

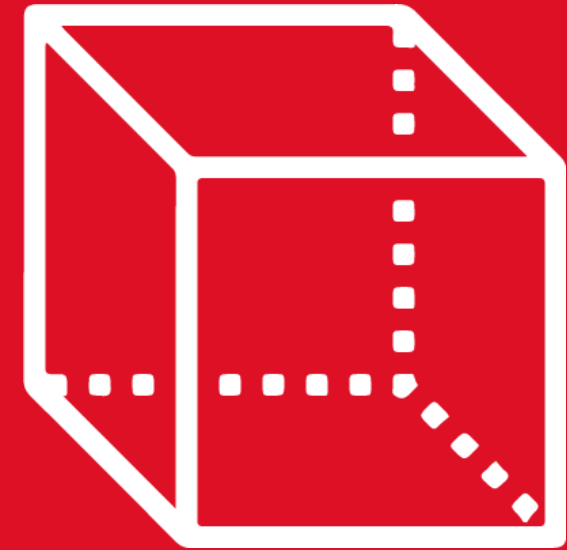


GEOMETRÍA

Tomo 4

4th
SECONDARY

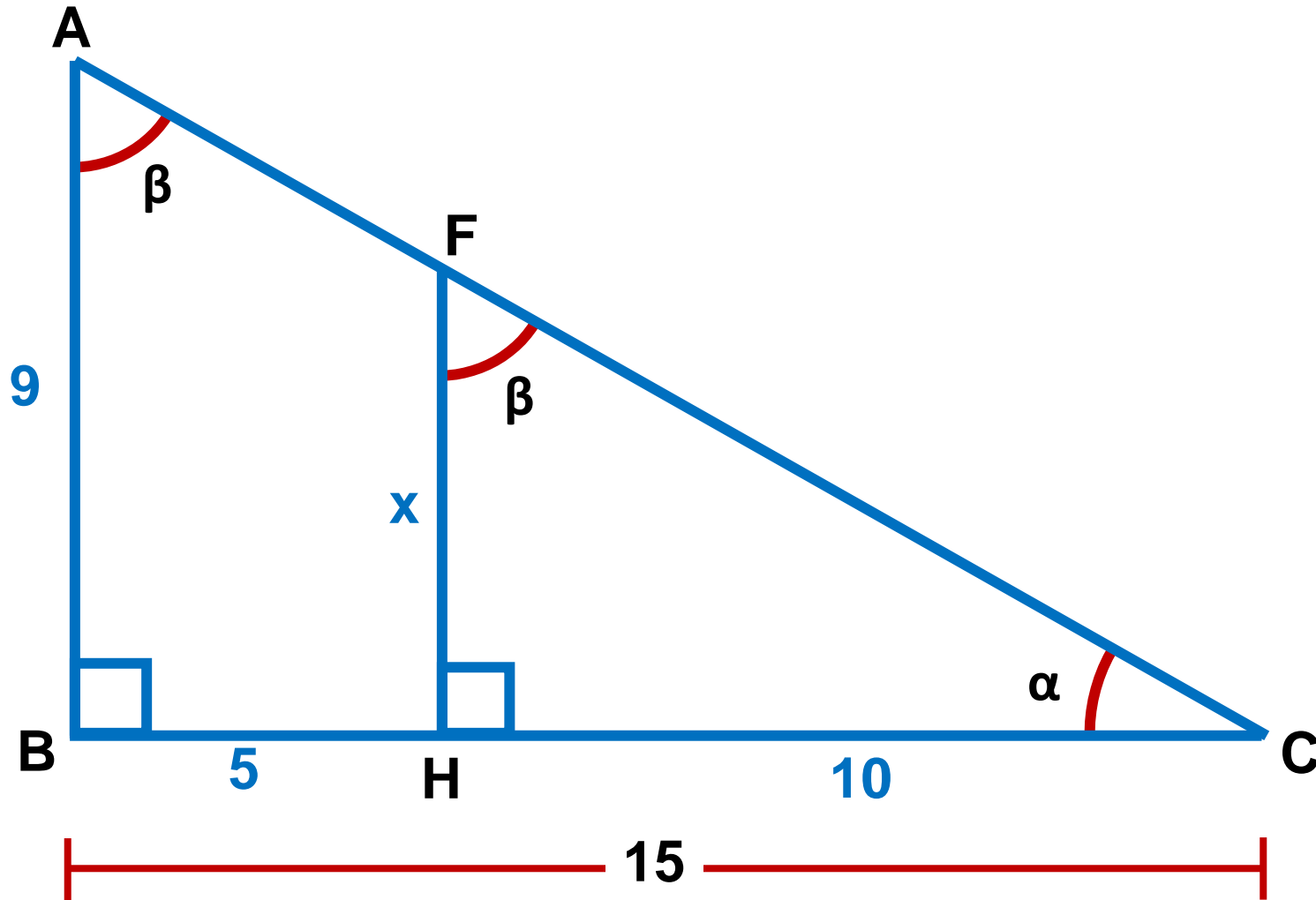
Retroalimentación



 **SACO OLIVEROS**



1. En la figura, calcule x.



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

$$\triangle FHC \sim \triangle ABC$$

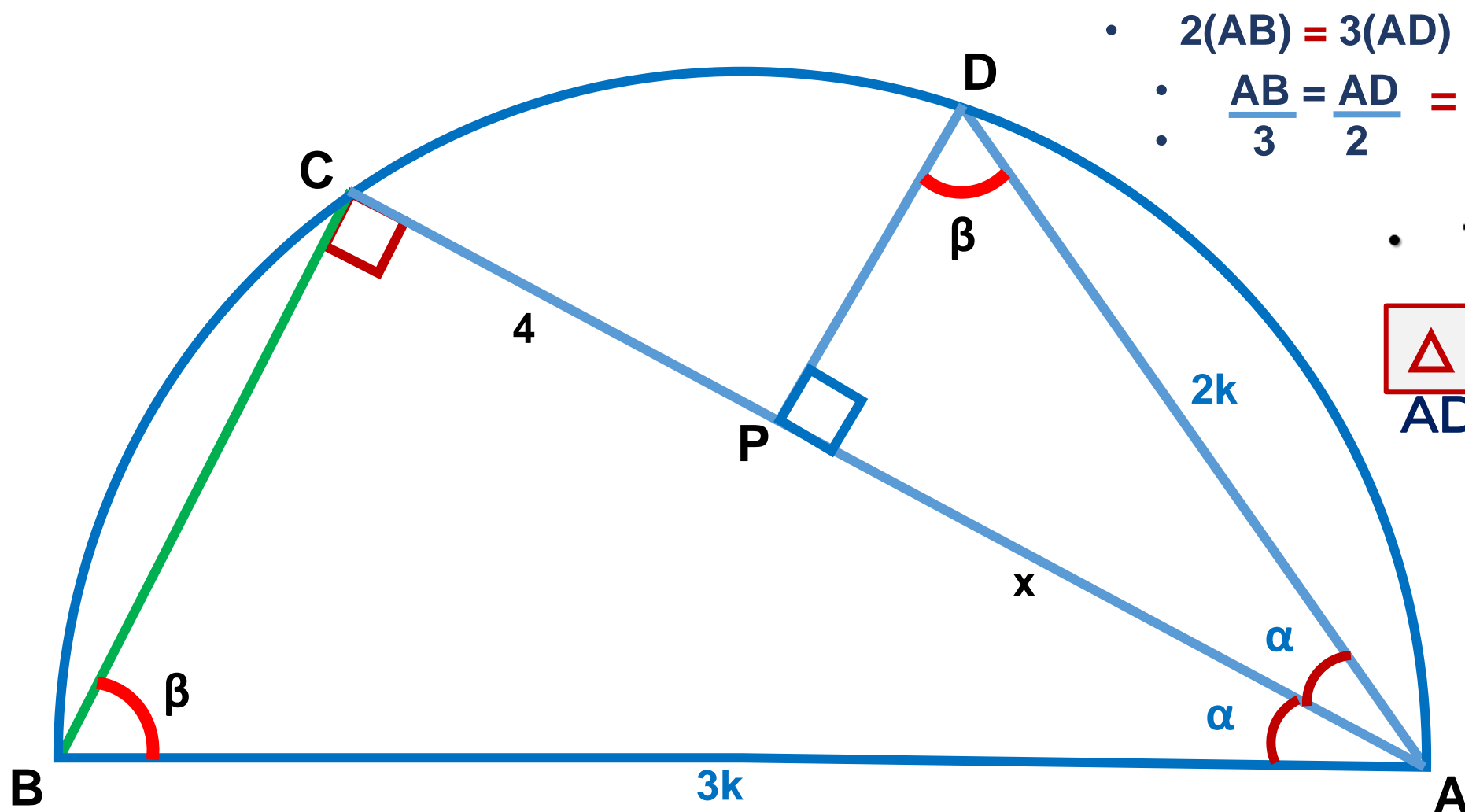
$$\frac{x}{9} = \frac{10}{15}$$

$$3x = 18$$

$$x = 6$$



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



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

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

$$AB = 3K$$

$$AD = 2K$$

- Trazamos \overline{BC} .

$$\triangle ABC \sim \triangle ADP$$

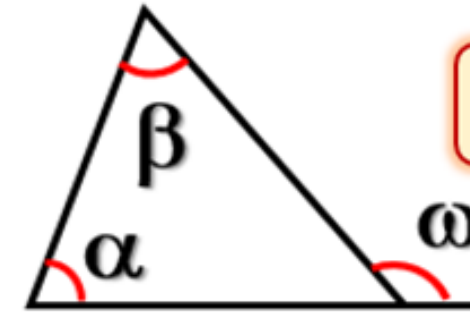
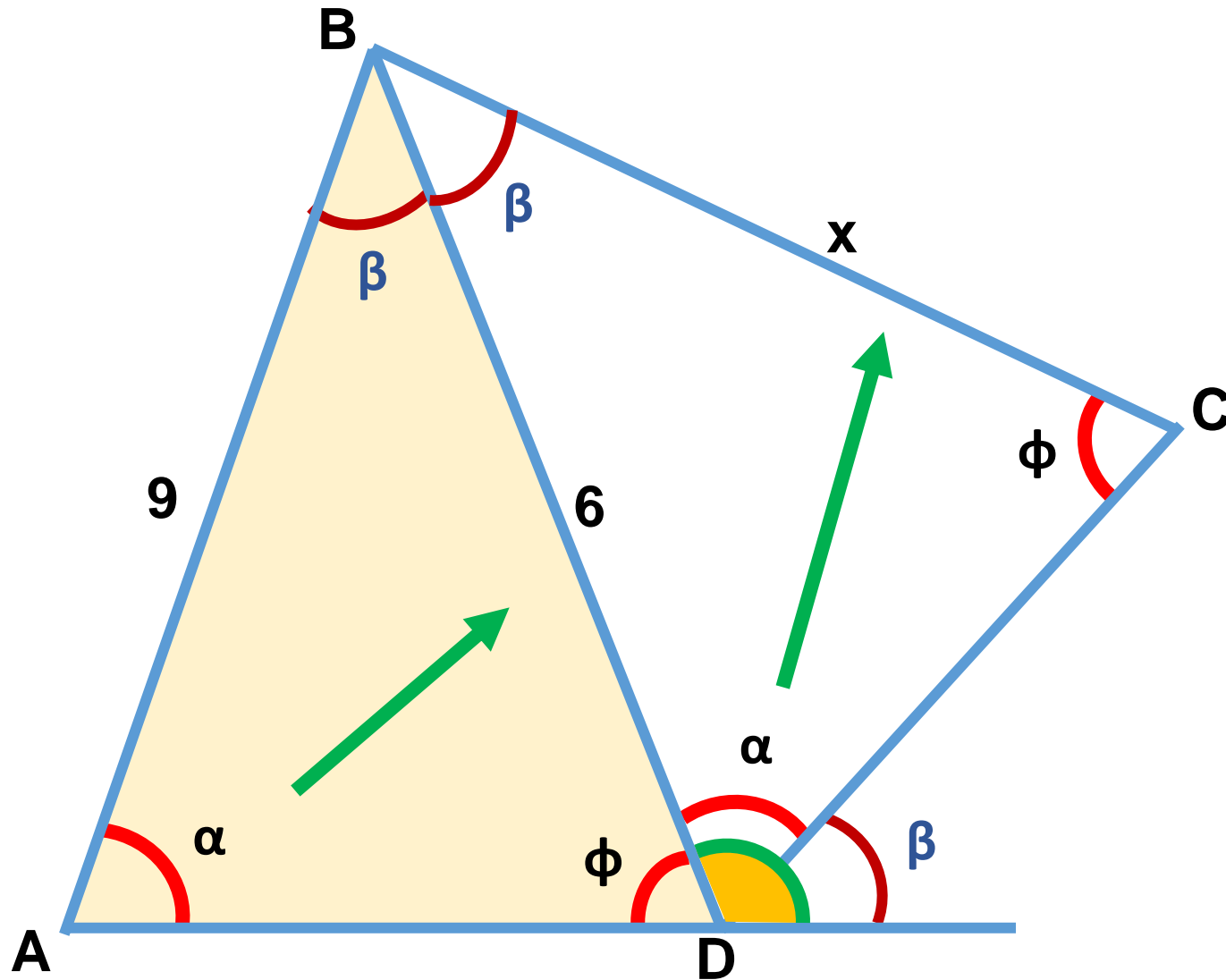
$$\frac{3k}{2k} = \frac{x+4}{x}$$

$$3x = 2x + 8$$

$$x = 8$$



03. En la figura, calcule x .



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

$$\triangle ABD \sim \triangle BDC$$

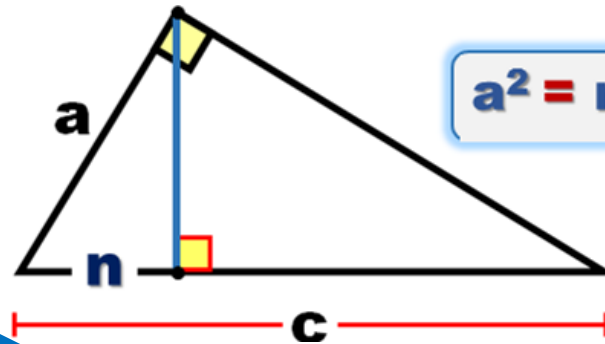
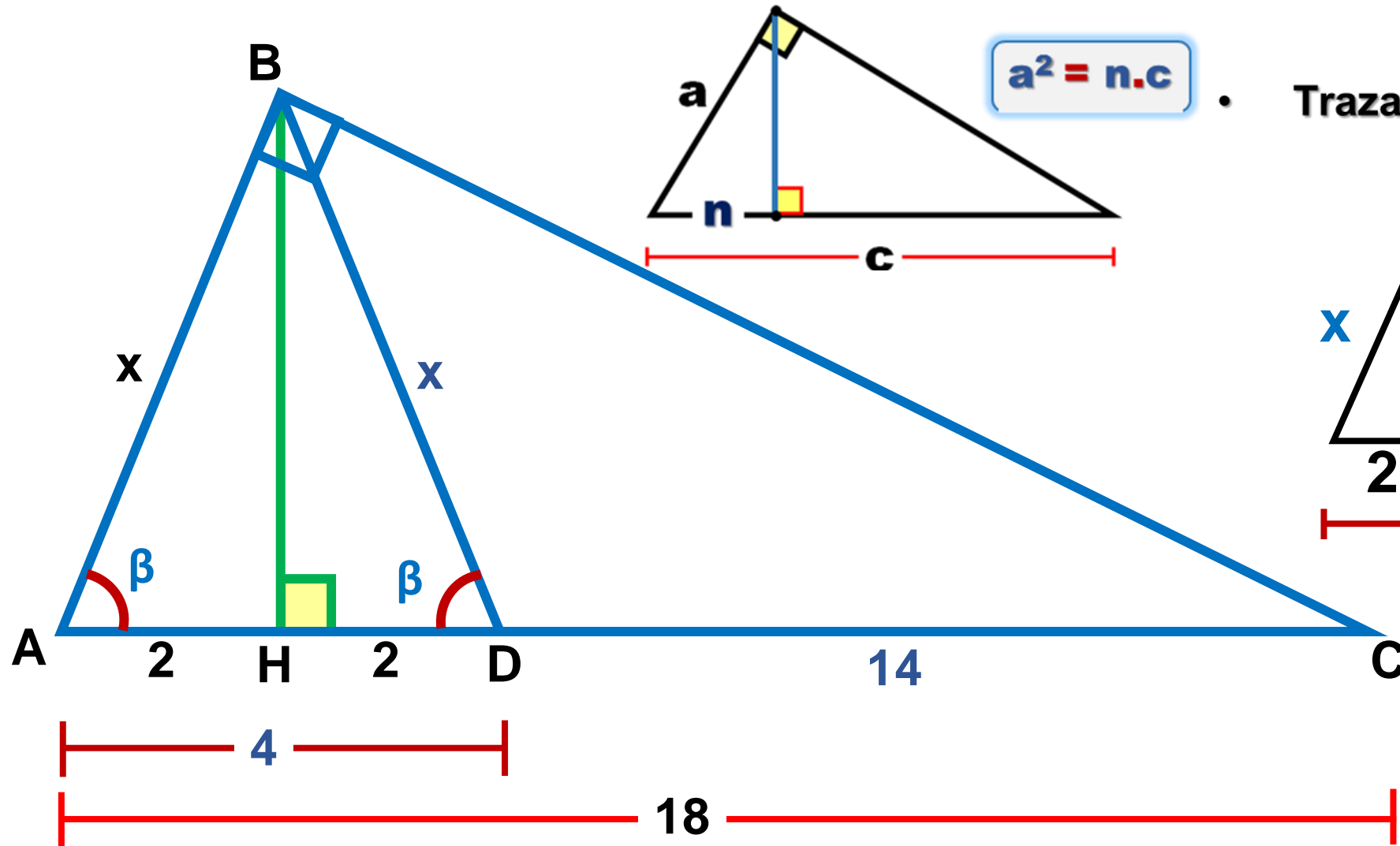
$$\frac{x}{6} = \frac{6}{9}$$

$$3x = 12$$

$$x = 4$$



04. En la figura, calcular x.

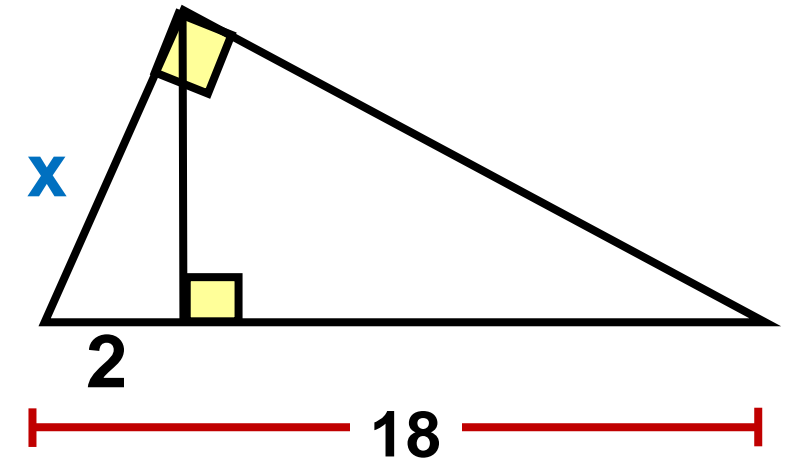


• $\triangle ABD$: Isósceles

$$AB = BD = x$$

• Trazamos la altura \overline{BH}

$$AH = HD = 2$$



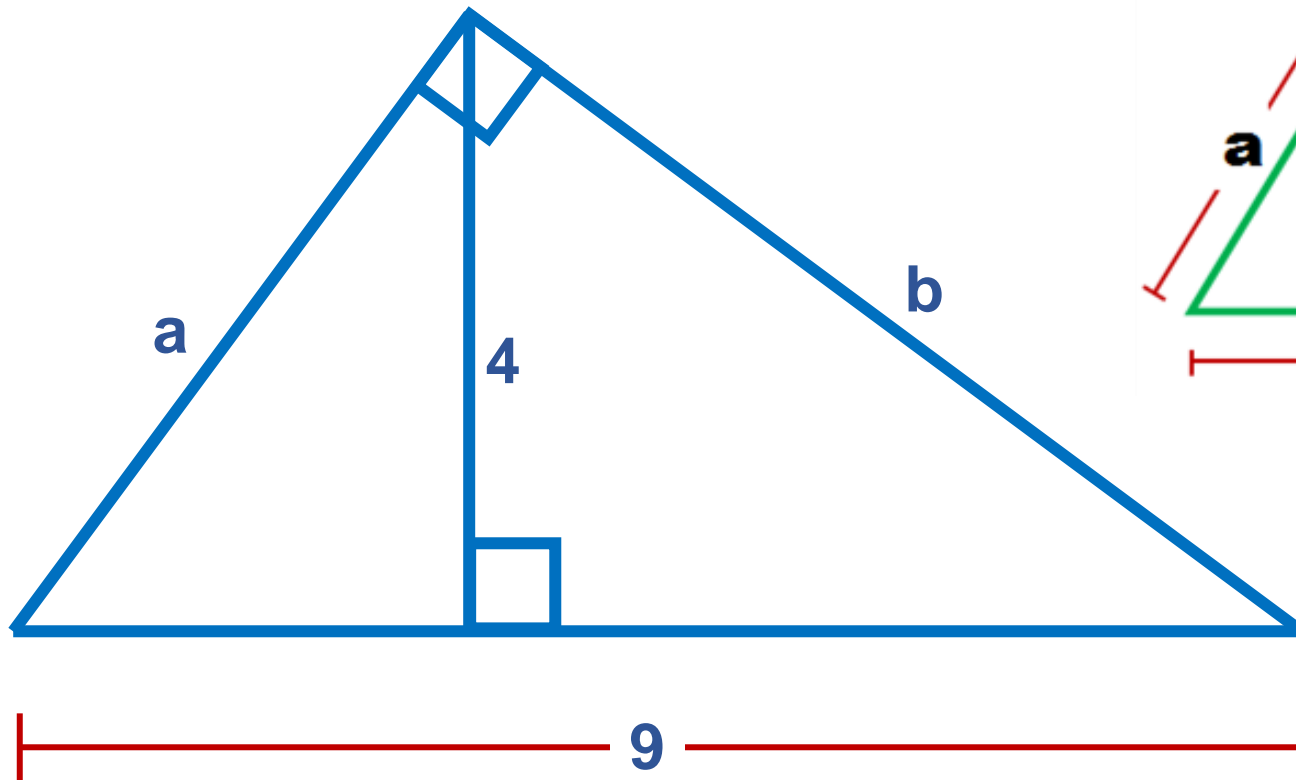
$$x^2 = 2(18)$$

$$x^2 = 36$$

$$x = 6$$



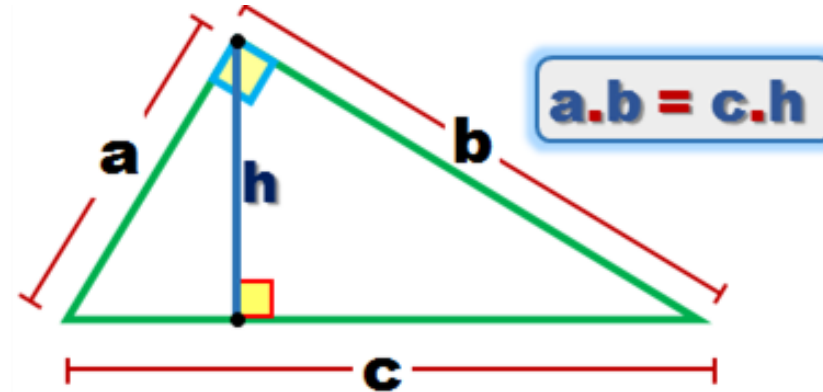
05. En la figura, calcular $a + b$.



- T. Pitágoras

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

$$81 = a^2 + b^2$$



- $a.b = 9.4$
 $a.b = 36$

- Binomio al cuadrado

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

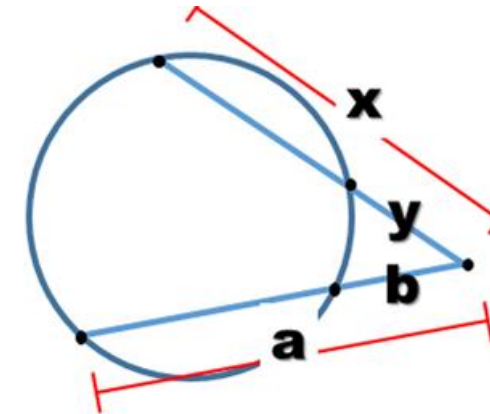
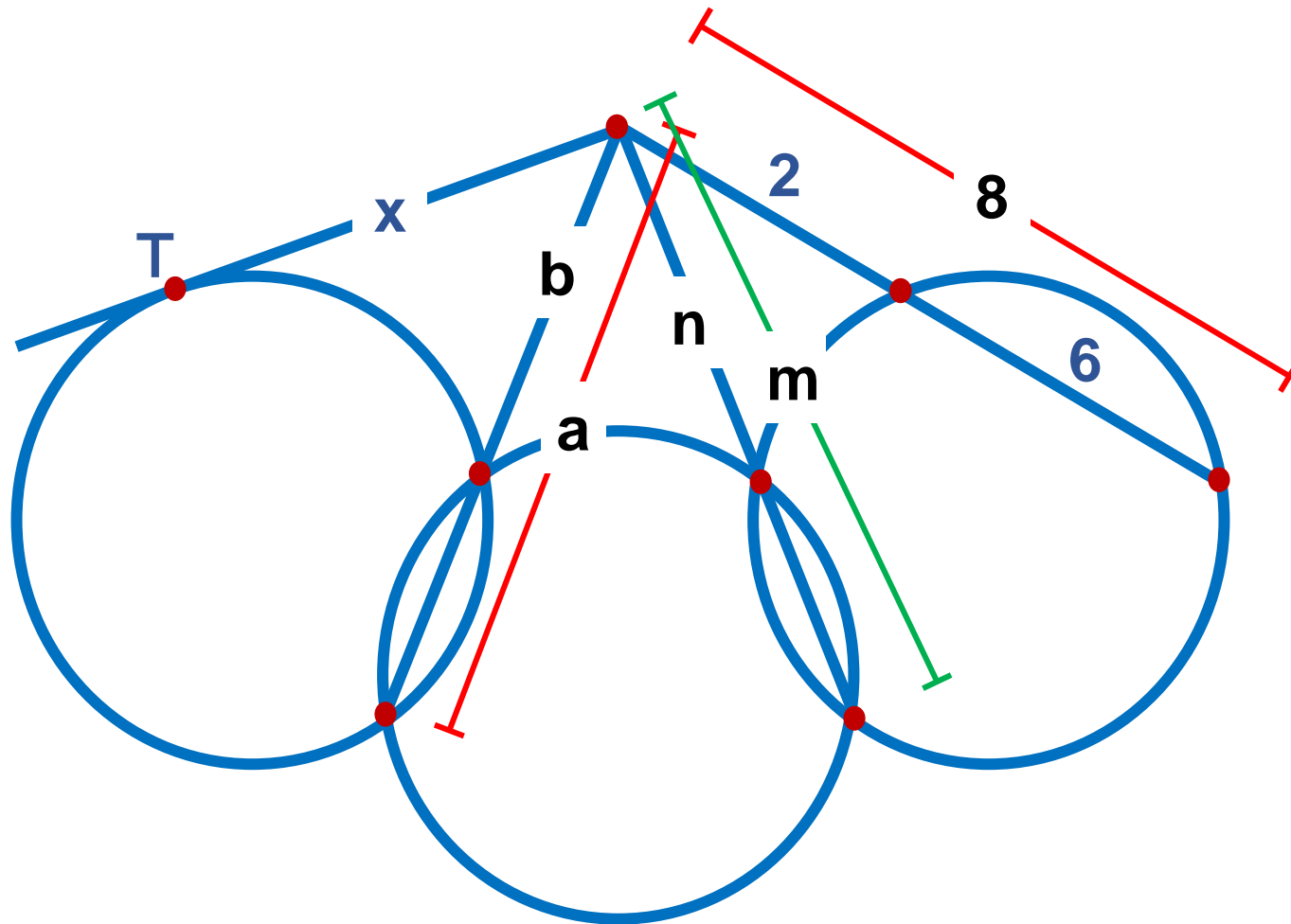
$$(a + b)^2 = 81 + 2(36)$$

$$(a + b)^2 = 153$$

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



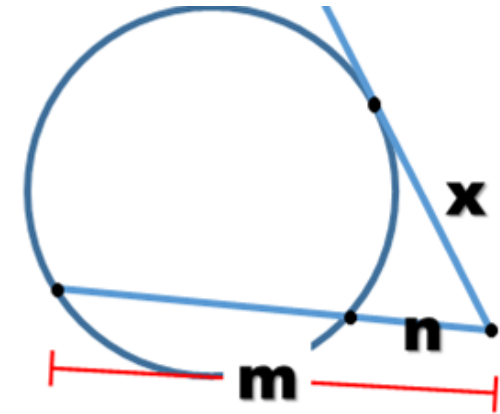
06. Calcule x si T es punto de tangencia.



T. de las Secantes

$$x \cdot y = a \cdot b$$

- $m \cdot n = 8 \cdot 2$
 $m \cdot n = 16$
- $a \cdot b = m \cdot n$
 $a \cdot b = 16$



T. de la Tangente

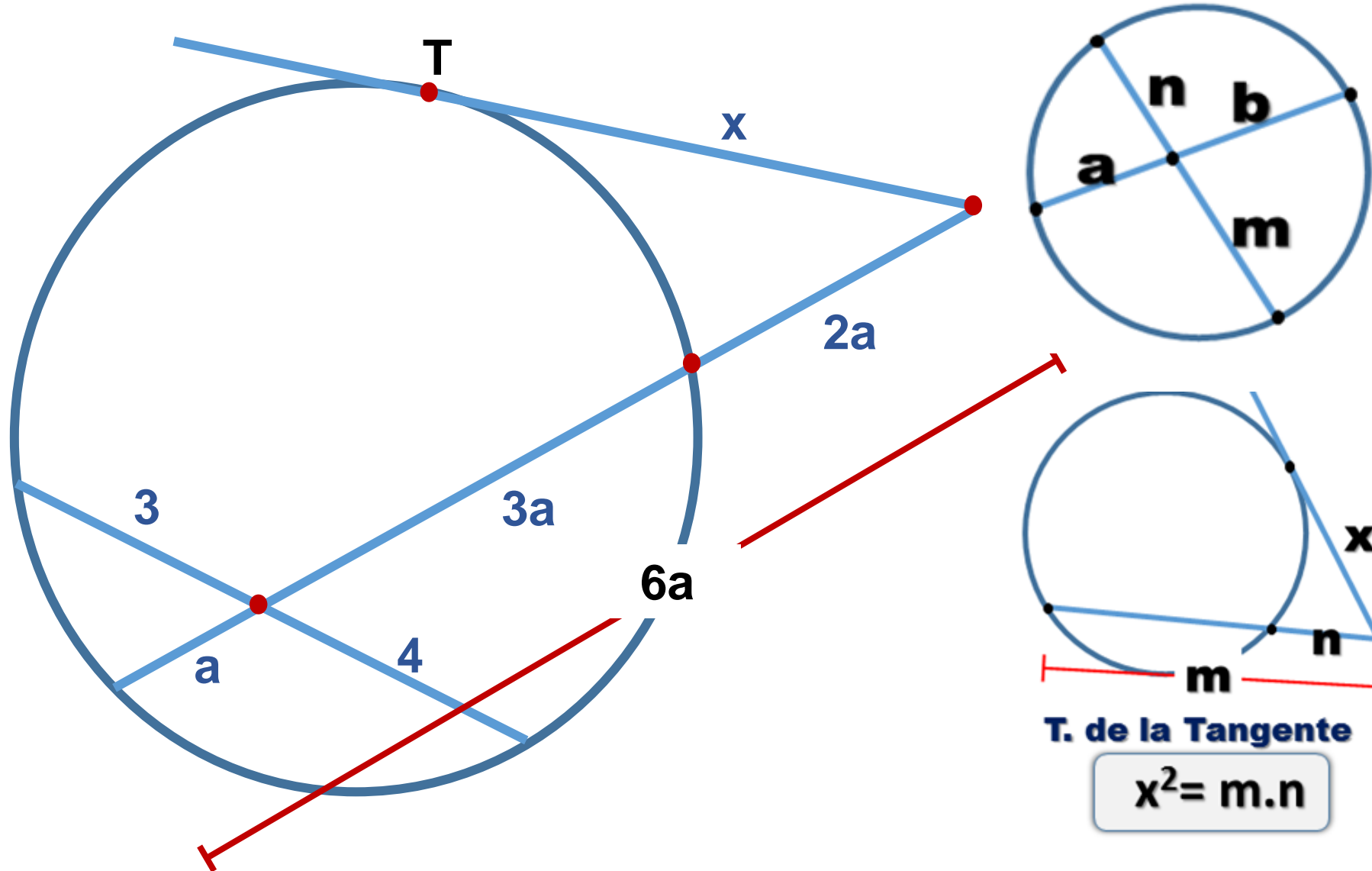
$$x^2 = m \cdot n$$

- $x^2 = a \cdot b$
↓
 $x^2 = 16$

$$x = 4$$



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



T. de Cuerdas

$$a \cdot b = m \cdot n$$

$$(3a) \cdot (a) = (4) \cdot (3)$$

$$a^2 = 4$$

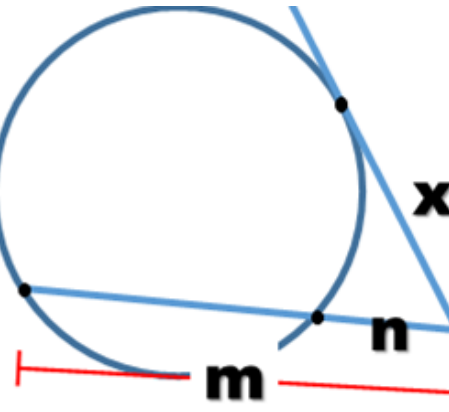
$$a = 2$$

$$x^2 = 6a \cdot 2a$$

$$x^2 = 12 \cdot 4$$

$$x^2 = (3 \cdot 4) \cdot 4$$

$$x = 4\sqrt{3}$$

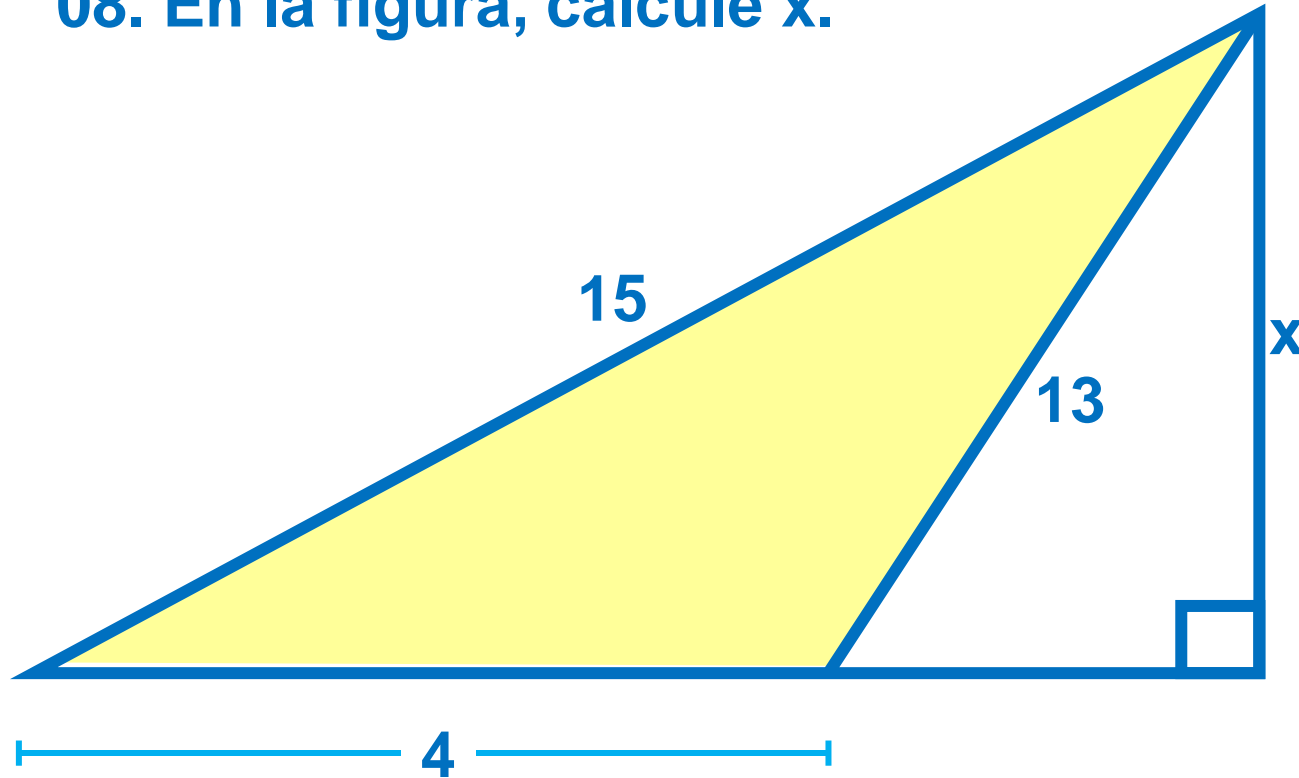


T. de la Tangente

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



08. En la figura, calcule x.

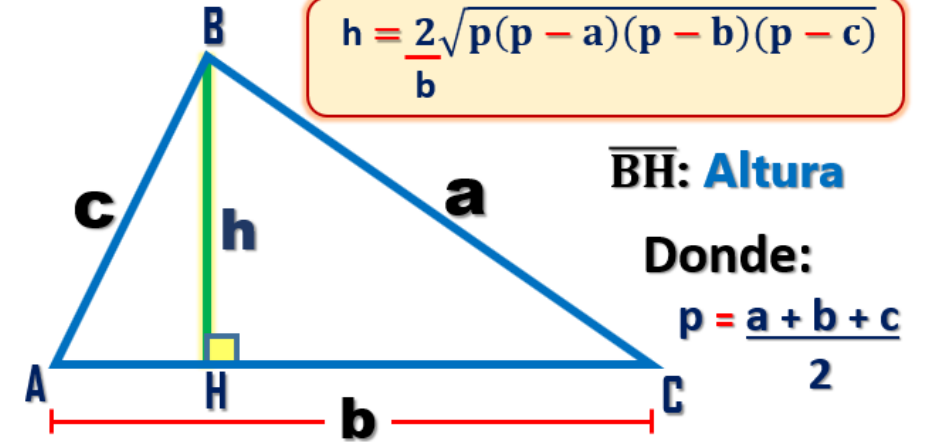


- Calculamos el semiperímetro

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

TEOREMA DE HERÓN

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



- Por teorema de Herón

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

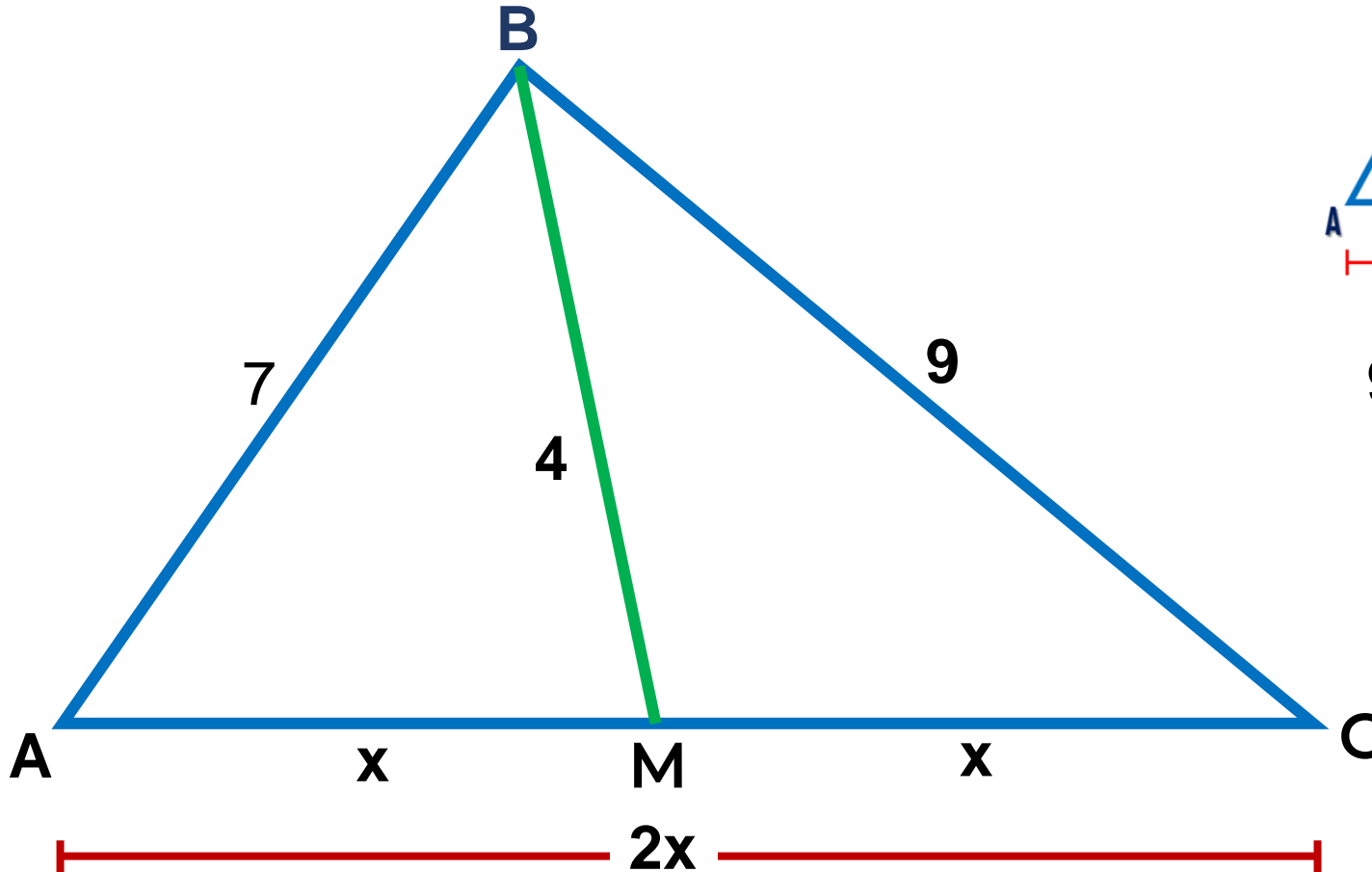
$$x = \frac{1\sqrt{16(3)(12)(1)}}{2} \quad x = \frac{1(4)(6)(1)}{2}$$

36

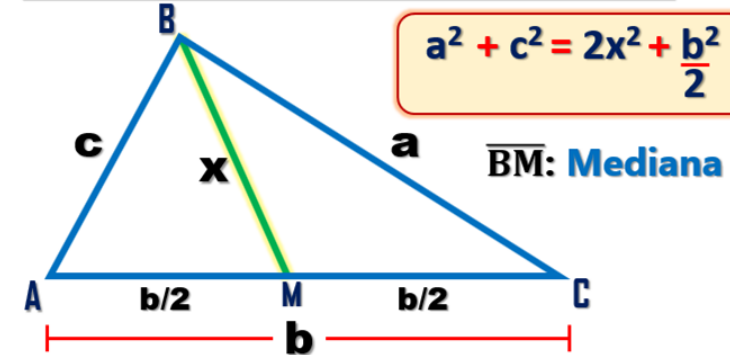
$$x = 12$$



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



TEOREMA DE LA MEDIANA



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

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

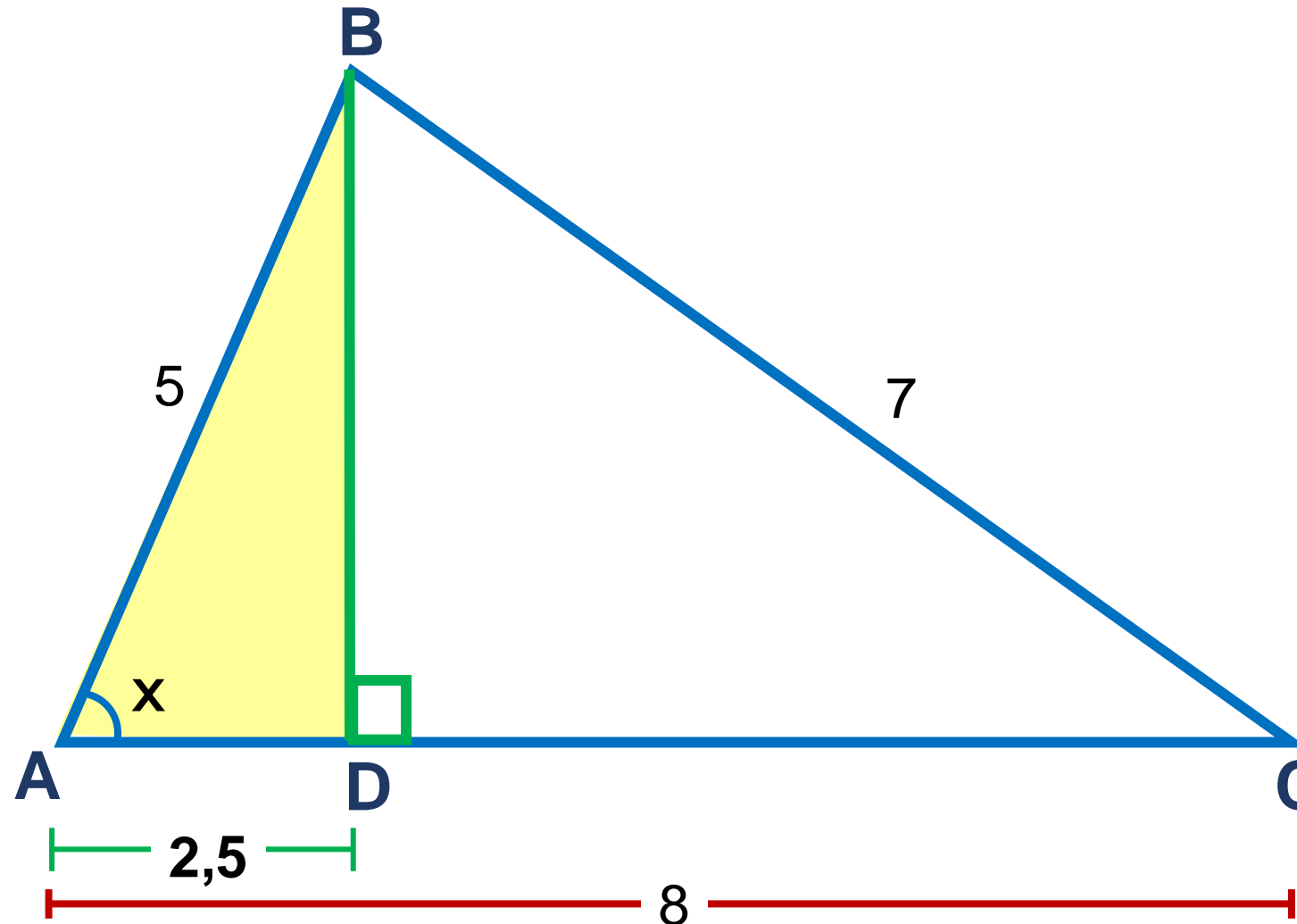
$$98 = 2x^2$$

$$49 = x^2$$

$$x = 7$$

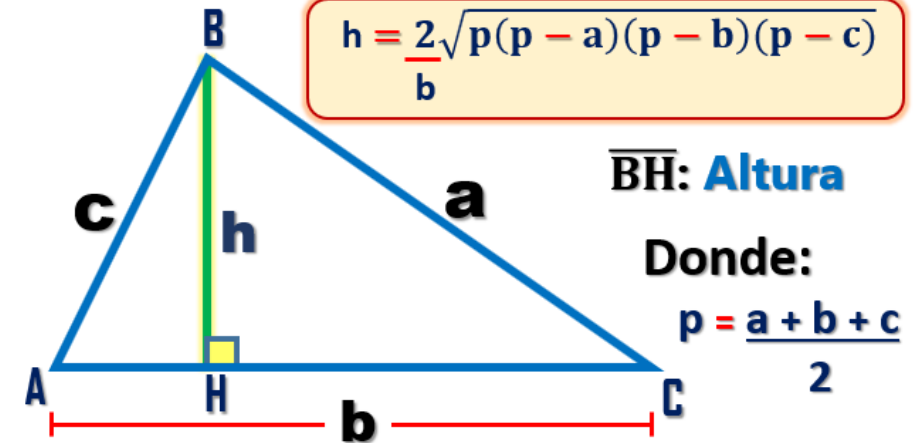


10. En la figura, calcule x .



- Trazamos la altura \overline{BD}
- TEOREMA DE HERÓN**

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



\overline{BH} : **Altura**

Donde:

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

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

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

$$16m = 40$$

$$m = 2.5$$

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

$$x = 60^\circ$$