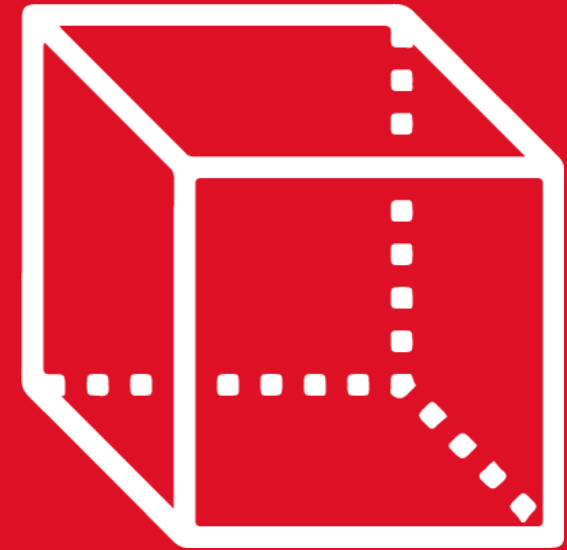




GEOMETRÍA

Capítulo 12

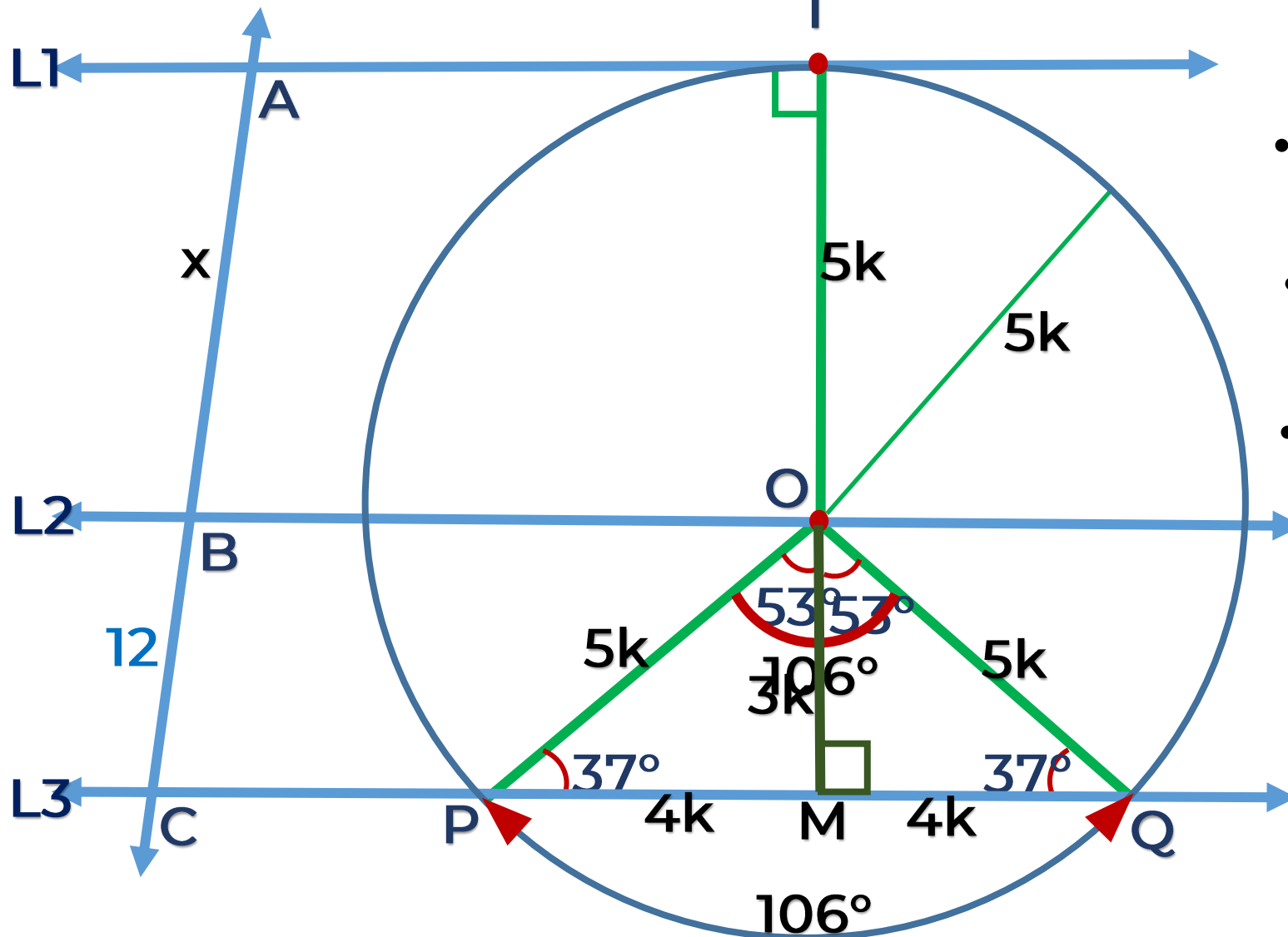
5th
SECONDARY




Tomo 3:

Helicoasesoría

 **SACO OLIVEROS**



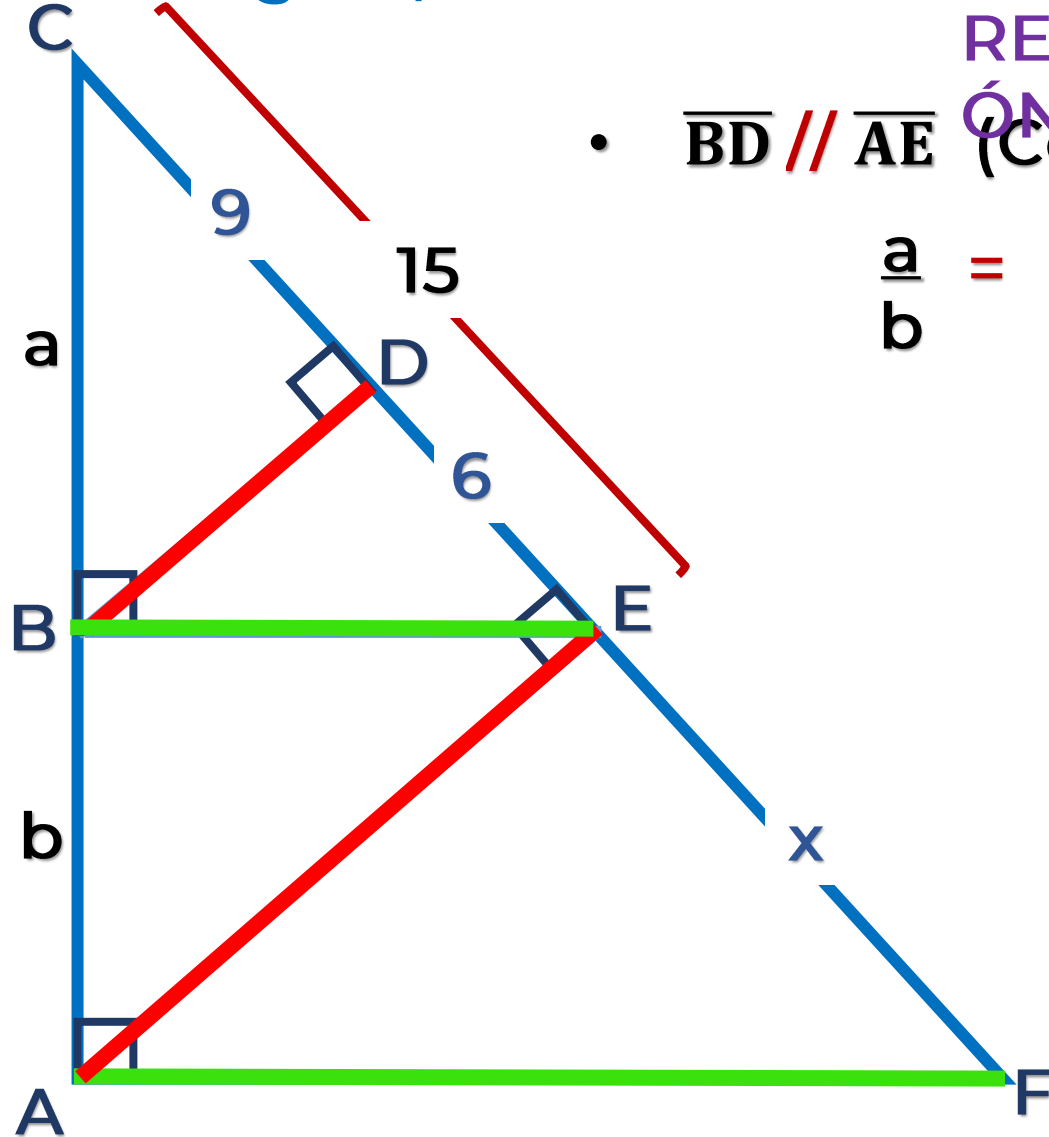
- Se traza el radio \overline{OT} y por teorema la
- $m\angle OTA = 90^\circ$
La prolongación de $\overline{T0}$ interseca a L_3 en
-  M aproximado de 37° y 53°
- Teorema de TALES

$$x = \frac{60}{3}$$

x = 20



2. En la figura, calcule x.



RESOLUCIÓN

- $\overline{BD} \parallel \overline{AE}$ (Corolario de Tales) $\overline{BE} \parallel \overline{AF}$ (Corolario de Tales)

$$\frac{a}{b} = \frac{9}{6} \dots\dots (1)$$

$$\frac{a}{b} = \frac{15}{x} \dots\dots (2)$$

- Reemplazando (1) en

$$\frac{3}{2} = \frac{15}{x}$$

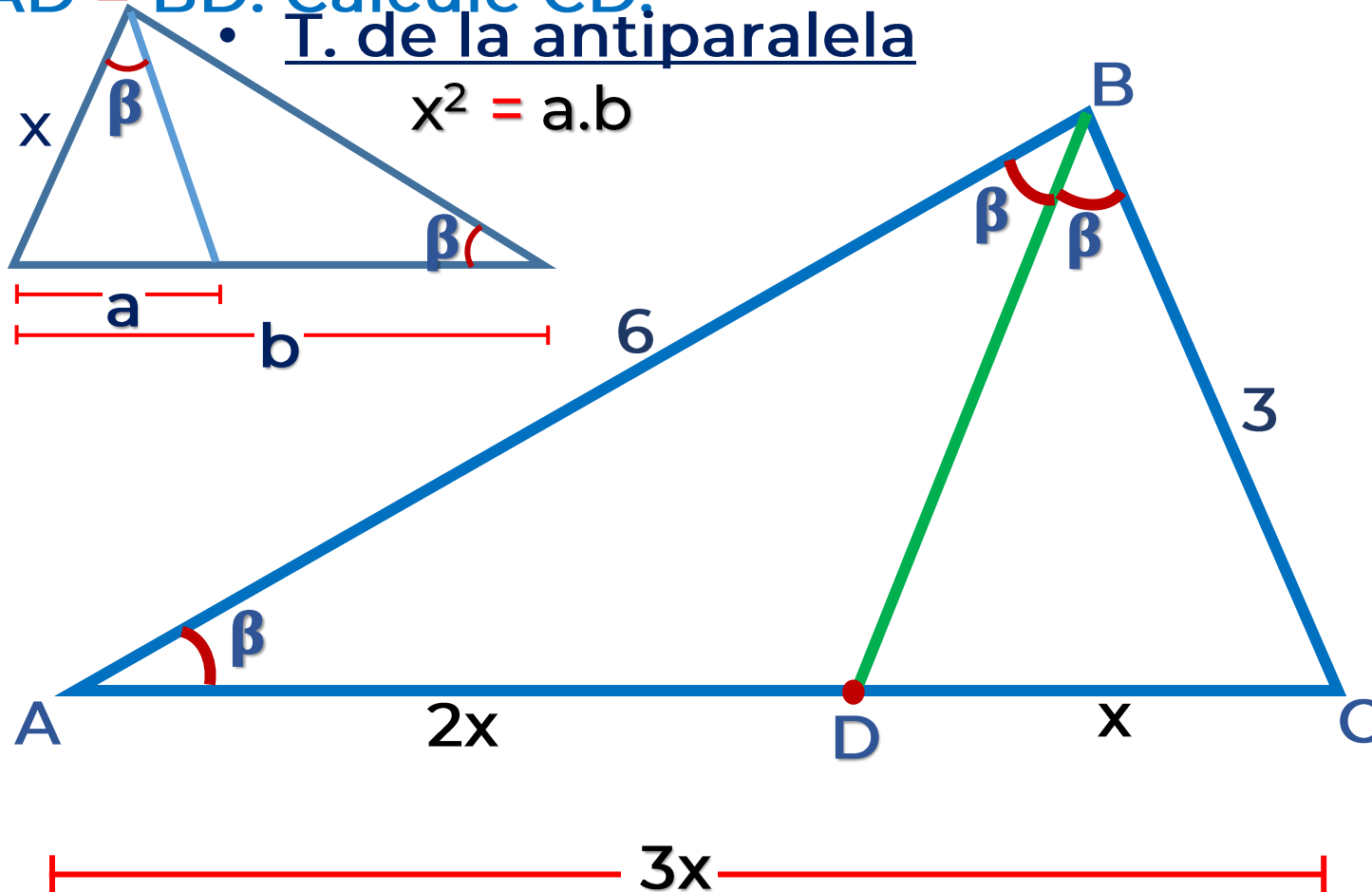
$$3x = 30$$

$$x = 10$$



3. En un triángulo ABC, $AB = 6$, $BC = 3$, se traza la bisectriz interior \overline{BD} y $AD = BD$. Calcule CD .

- T. de la antiparalela



RESOLUCIÓN

• $\triangle ABD$:

Calcule CD

- T. de la bisectriz interior

$$\frac{2}{6} = \frac{AD}{CD}$$

$$2(CD) = AD \quad CD = x \quad AD = 2x$$

- T. de la antiparalela

$$3^2 = (x)(3x)$$

$$9 = 3x^2$$

$$3 = x^2$$

$$\sqrt{3} = x$$



4. En la figura, O es centro de la semicircunferencia y $PC = 2(AC)$. Calcule OM

Dato

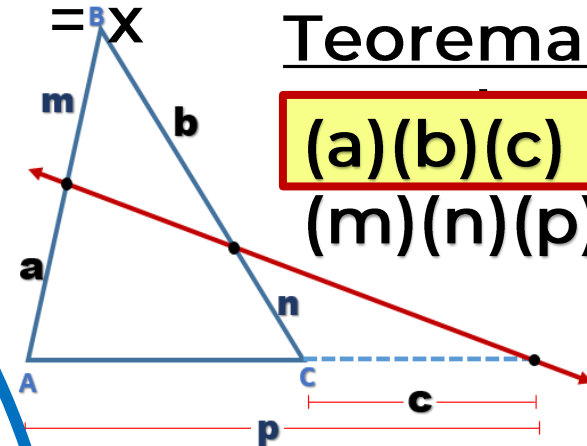
- $PC = 2(AC)$
- $AC = a$
- $PC = 2a$

RESOLUCIÓN

Calcule OM

Teorema de

$$(a)(b)(c) = (m)(n)(p)$$

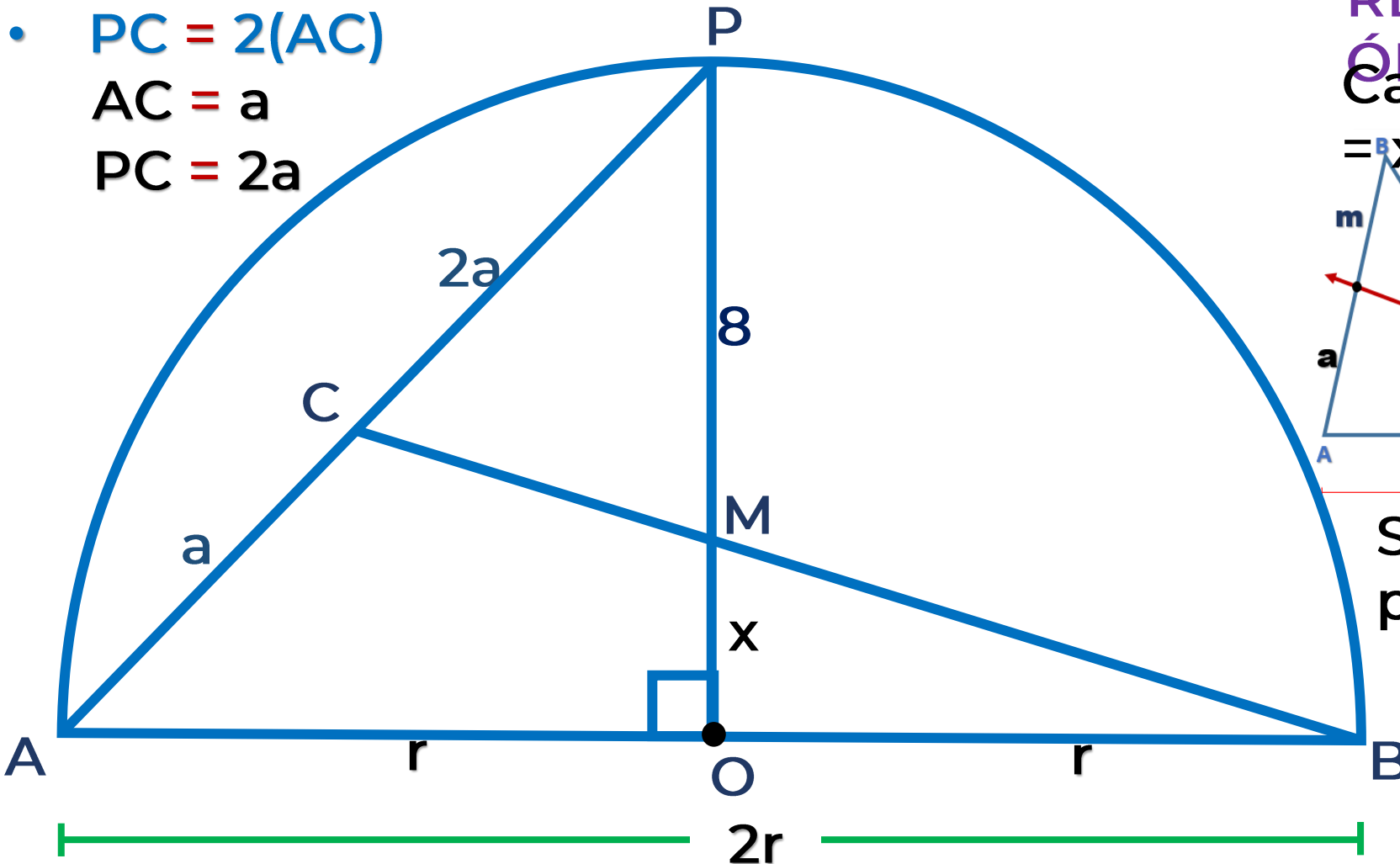


Se aplica en el

$$(a)(b)(c) = (m)(n)(p)$$

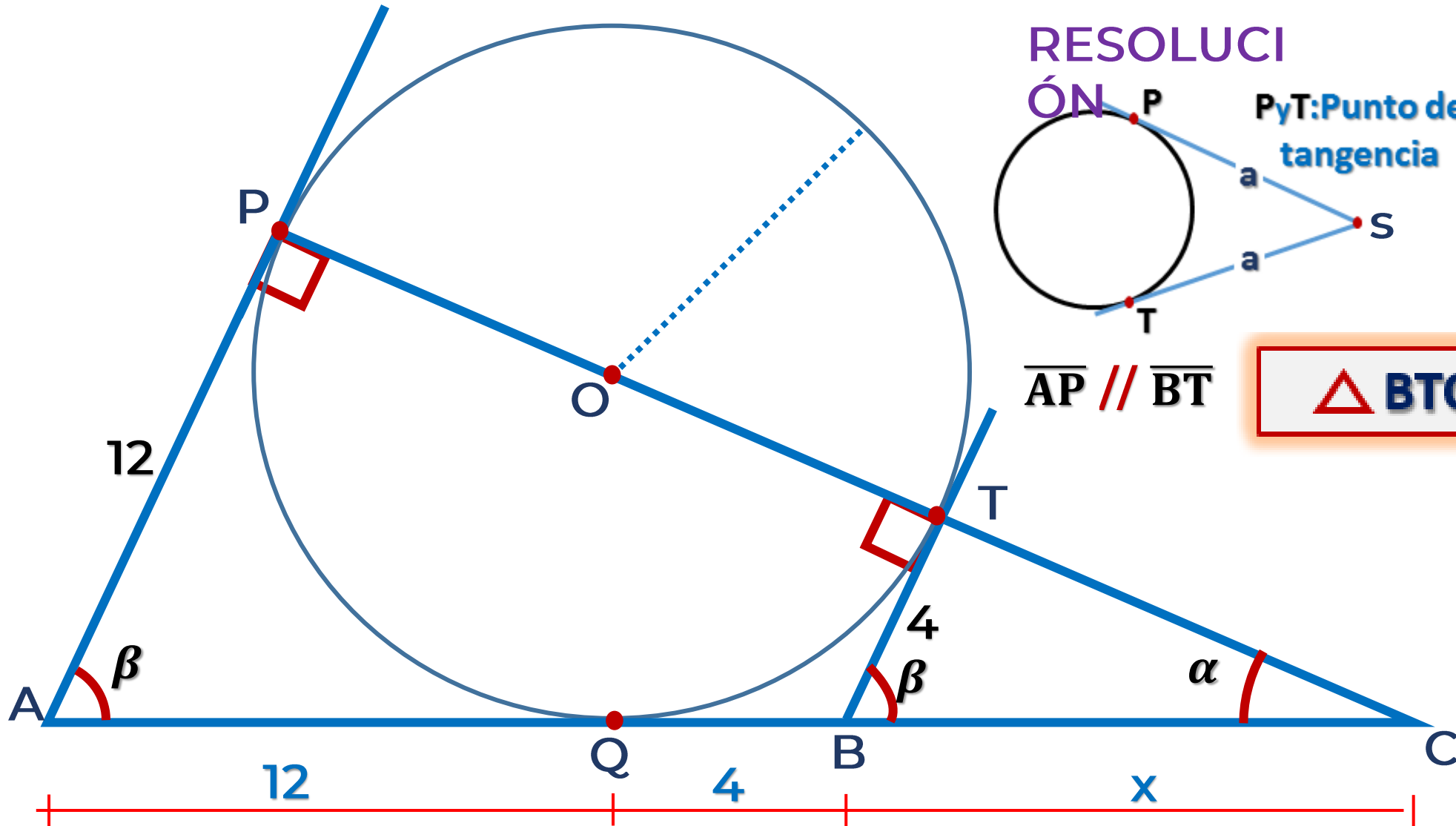
$$8 = 4x$$

$$2 = x$$

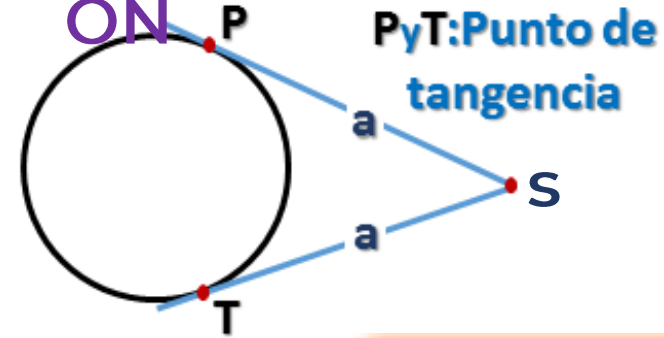




5. En la figura, P, Q y T son puntos de tangencias, calcule x.



RESOLUCIÓN



$\overline{AP} \parallel \overline{BT}$

$\triangle BTC \sim \triangle APC$

$$\frac{1}{3} = \frac{x}{x+16}$$

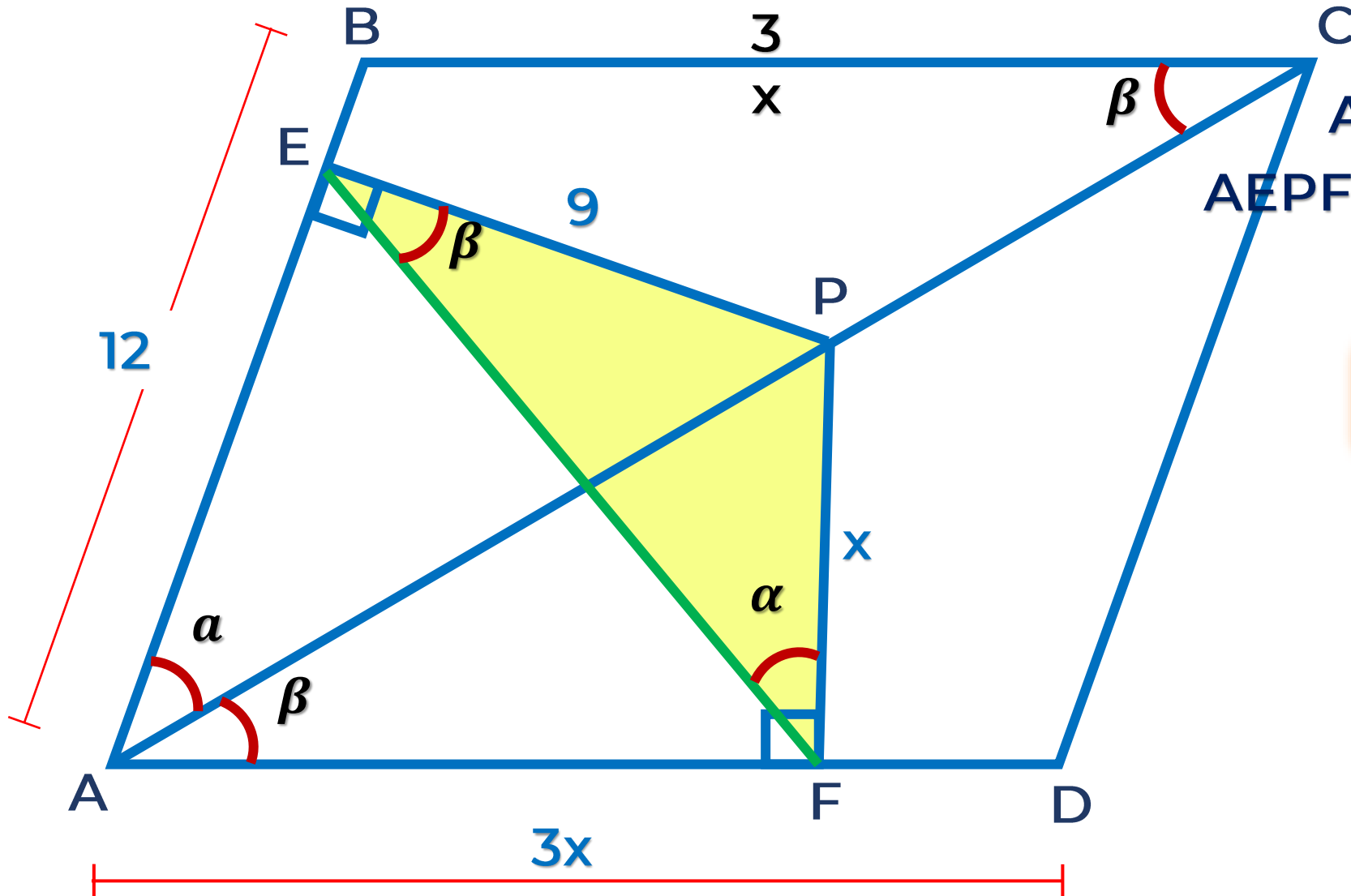
$$x + 16 = 3x$$

$$16 = 2x$$

$$8 = x$$



6. En la figura, ABCD es un romboide, calcule x.



RESOLUCIÓN

ABCD es romboide

AEPF es cuadrilátero inscriptible

- Se Traza \overline{EF} .

$$\triangle ABC \sim \triangle EPF$$

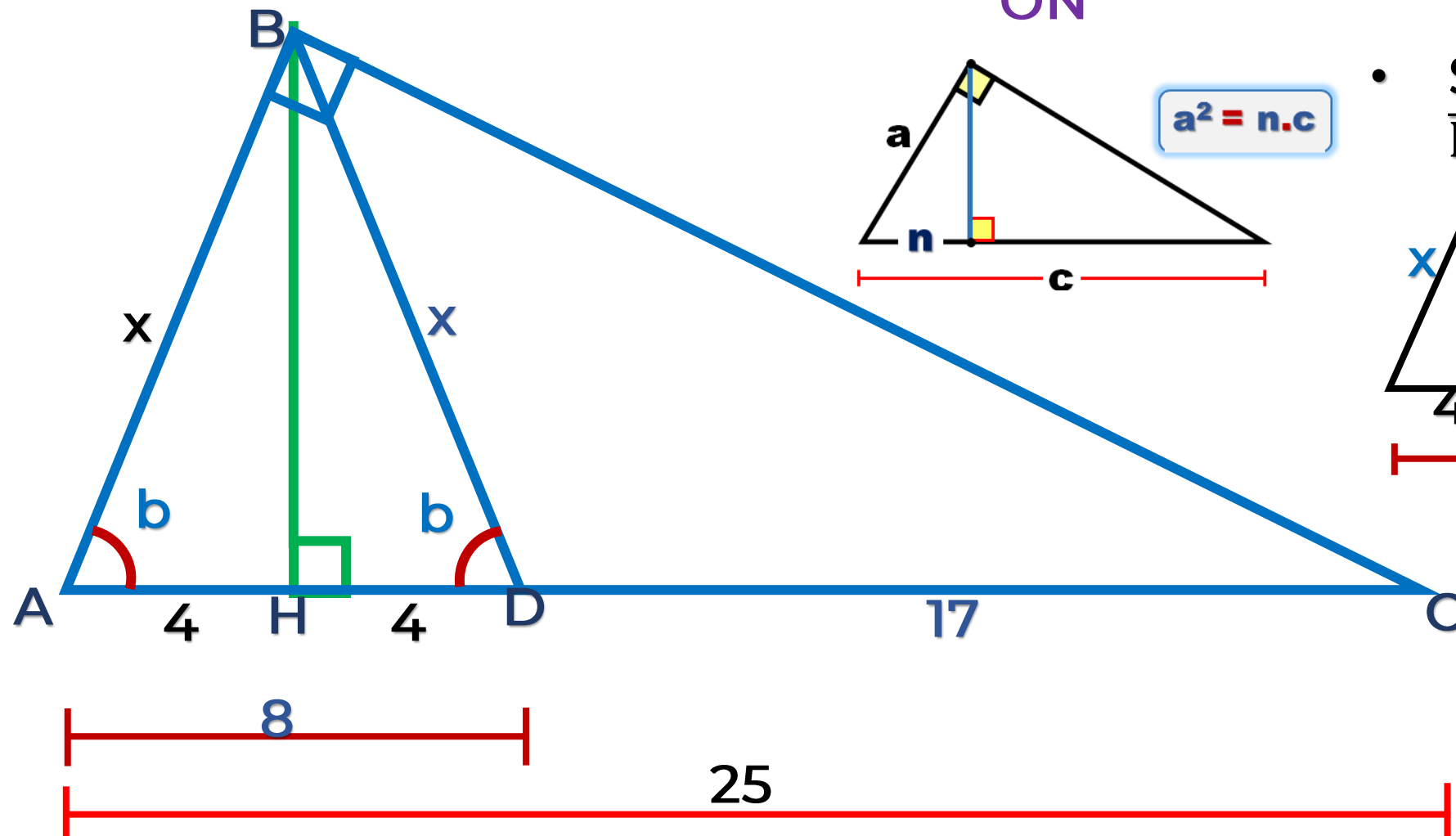
$$\frac{3x}{9} = \frac{12}{x}$$

$$x^2 = 36$$

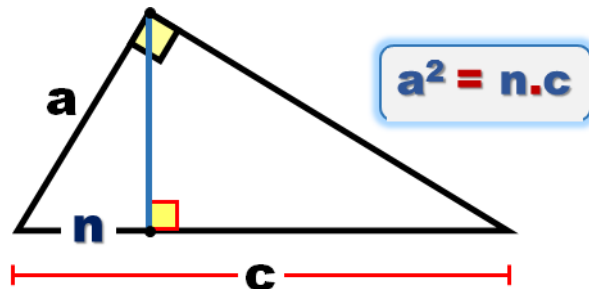
$$x = 6$$



7. En la figura, calcular x .



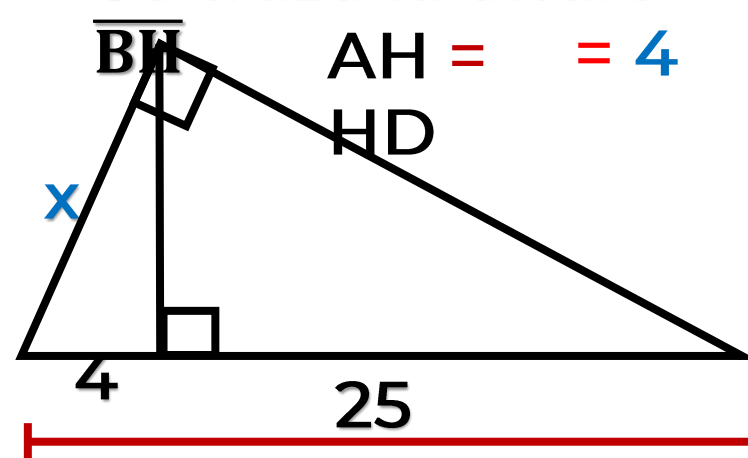
RESOLUCIÓN



$\triangle ABD$ es isósceles

$$AB = BD = x$$

• Se traza la altura



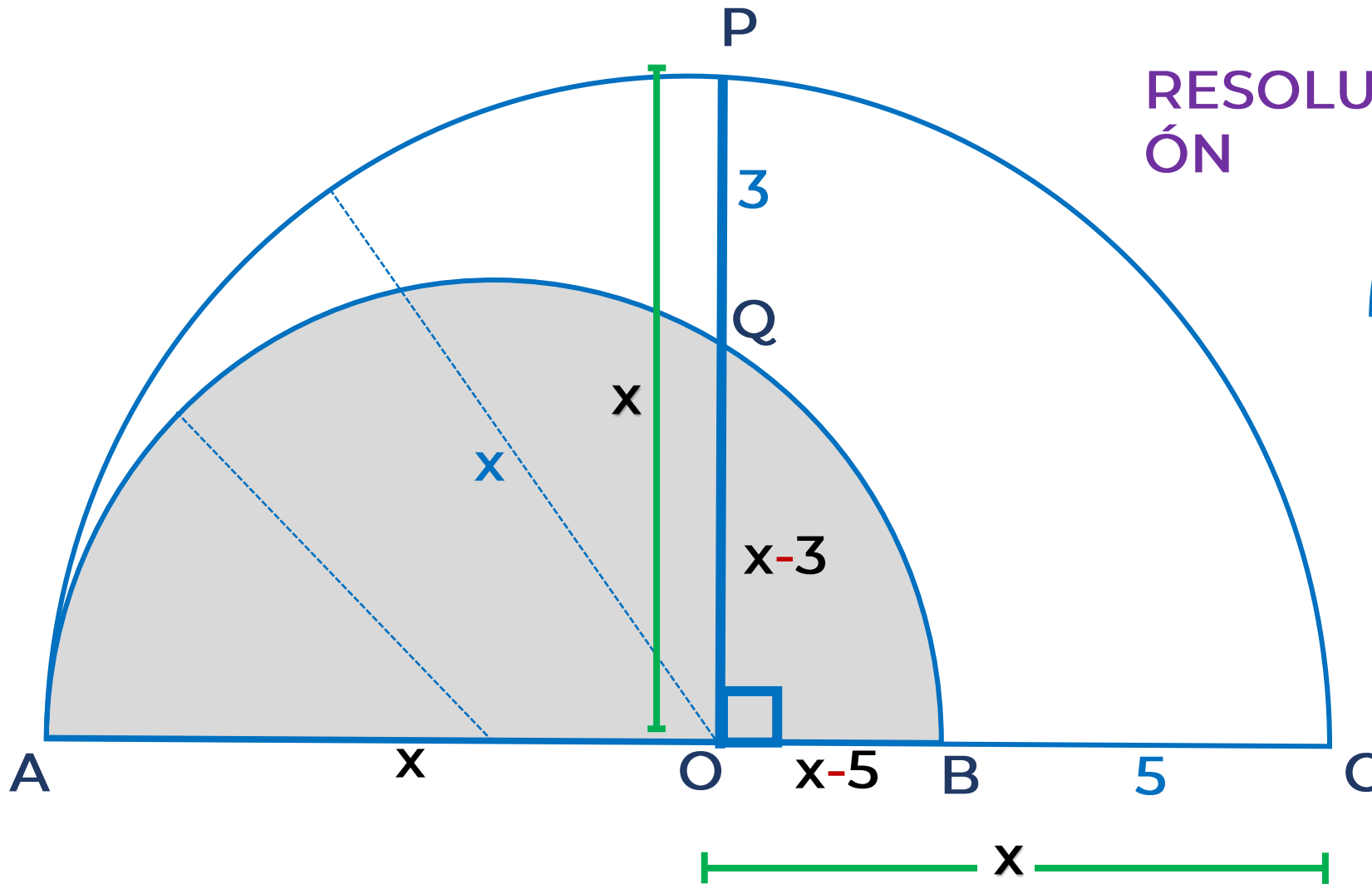
$$x^2 = 4(25)$$

$$x^2 = 100$$

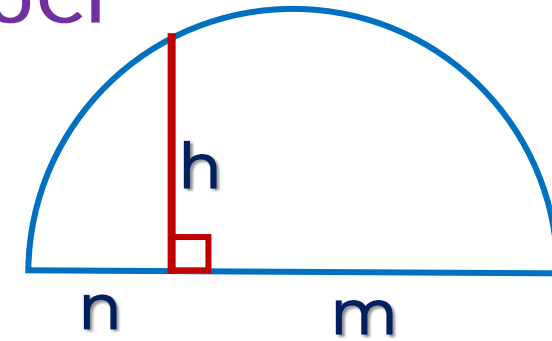
$$x = 10$$



8. En las siguientes semicircunferencias, calcule x.



RESOLUCIÓN



$$h^2 = n \cdot m$$

En el problema

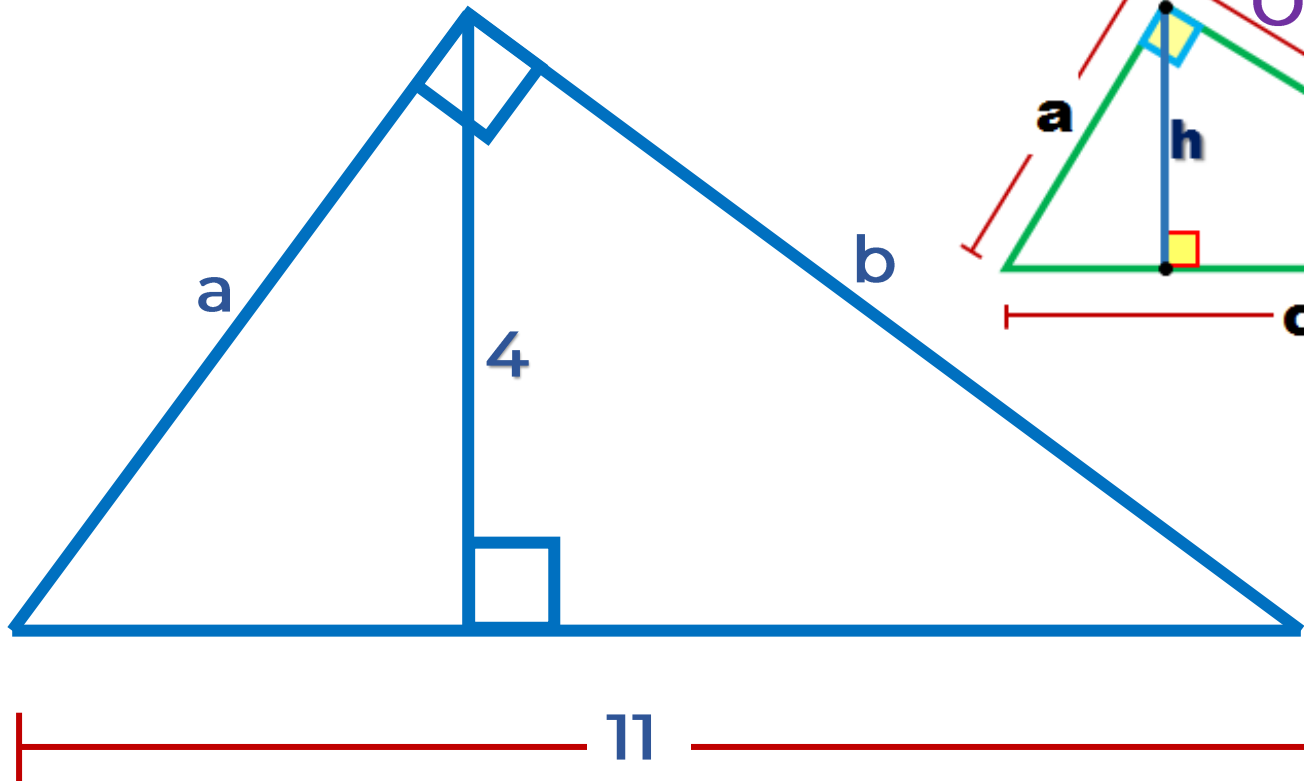
$$(x-3)^2 = x(x-5)$$

$$x^2 - 6x + 9 = x^2 - 5x$$

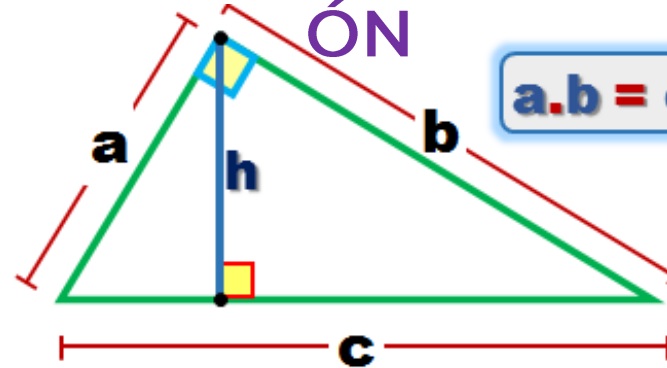
$$9 = x$$



9. En la figura, calcular $a + b$.



RESOLUCIÓN



$$a \cdot b = c \cdot h$$

- T. Pitágoras

$$11^2 = a^2 + b^2$$

$$121 = a^2 + b^2 \dots$$

(1)

- Teorema: $a \cdot b = 11 \cdot 4$

$$a \cdot b = 44 \dots$$

- Binomio al cuadrado

$$(a + b)^2 = a^2 + b^2 + 2ab \dots (3)$$

Reemplazando (1) y (2)

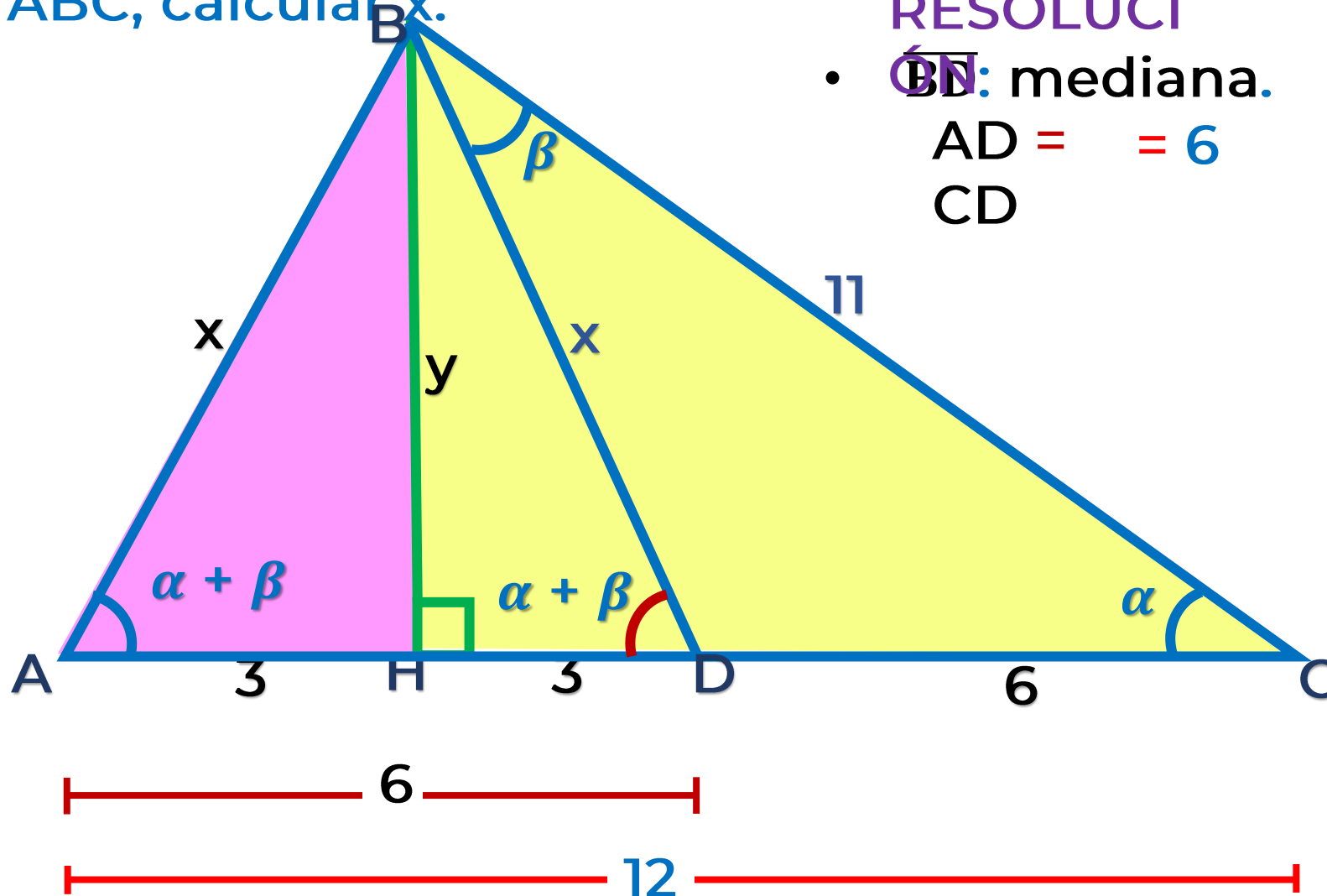
$$(a + b)^2 = 121 + 2(44)$$

$$(a + b)^2 = 209$$

$$a + b = \sqrt{209}$$



10. En la figura, \overline{BD} es una mediana del triángulo ABC, calcular x .



RESOLUCI

- \overline{BD} : mediana.

$$\overline{AD} = \overline{CD} = 6$$

$\triangle ABD$ es isósceles

$$\overline{AB} = \overline{BD} = x$$

- Se traza la altura \overline{BH}

$$\overline{AH} = 3$$

$$\overline{HD} = 3$$

$\triangle BCH$, T. Pitágoras

$$11^2 = 9^2 + y^2 \quad 40 = y^2$$

$\triangle AHB$, T. Pitágoras

$$x^2 = 3^2 + y^2$$

$$x^2 = 3^2 + 40$$

$$x^2 = 49$$

$$x = 7$$