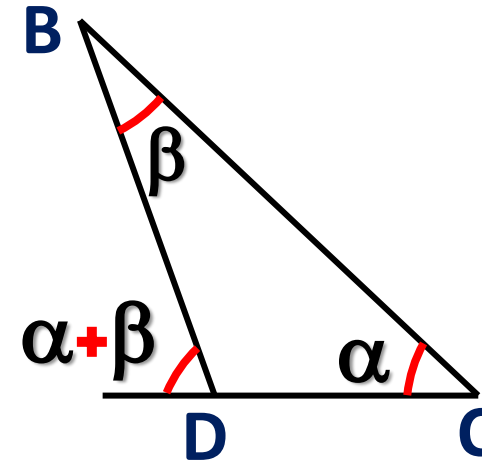
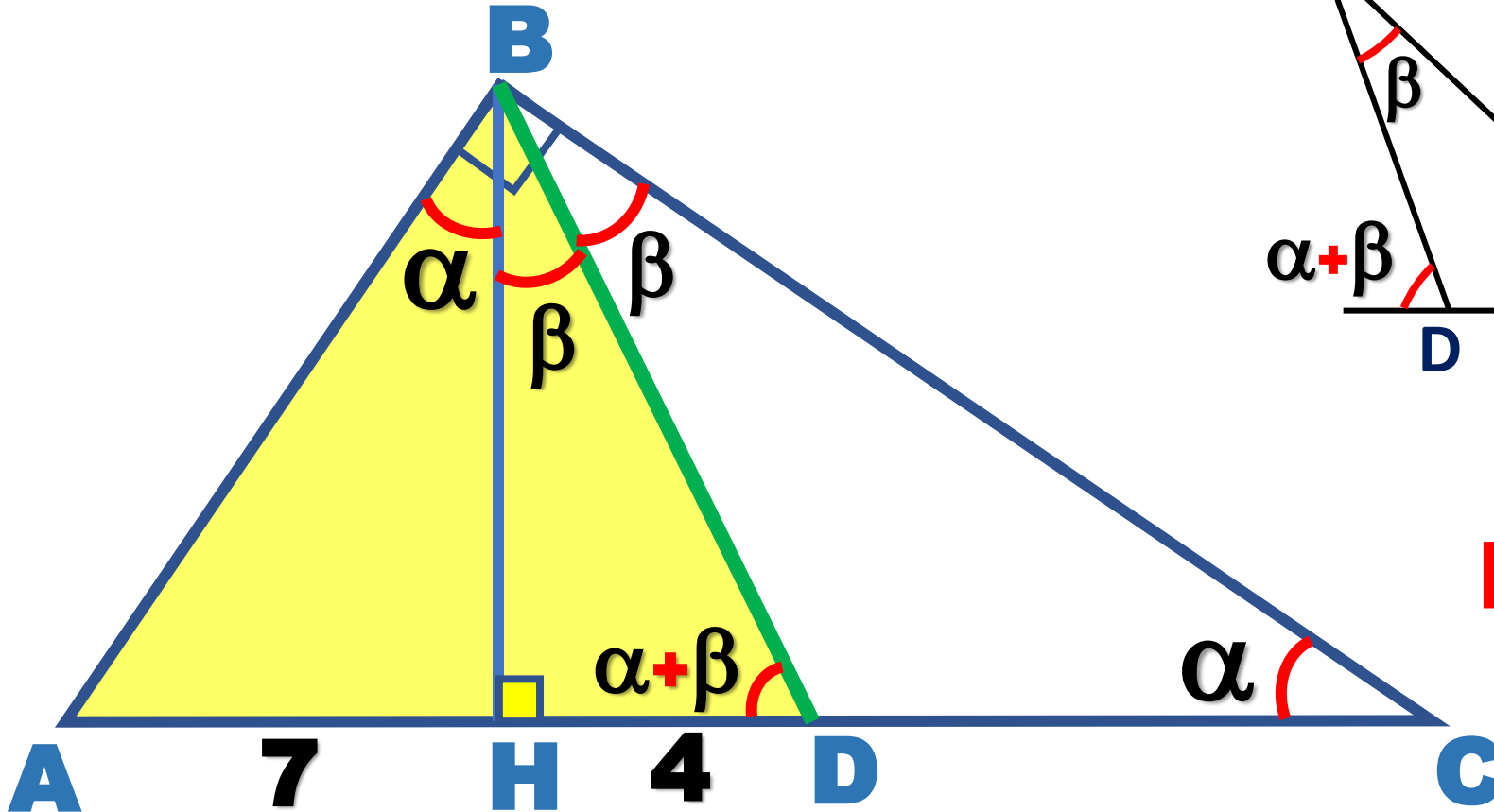
$$\alpha + \beta = 25^\circ$$

En el $\triangle AIC$

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

$$x = 155^\circ$$

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

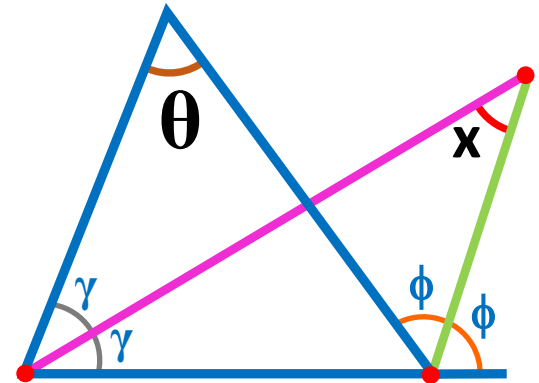
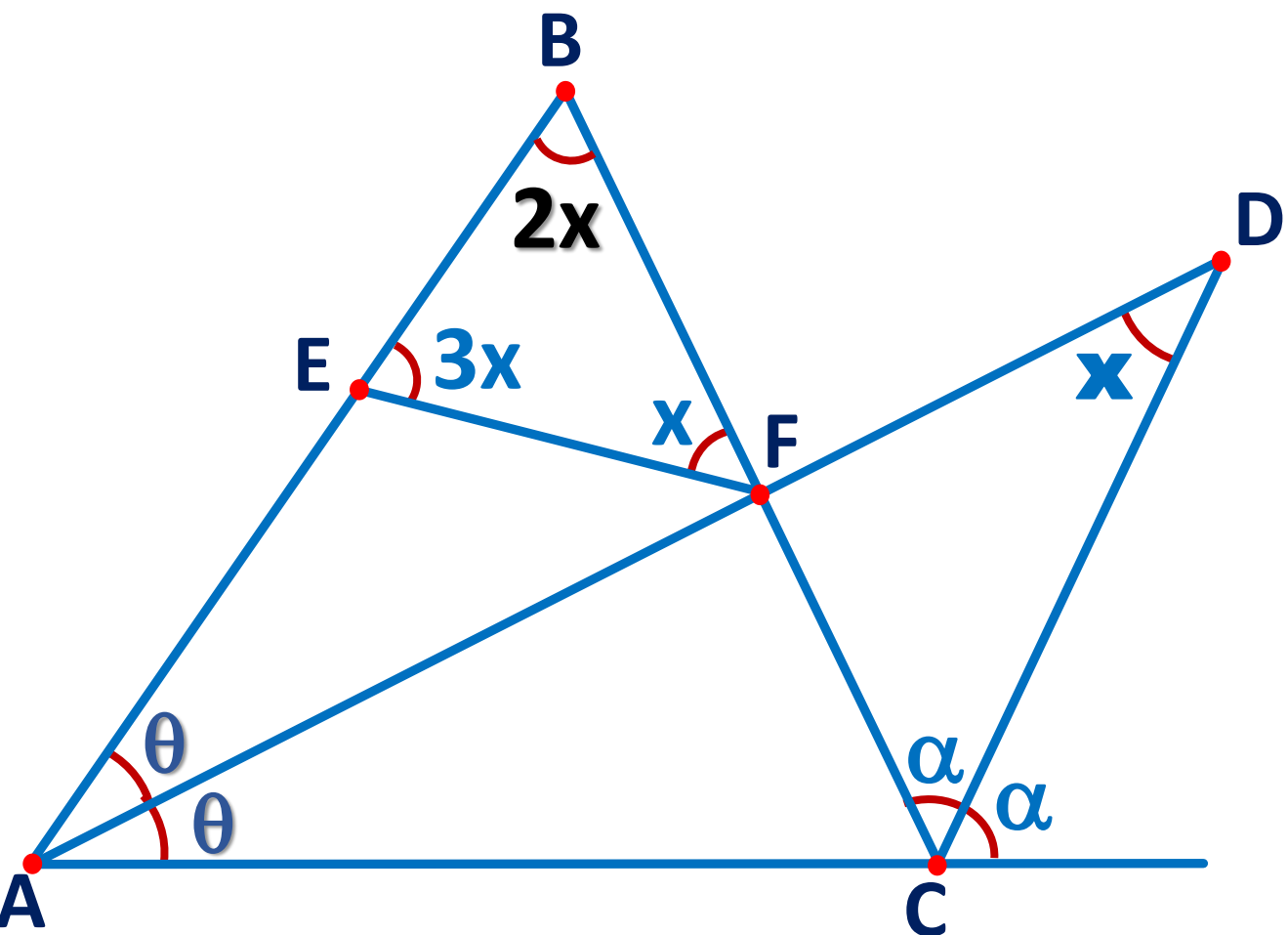


El $\triangle ABD$ es isósceles
 : $AB = AD = 7 + 4$

$AB = 11$



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



Por teorema:

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

Entonces:

$m \angle ABC = 2$

En el Δ

EBF:



$3x + 2x + x = 180^\circ$

$6x = 180^\circ$

$$x = 30^\circ$$