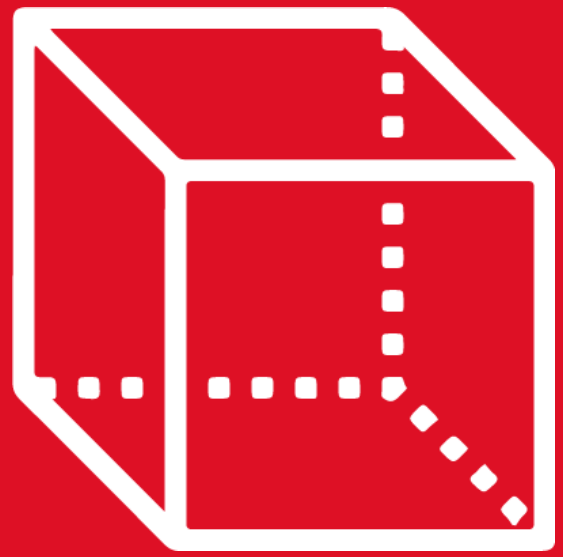
GEOMETRÍA

Tomo 4



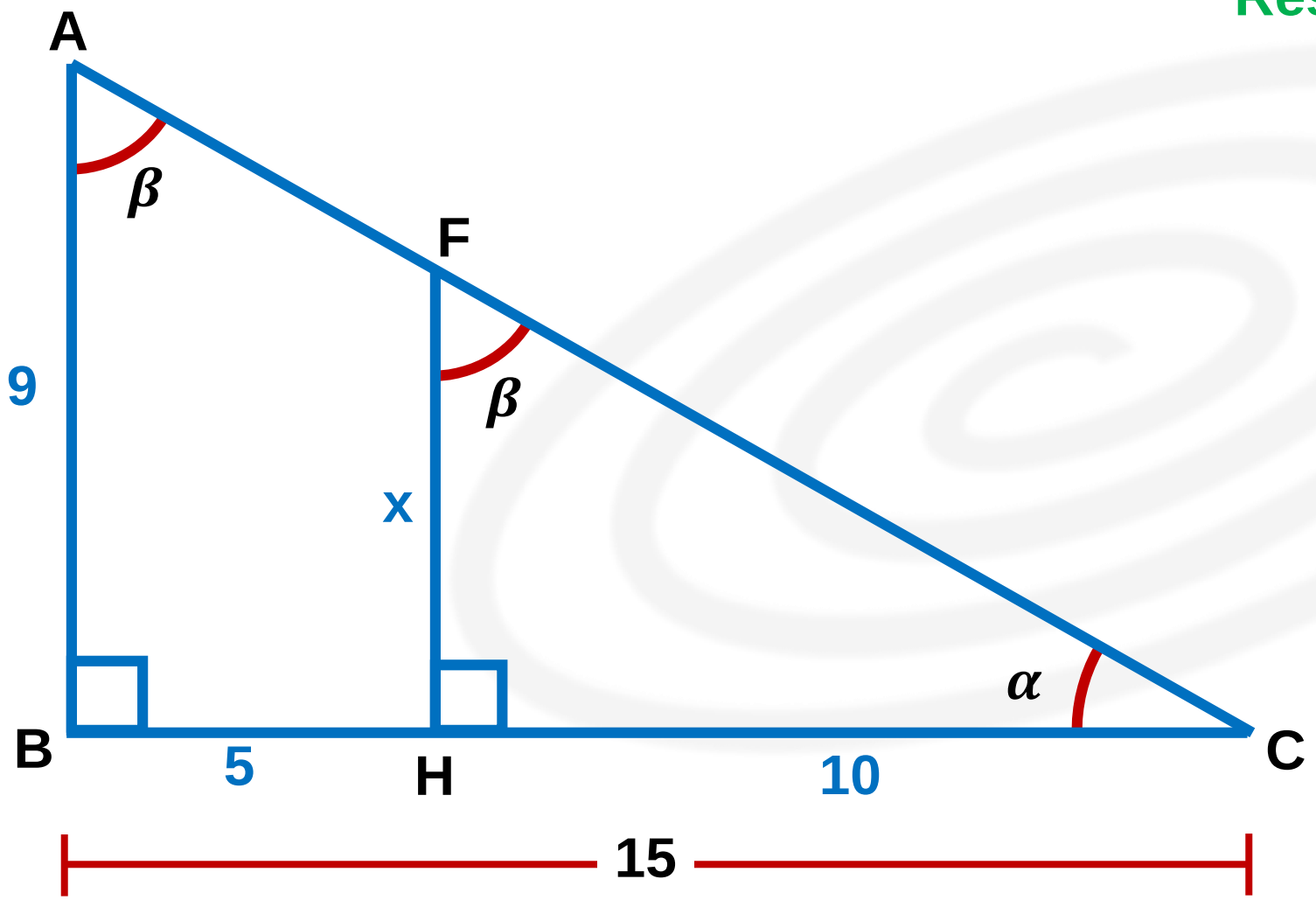
4th

SECONDARY

RETROALIMENTACIÓN

SACO OLIVEROS

1. En la figura, calcule x.



Resolución

Piden x

$\overline{AB} \parallel \overline{FH}$

$\Delta FHC \sim \Delta ABC$

$$\frac{x}{9} = \frac{10}{15} = \frac{2}{3}$$

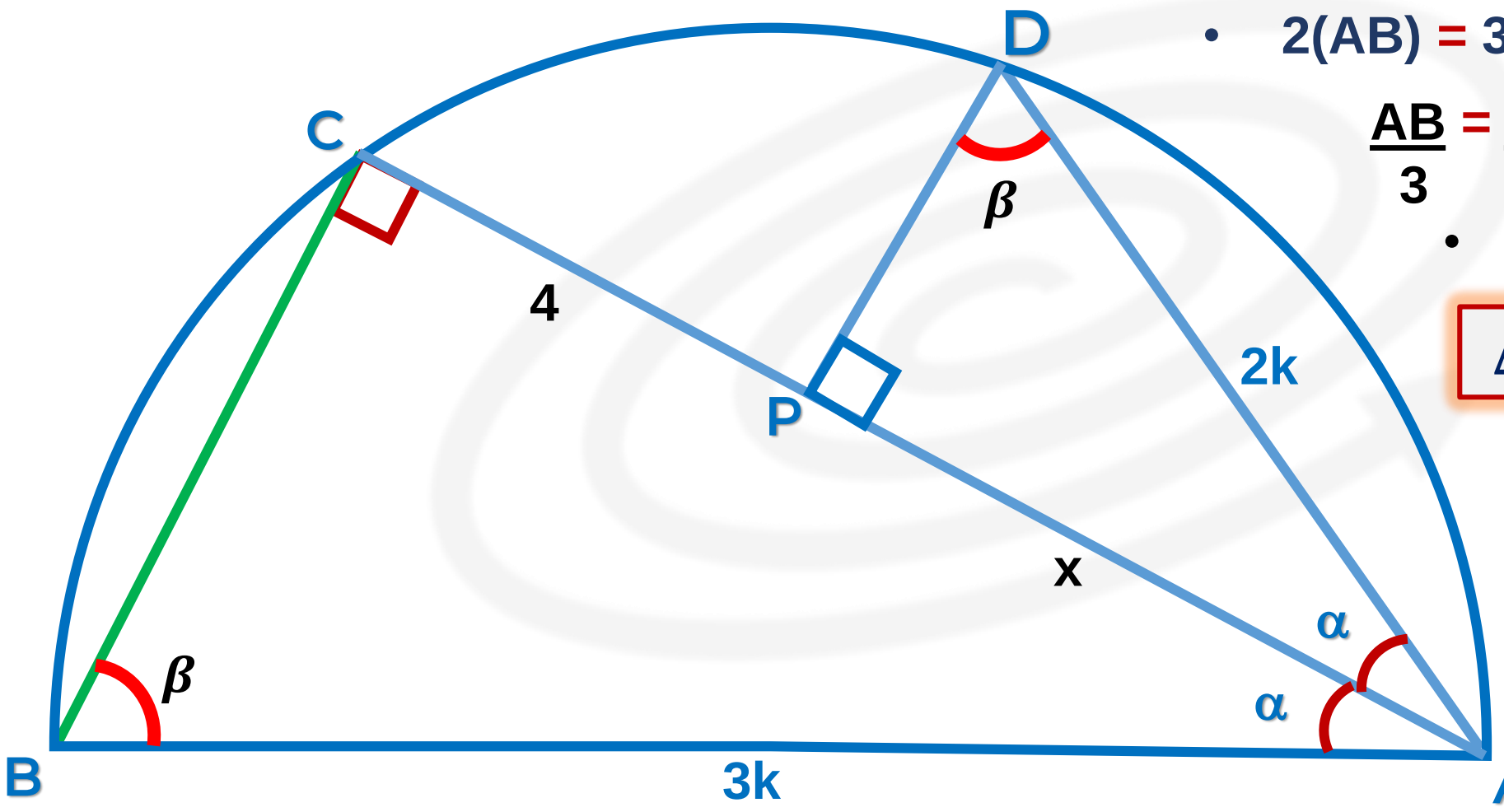
$3x = 18$

$x = 6$

02. En la semicircunferencia, 2(AB) = 3(AD) y PC = 4. Calcule AP.

Resolución

Piden x



- $2(AB) = 3(AD)$

$$\frac{AB}{3} = \frac{AD}{2} = K$$

$AB = 3K$

$AD = 2K$

- Trazamos $\overline{BC}$.

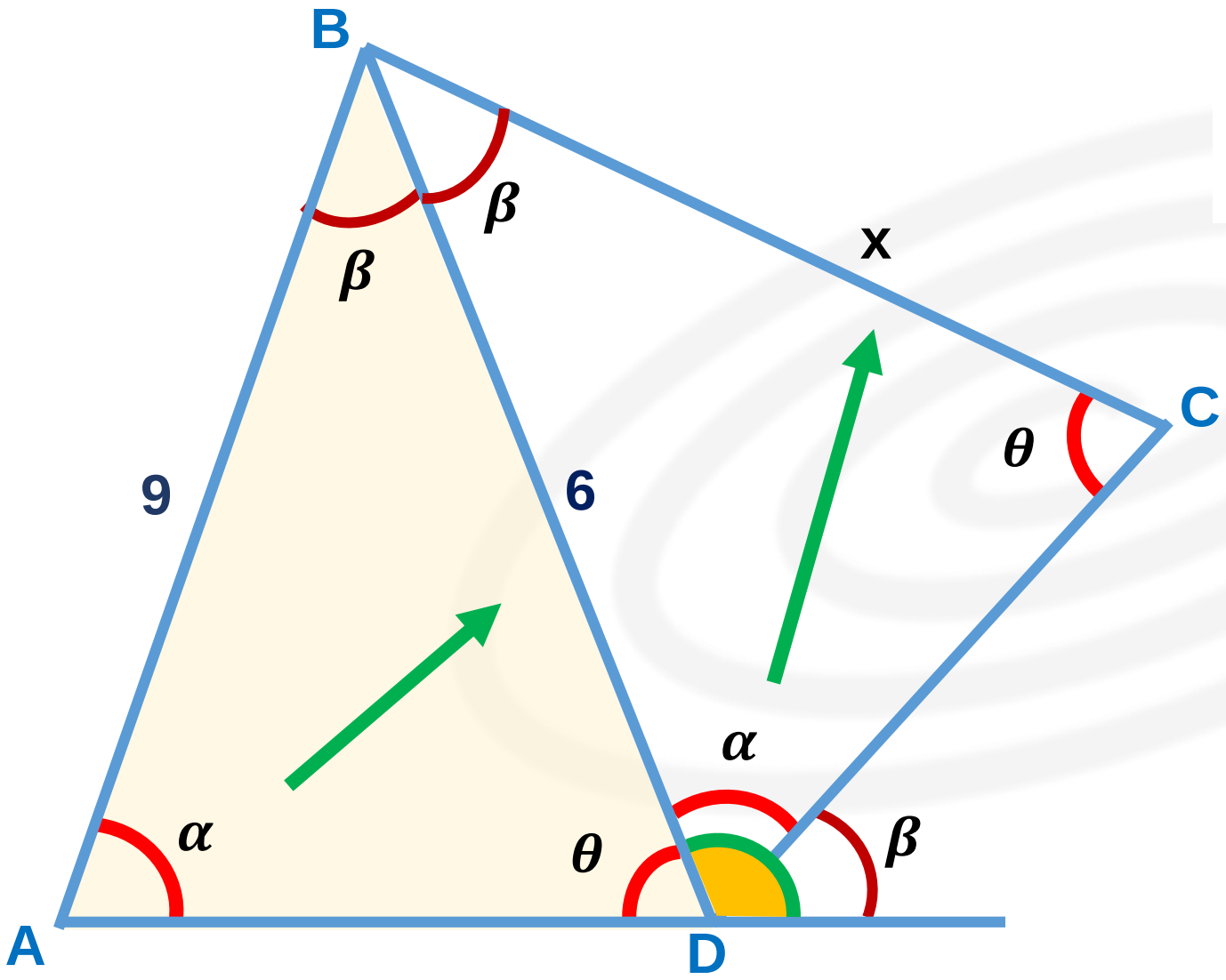
$\Delta ABC \sim \Delta ADP$

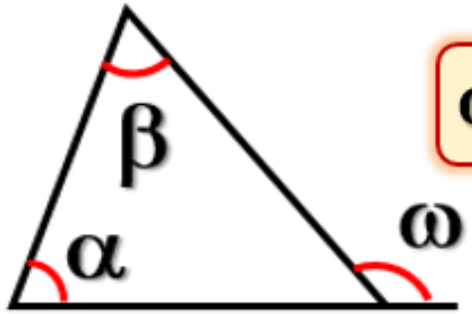
$$\frac{3k}{2k} = \frac{x+4}{x}$$

$$3x = 2x + 8$$

$$x = 8$$

03. En la figura, calcule x.





$$\omega = \alpha + \beta$$

Resolución

Piden x

$$\Delta ABD \sim \Delta DBC$$

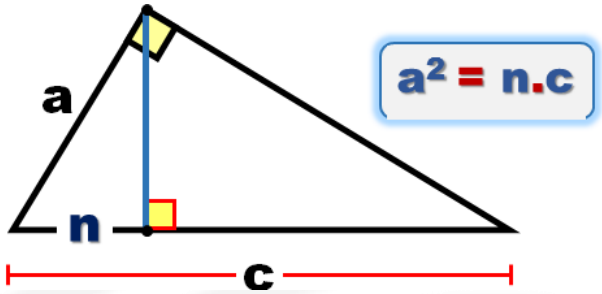
$$\frac{x}{6} = \frac{9}{9} \quad (9 \div 3 = 3,\ 6 \div 3 = 2)$$

$$3x = 12$$

$$x = 4$$

04. En la figura, calcular x.

Resolución



$a^2 = n.c$

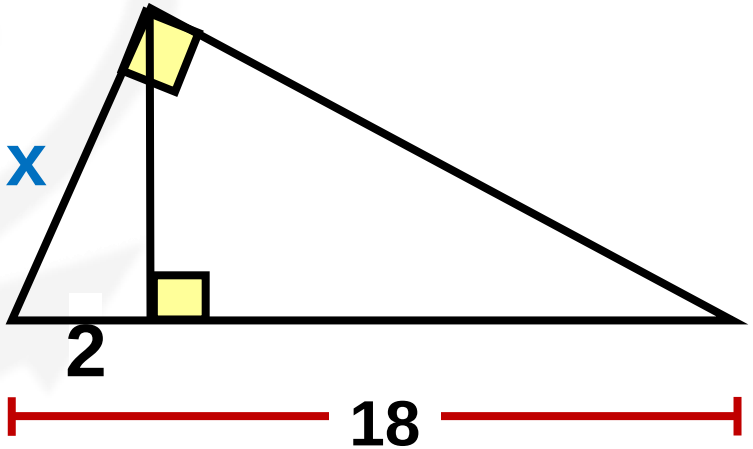
Piden x

- Δ ABD : Isósceles

  AB = BD = x

- Trazamos la altura $\overline{BH}$

  AH = HD = 2

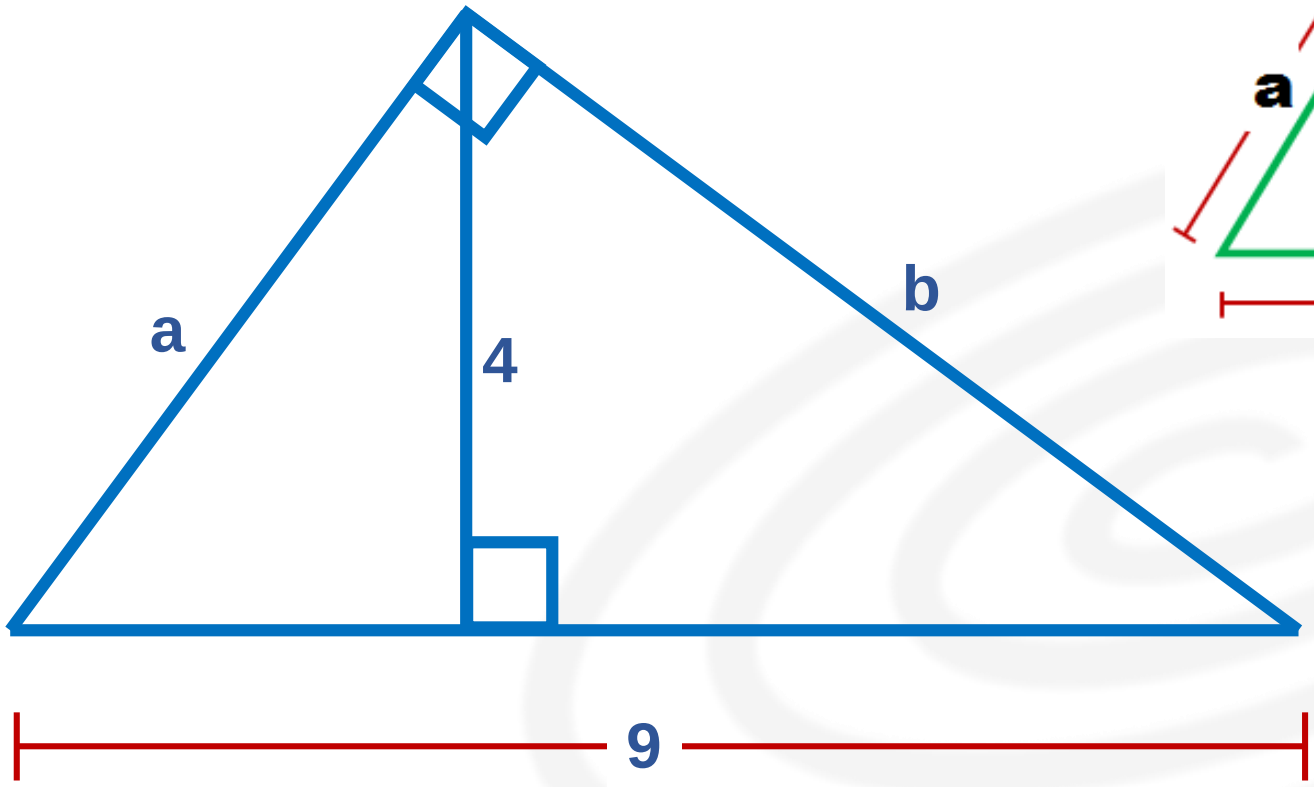


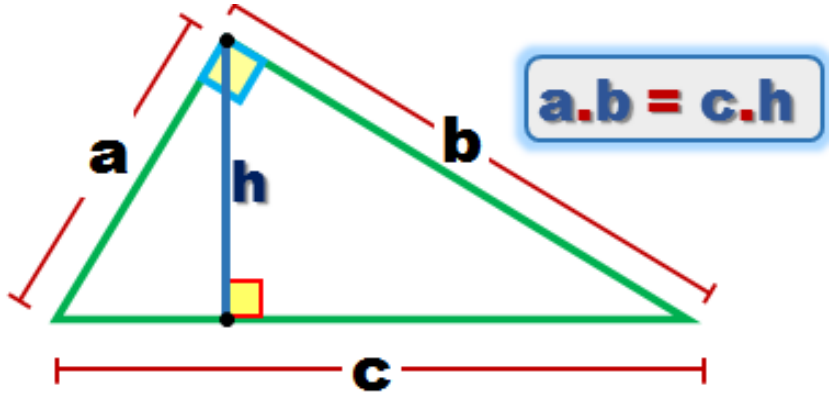
$x^2 = 2(18)$

$x^2 = 36$

x = 6

05. En la figura, calcular a + b.





- $a.b = 9.4$

$a.b = 36$

- **Binomio al cuadrado**

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

$(a + b)^2 = 81 + 2(36)$

$(a + b)^2 = 153$

$a + b = 3\sqrt{17}$

Resolución

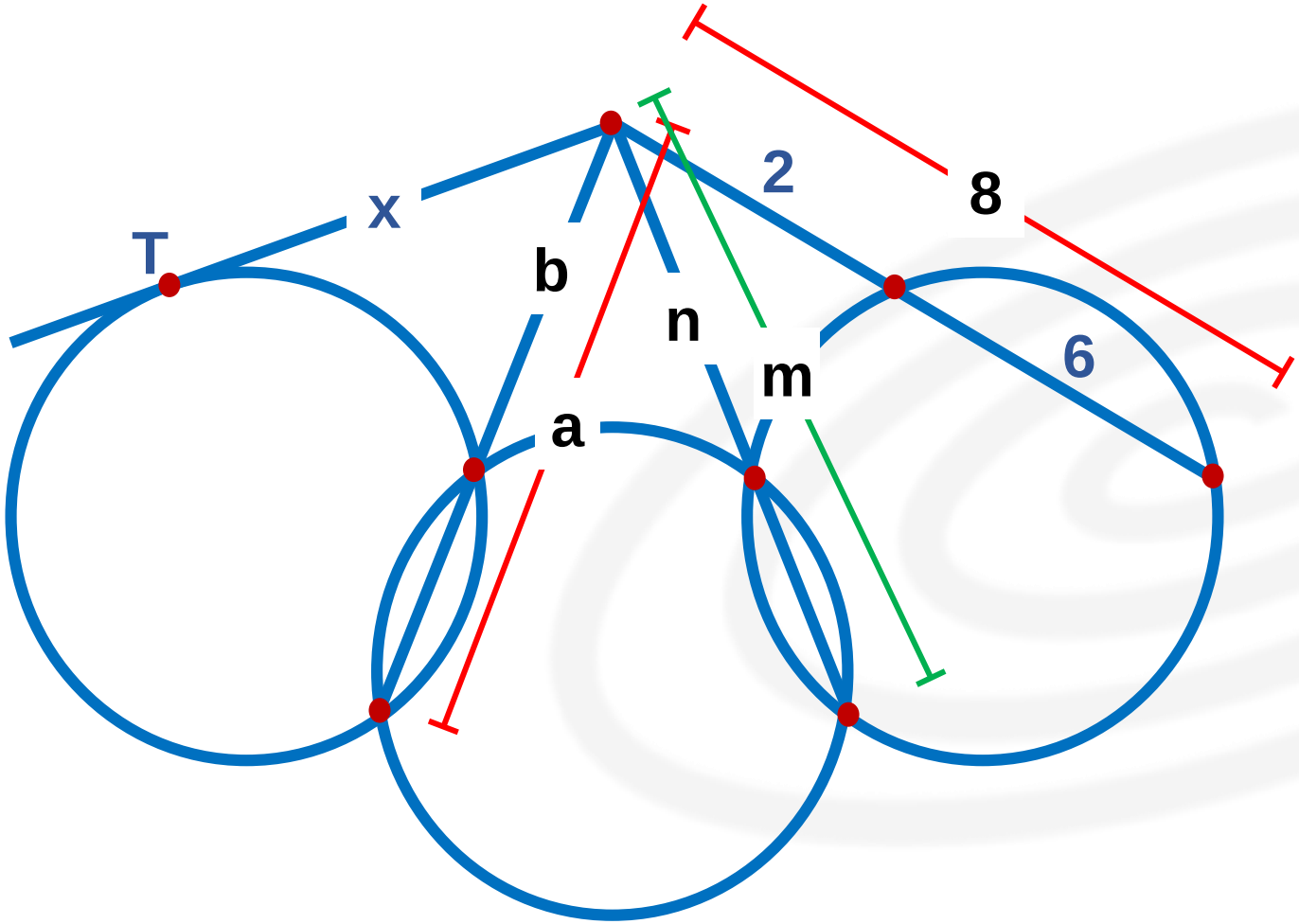
Piden x

- **T. Pitágoras**

$9^2 = a^2 + b^2$

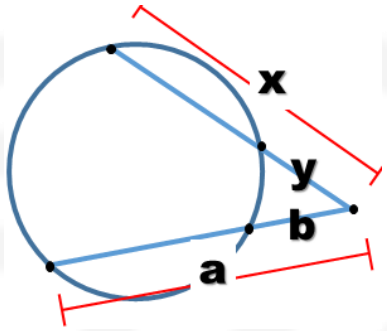
$81 = a^2 + b^2$

06. Calcule x si T es punto de tangencia.



Resolución

Piden x



T. de las Secantes

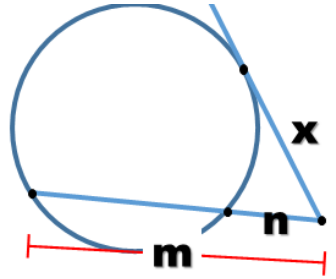
$x.y = a.b$

- $m.n = 8.2$

  $m.n = 16$

- $a.b = m.n$

  $a.b = 16$



T. de la Tangente

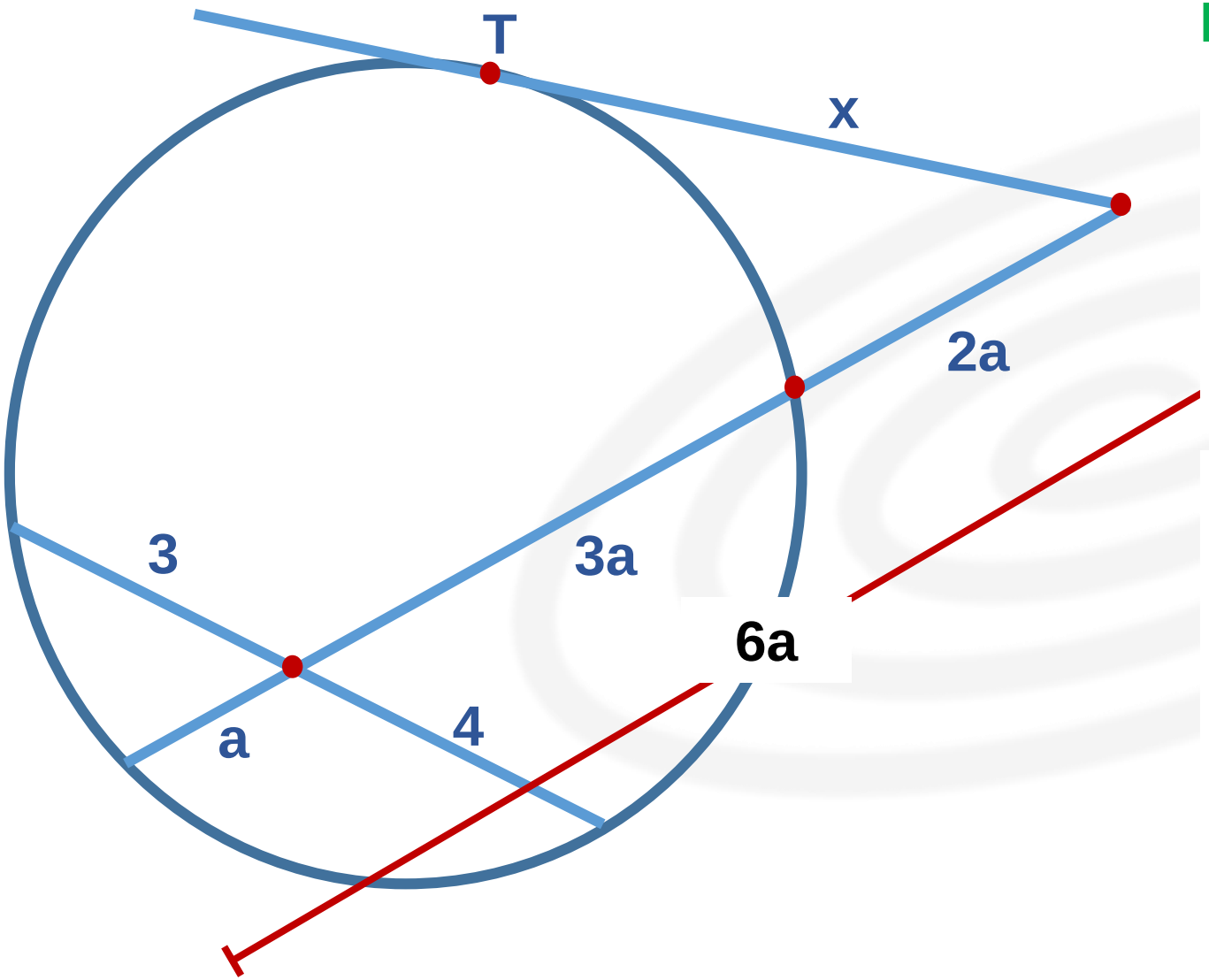
$x^2 = m.n$

- $x^2 = a.b$

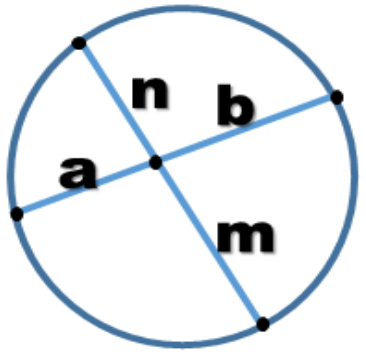
  $x^2 = 16$

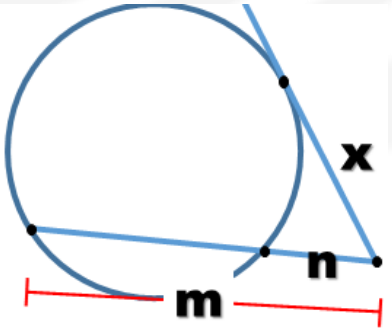
$x = 4$

07. Calcule x, si T es punto de tangencia.



Resolución





T. de la Tangente

$x^2 = m.n$

Piden x

T. de Cuerdas

$a.b = m.n$

$(3a).(a) = (4).(3)$

$a^2 = 4$

$a = 2$

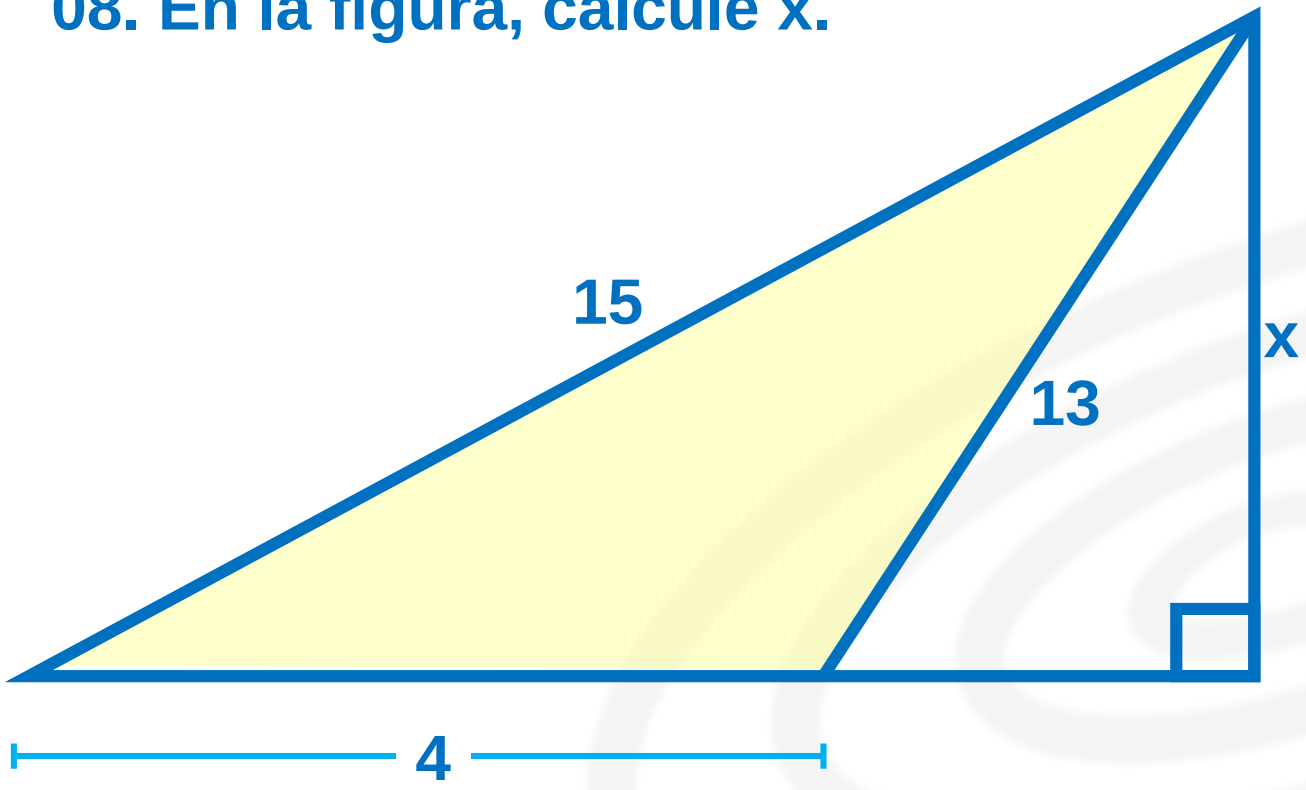
$x^2 = 6a.2a$

$x^2 = 12.4$

$x^2 = (3.4).4$

$x = 4\sqrt{3}$

08. En la figura, calcule x.

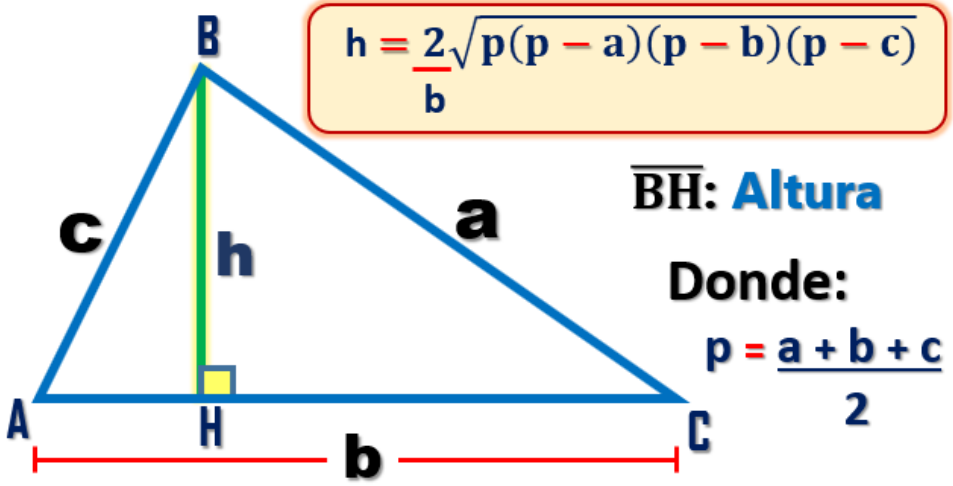


Resolución Piden x

- **Calculamos el semiperímetro**

$$p = \frac{15 + 13 + 4}{2} \qquad p = 16$$

Teorema de Herón



$$h = \frac{2\sqrt{p(p-a)(p-b)(p-c)}}{b}$$

$\overline{BH}$: Altura

Donde:

$$p = \frac{a+b+c}{2}$$

- **Por teorema de Herón**

$$x = \frac{2\sqrt{16(16-13)(16-4)(16-15)}}{4}$$

$$x = \frac{1\sqrt{16(3)(12)(1)}}{2} \qquad x = \frac{1(4)(6)(1)}{2}$$

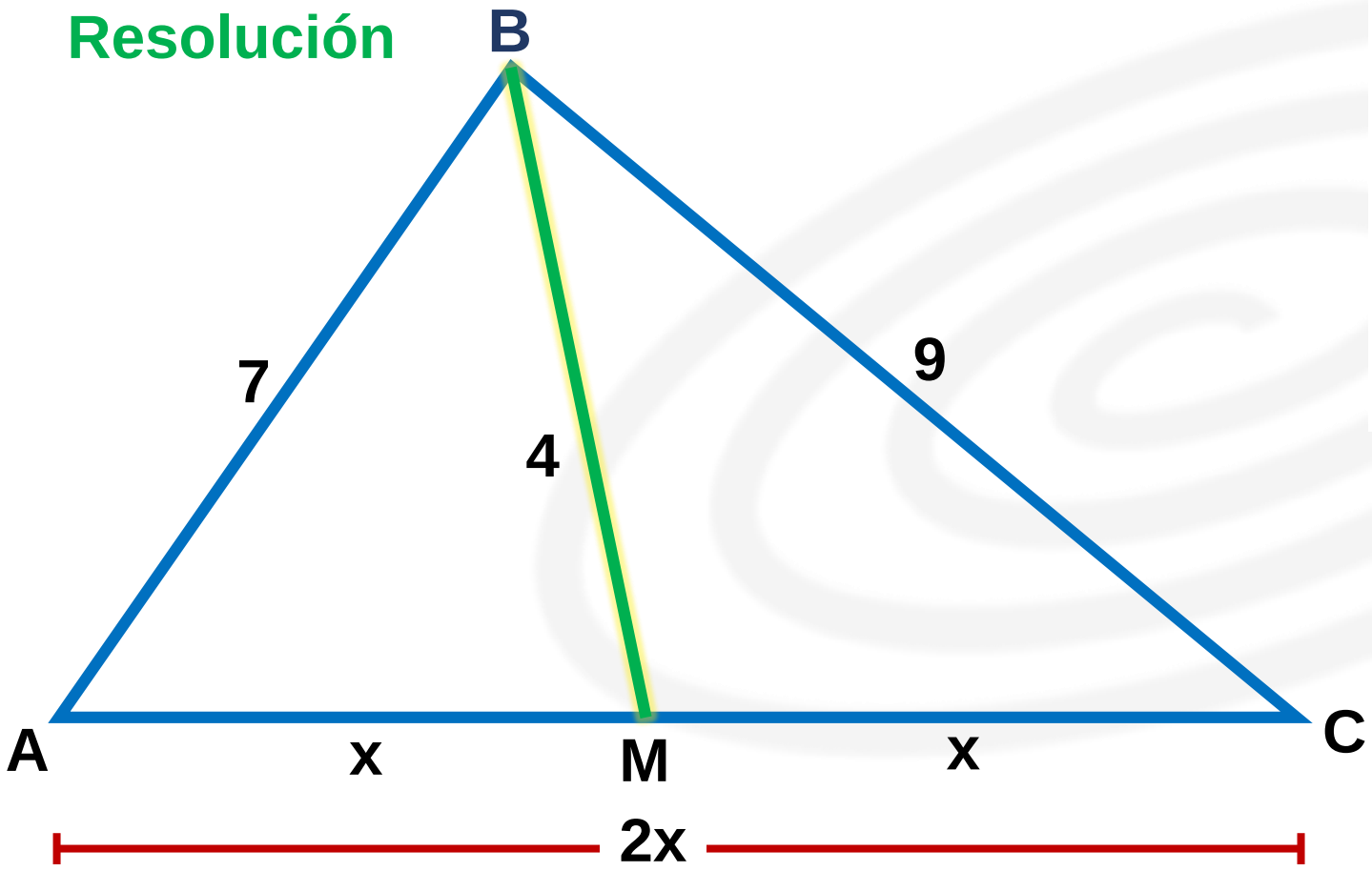
36

$$x = 12$$

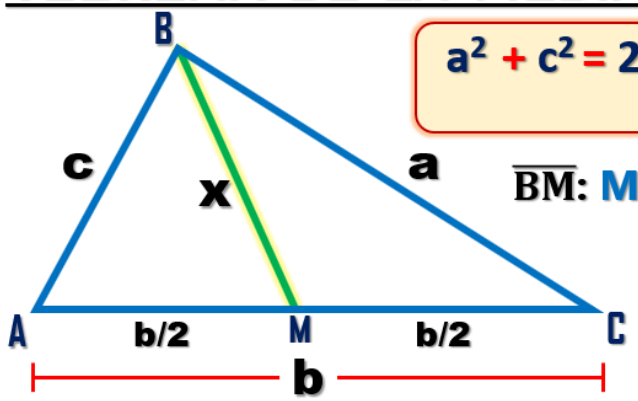
9. En un triángulo ABC se traza la mediana $\overline{BM}$, AB = 7, BC = 9 y BM = 4. Calcule AM.

Piden x

Resolución



TEOREMA DE LA MEDIANA



$a^2 + c^2 = 2x^2 + \frac{b^2}{2}$

$\overline{BM}$: Mediana

$$9^2 + 7^2 = 2(4)^2 + \frac{(2x)^2}{2}$$

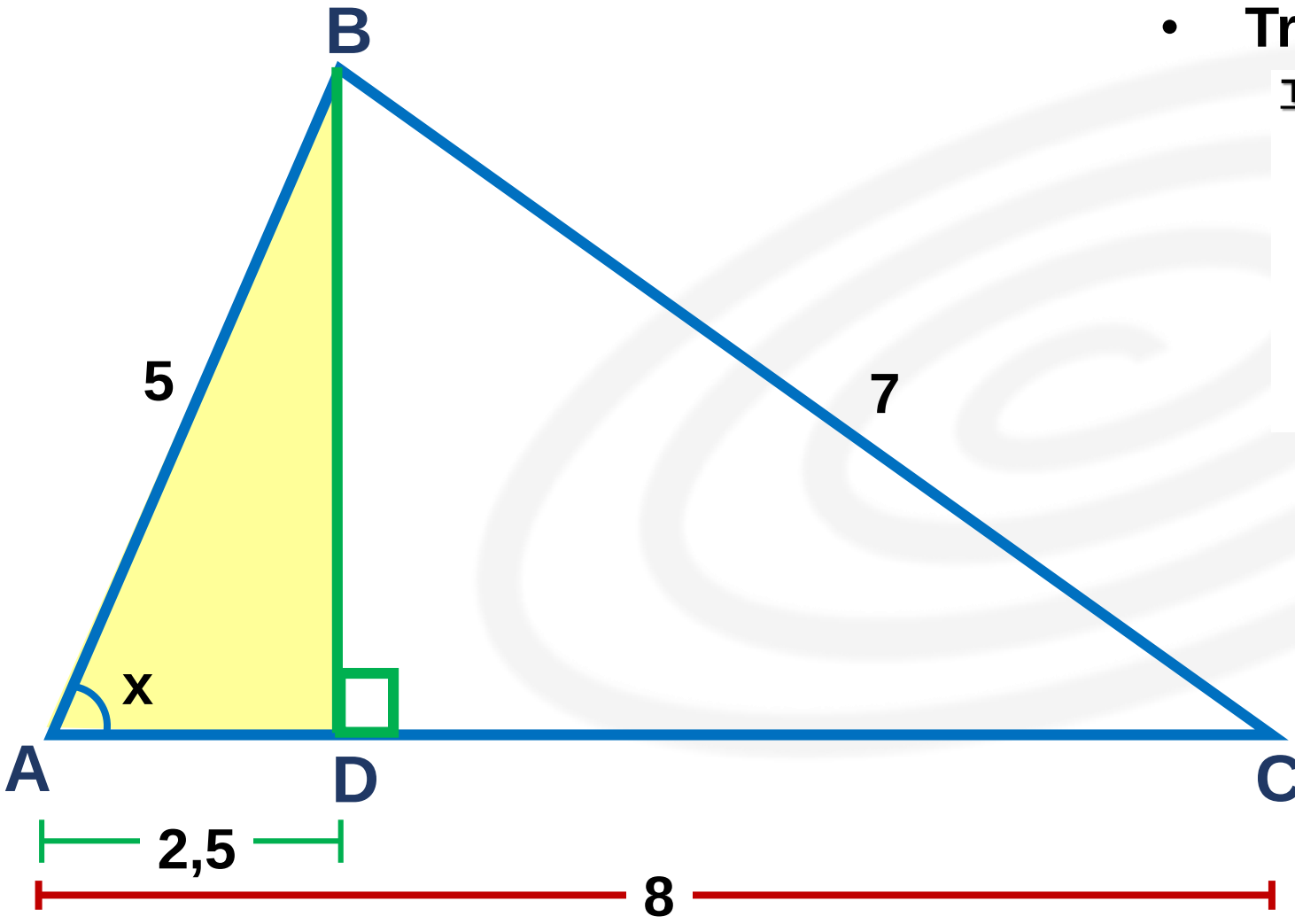
$$81 + 49 = 32 + 2x^2$$

$$98 = 2x^2$$

$$49 = x^2$$

$$x = 7$$

10. En la figura, calcule x.

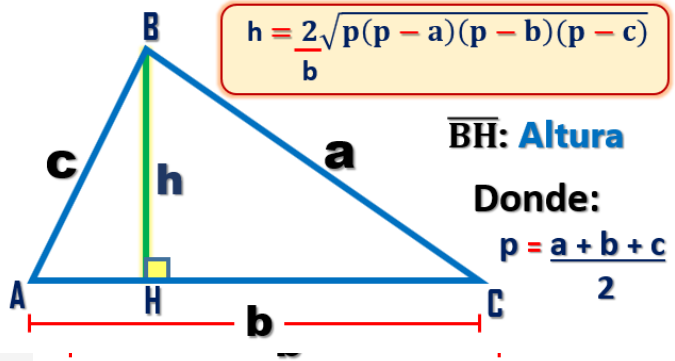


Resolución

Piden x

- Trazamos la altura $\overline{BD}$

TEOREMA DE HERÓN



$$h = \frac{2}{b}\sqrt{p(p-a)(p-b)(p-c)}$$

$\overline{BH}$: Altura

Donde:

$$p = \frac{a+b+c}{2}$$

$$7^2 = 8^2 + 5^2 - 2(8)(m)$$

$$49 = 64 + 25 - 16m$$

$$16m = 40$$

$$m = 2,5$$

- $\triangle ABD$: Notable de 30° y 60°

$$x = 60^\circ$$