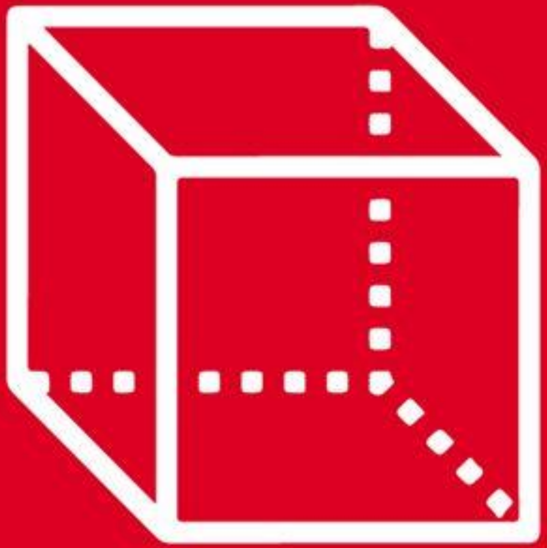
GEOMETRY

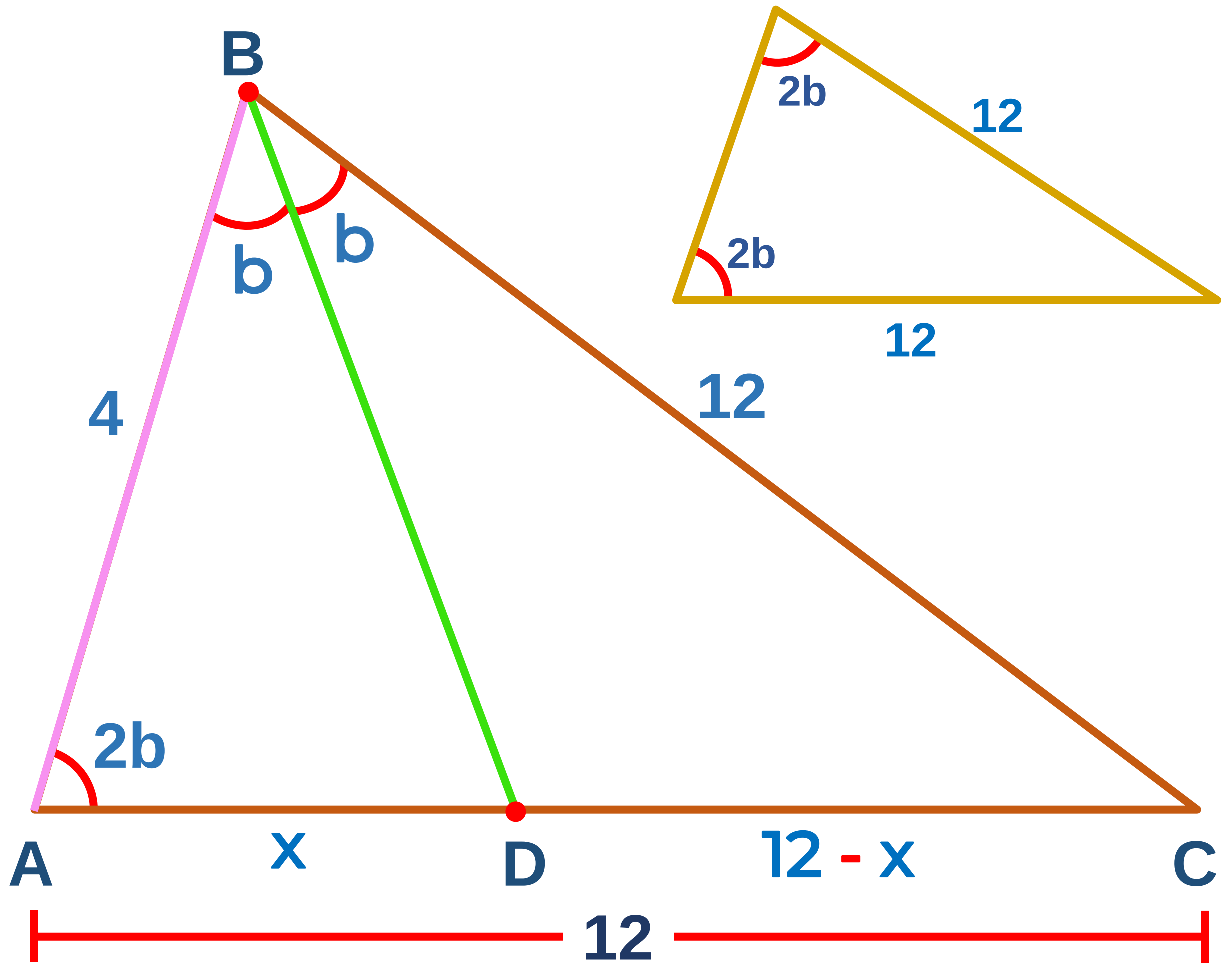


5° DE SECUNDARIA

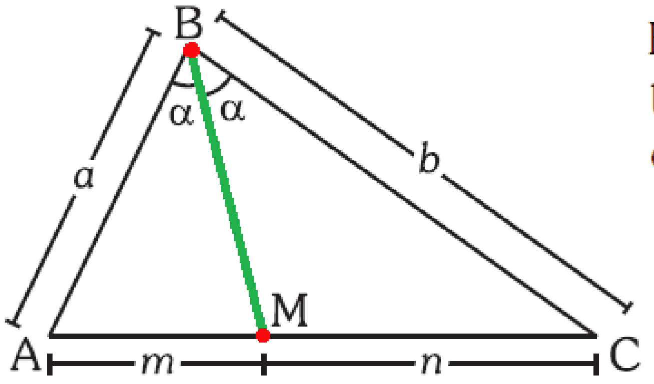
RETROALIMENTACIÓN

ASOCIACIÓN EDUCATIVA
SACO OLIVEROS

1. En un triángulo ABC, se traza la bisectriz interior $\overline{BD}$. AB = 4, BC = 12 y m∡BAD = m∡ABC. Calcule AD.



Teorema de la bisectriz interior



En el ΔABC, $\overline{BM}$ es bisectriz interior, se demuestra

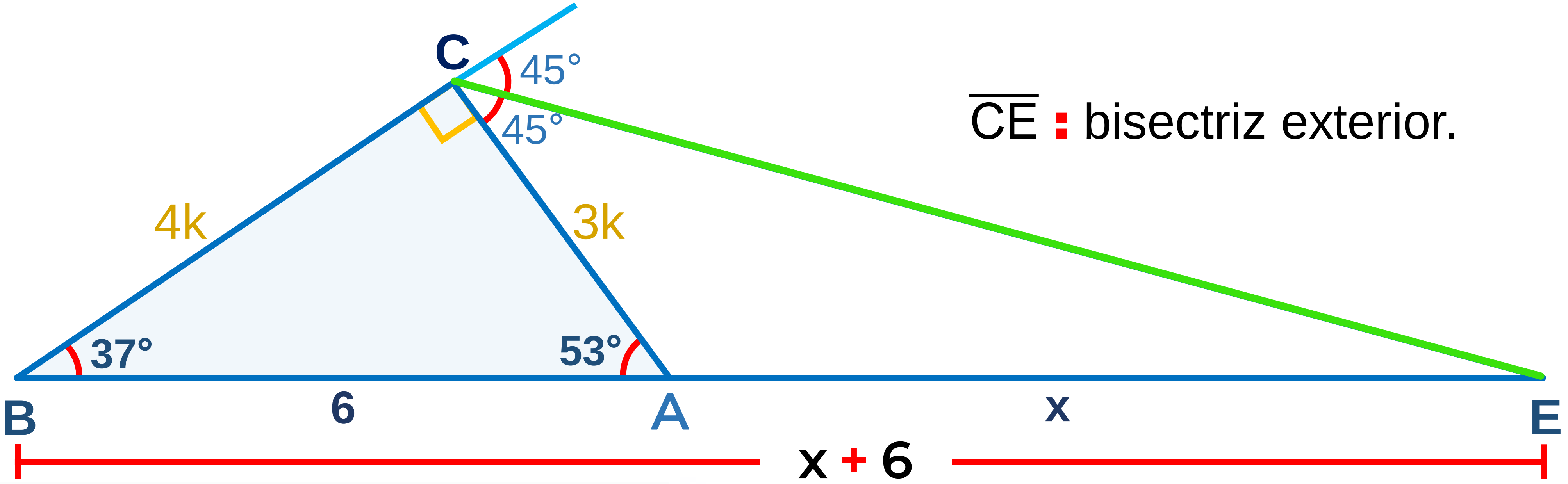
$$\boxed{\frac{a}{b} = \frac{m}{n}}$$

$$\frac{\cancel{4}^{\,1}}{\cancel{12}_{\,3}} = \frac{x}{12 - x} \Rightarrow 12 - x = 3x$$

$$12 = 4x$$

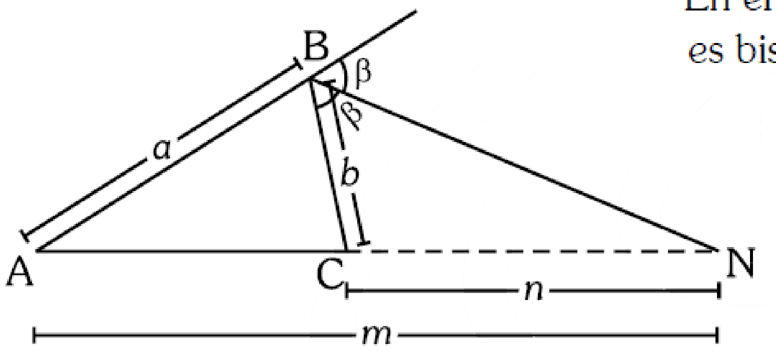
$$\boxed{\therefore x = 3}$$

2. En la figura, AB = 6, calcule AE.



$\overline{CE}$: bisectriz exterior.

Teorema de la bisectriz exterior



En el $\triangle ABC$, $\overline{BN}$ es bisectriz exterior.

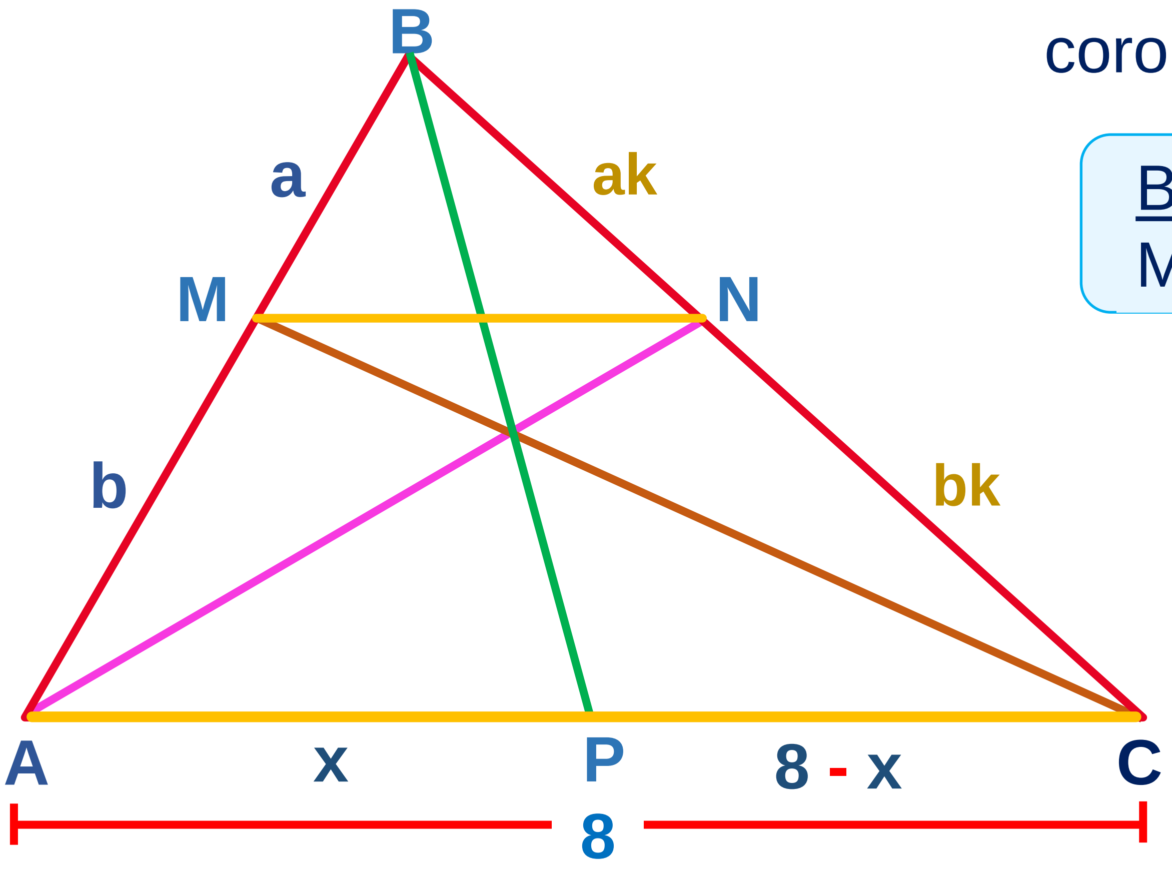
$$\boxed{\frac{a}{b} = \frac{m}{n}}$$

$$\frac{4\cancel{k}}{3\cancel{k}} = \frac{x+6}{x}$$

$$4x = 3x + 18$$

$$\boxed{\therefore\ x = 18}$$

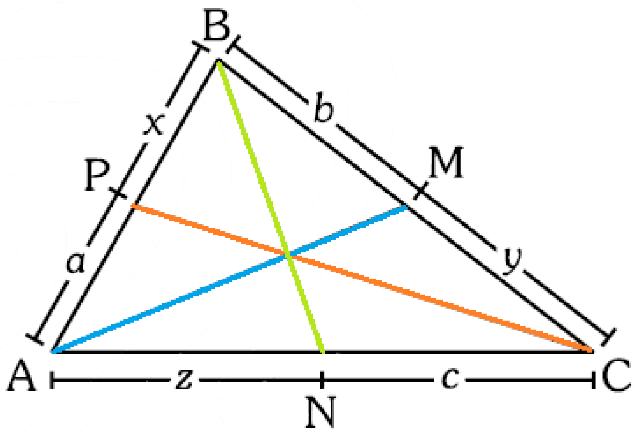
3. En la figura, $\overline{MN} \parallel \overline{AC}$, calcule AP.



* En Δ ABC, por el corolario de Thales

$$\frac{BM}{MA} = \frac{BN}{NC}$$

Teorema de Ceva



En el ΔABC, AM, BN y CP son cevianas internas concurrentes, se demuestra

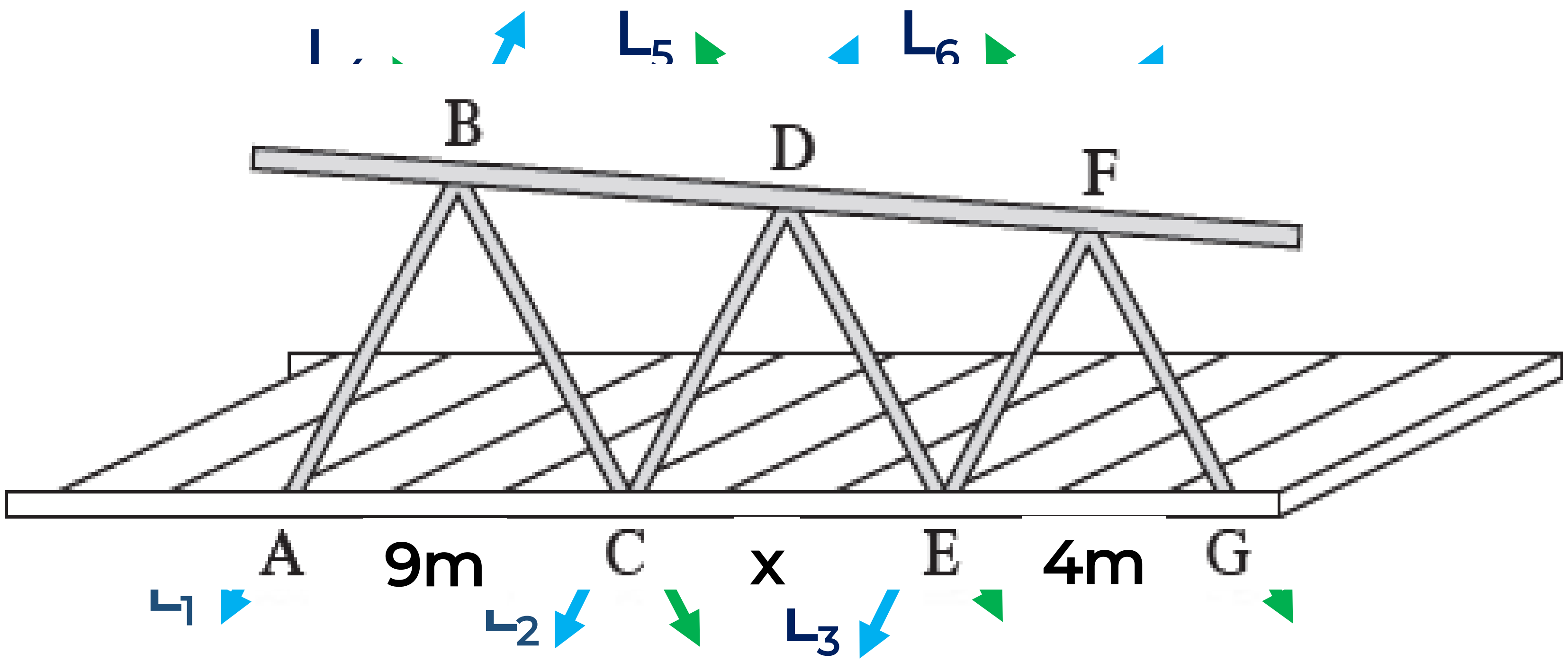
$$\boxed{a \cdot b \cdot c = c \cdot y \cdot z}$$

$$(\cancel{a})(\cancel{bk})(x) = (\cancel{b})(\cancel{ak})(8-x)$$

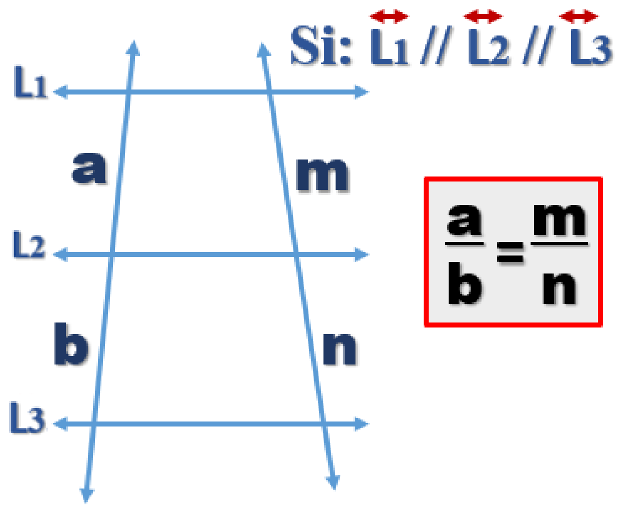
$$x = 8 - x \quad \Rightarrow \quad 2x = 8$$

$$\boxed{\therefore\ x = 4}$$

4. Los triángulos ABC, CDE y EFG son equiláteros. Calcule x.



Teorema de Tales



$$\boxed{\frac{a}{b} = \frac{m}{n}}$$

$\overleftrightarrow{L_1} \,//\, \overleftrightarrow{L_2} \,//\, \overleftrightarrow{L_3}$ ⟹ $\frac{a}{b} = \frac{9}{x}$ .... (1)

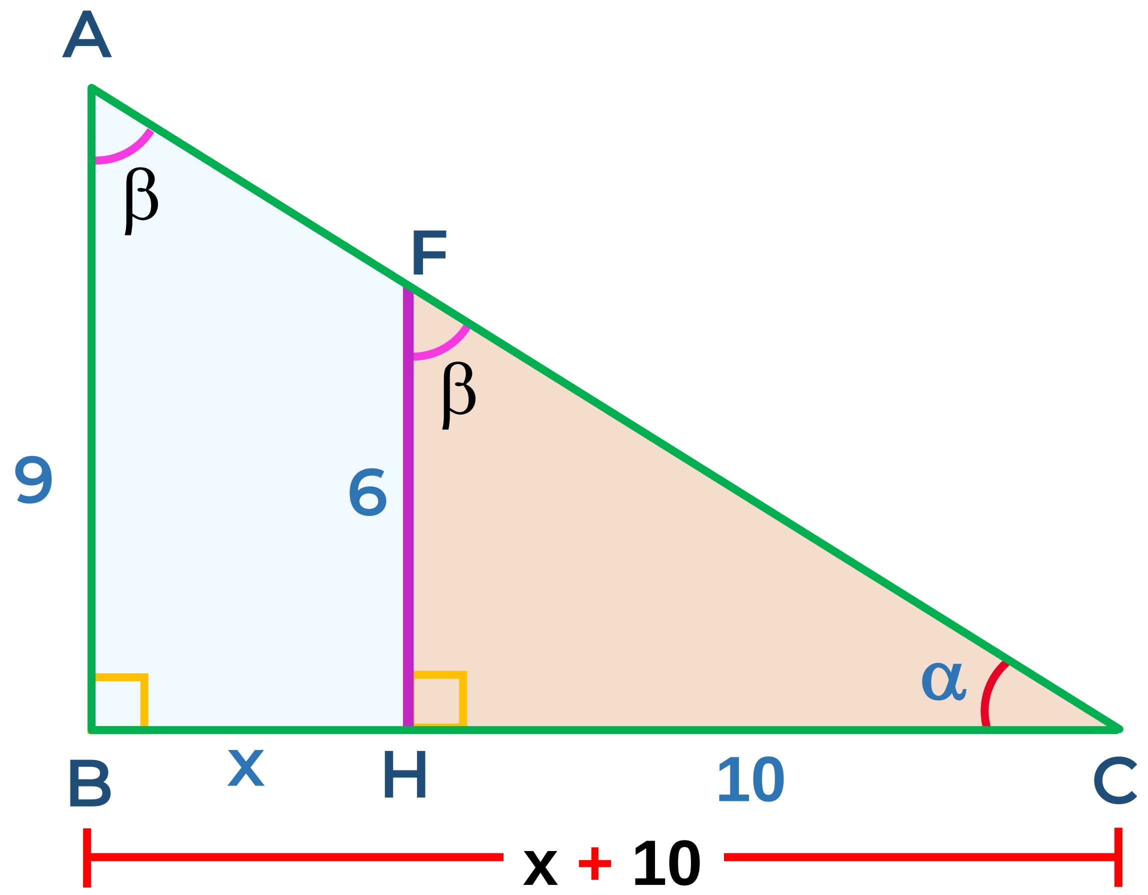
$\overleftrightarrow{L_4} \,//\, \overleftrightarrow{L_5} \,//\, \overleftrightarrow{L_6}$ ⟹ $\frac{a}{b} = \frac{x}{4}$ .... (2)

Igualando 1 y 2

$$\frac{9}{x} = \frac{x}{4} \Rightarrow 36 = x^2$$

$\boxed{.:\ x = 6\text{ m}}$

5. En la figura, calcule x.



* Del gráfico $\overline{AB} \parallel \overline{FH}$

$$\boxed{\Delta\, FHC \sim \Delta\, ABC}$$

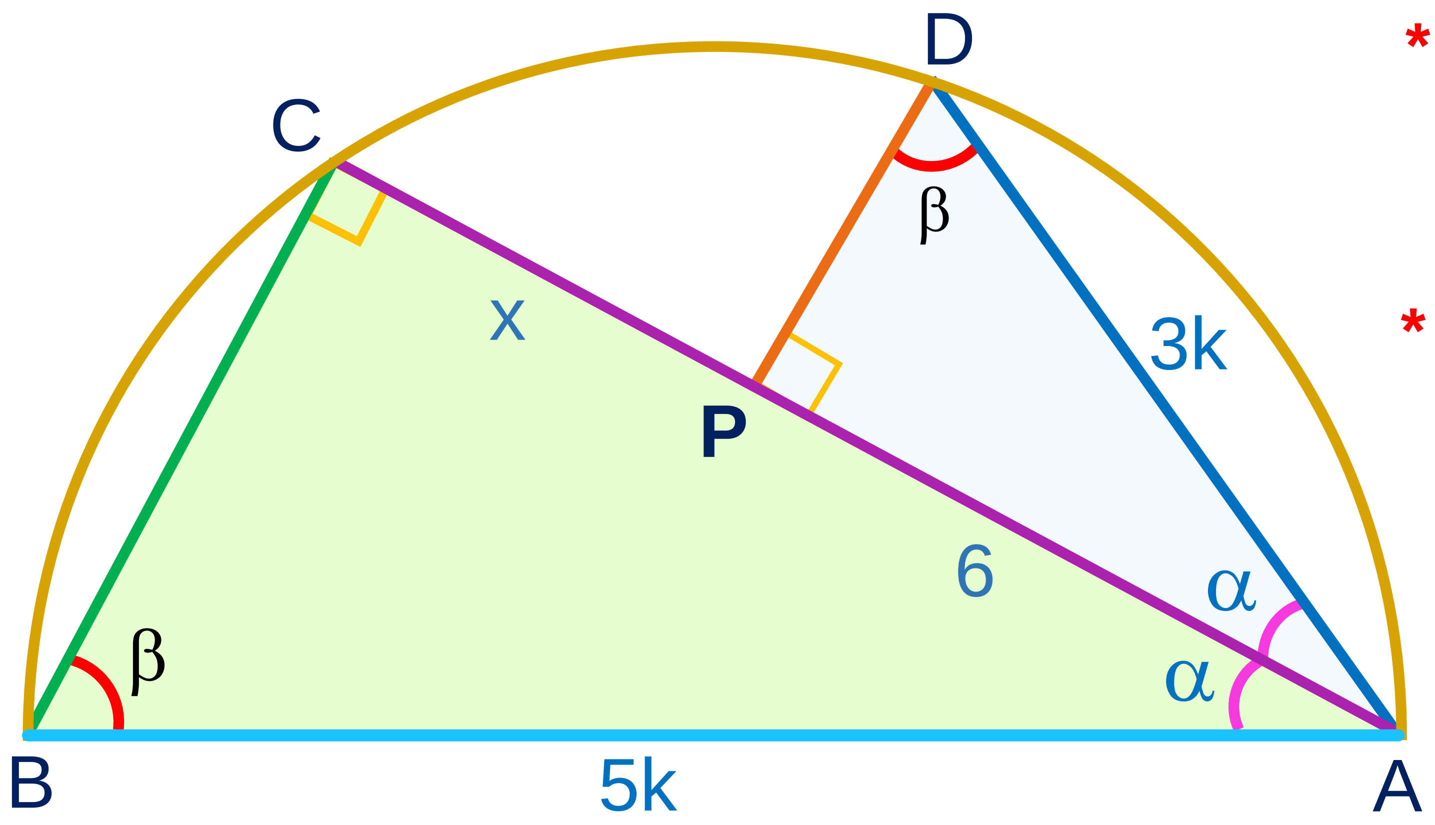
$$\frac{\cancel{6}^{\,2}}{\cancel{9}_{\,3}} = \frac{10}{x + 10}$$

$$2x + 20 = 30$$

$$2x = 10$$

$$\boxed{.:\ x = 5}$$

6. En la semicircunferencia, 3(AB) = 5(AD) y AP = 6. Calcule PC.



* $3(AB) = 5(AD)$

$$\frac{AB}{5} = \frac{AD}{3} = K$$

$AB = 5k$

$AD = 3k$

* Trazamos la cuerda $\overline{BC}$

$$\boxed{\Delta ABC \sim \Delta ADP}$$

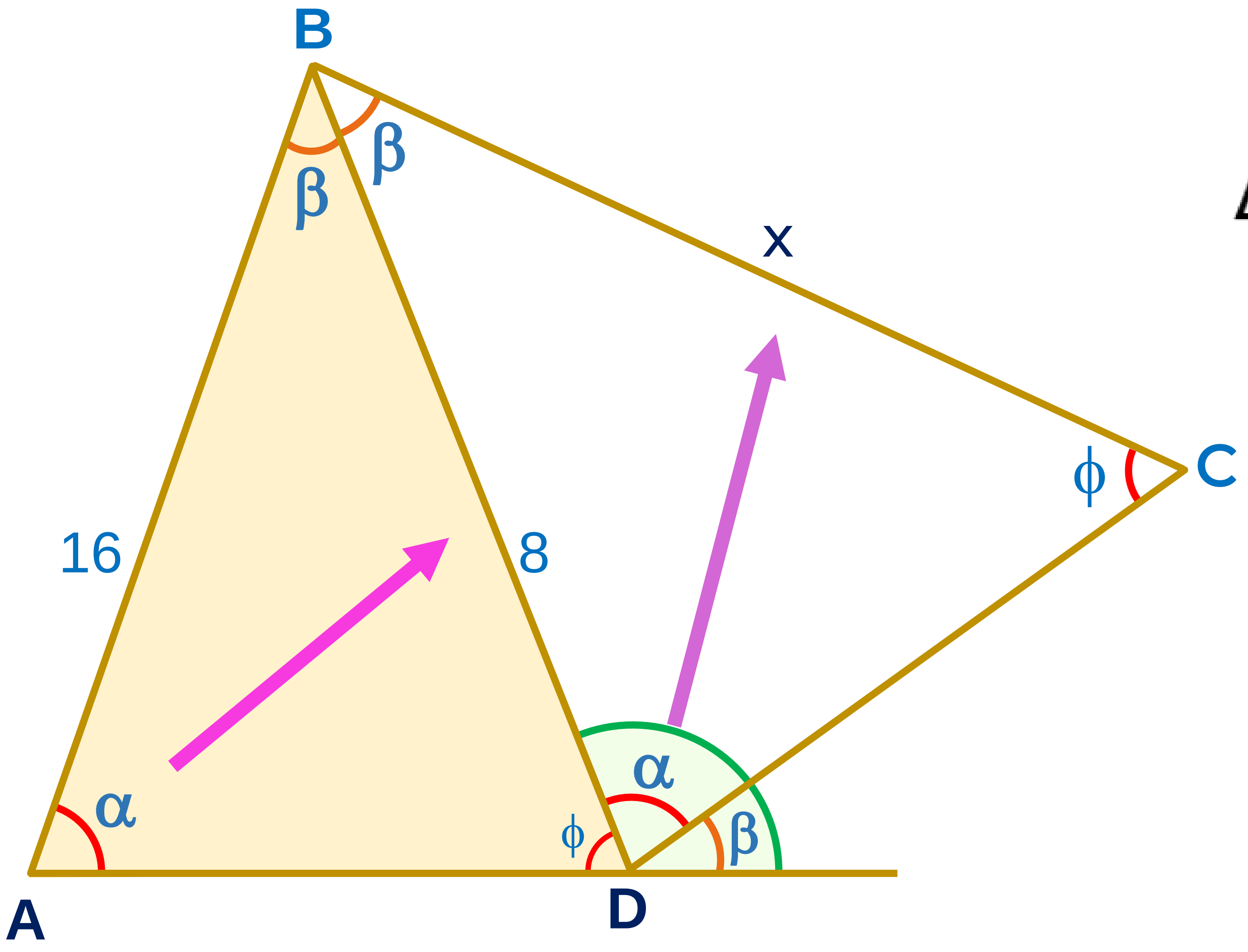
$$\frac{5\cancel{k}}{3\cancel{k}} = \frac{x + 6}{6}$$

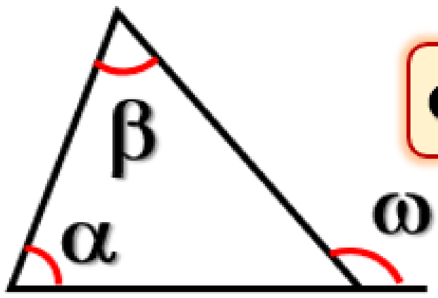
$$30 = 3x + 18$$

$$12 = 3x$$

$$\boxed{\therefore\ x = 4}$$

7. En la figura, calcule x.





$\boxed{\omega = \alpha + \beta}$

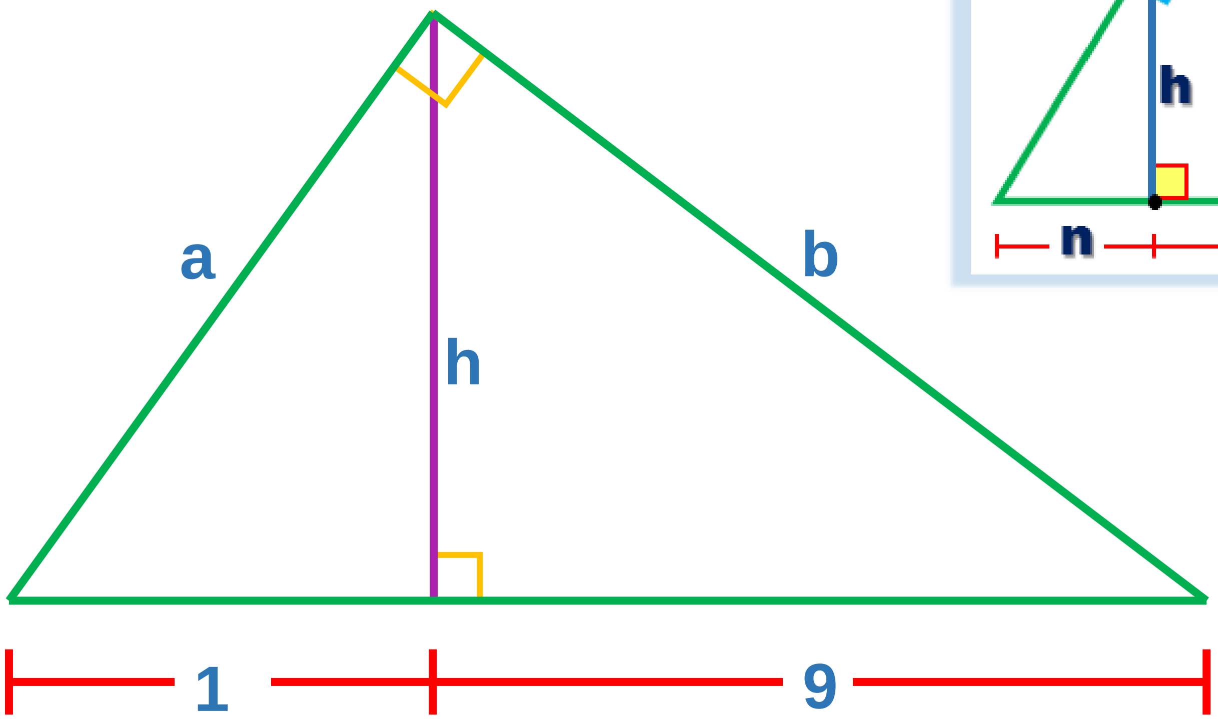
$\triangle ABD \sim \triangle DBC$

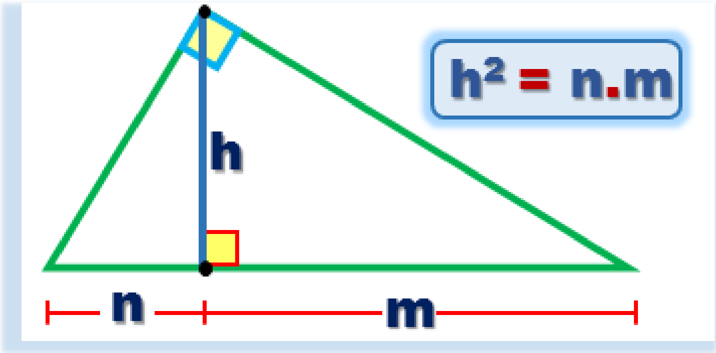
$$\frac{x}{8} = \frac{\cancel{8}^{\,1}}{\cancel{16}_{\,2}}$$

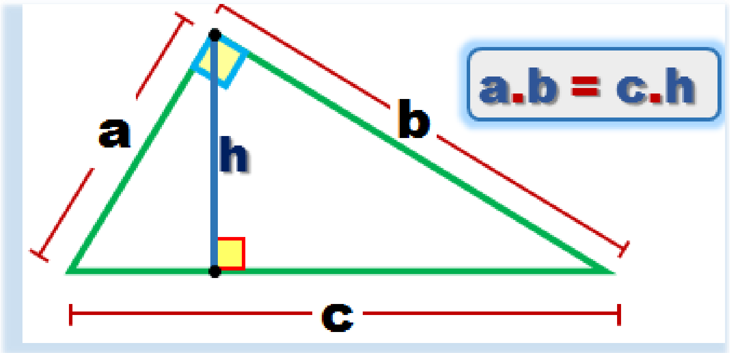
$$2x = 8$$

$$\boxed{\therefore\ x = 4}$$

8. En un triángulo rectángulo, las longitudes de las proyecciones de los catetos sobre la hipotenusa son 1 y 9. Calcule el producto entre las longitudes de los catetos.







$$h^2 = (1)(9)$$

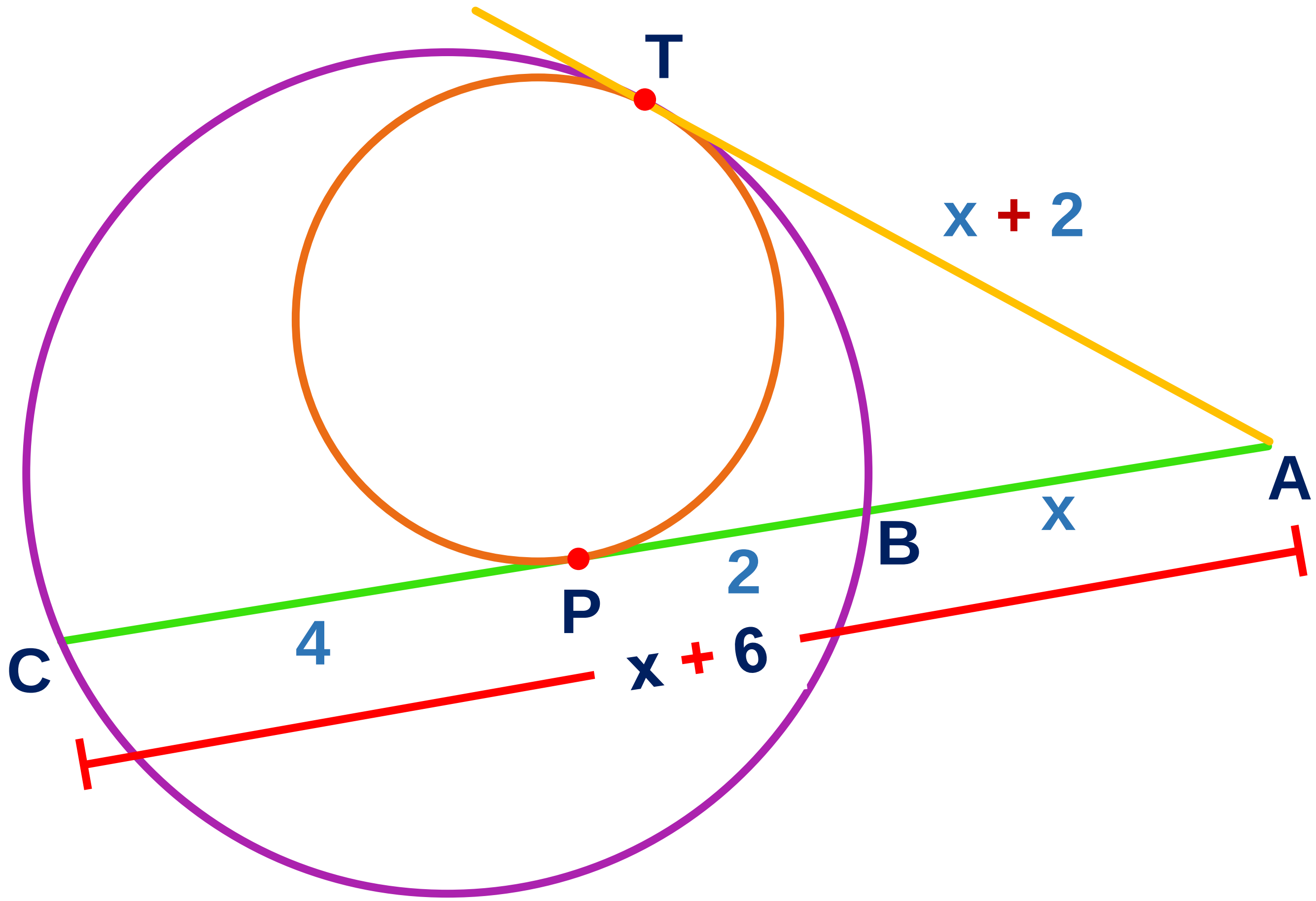
$$h = 3$$

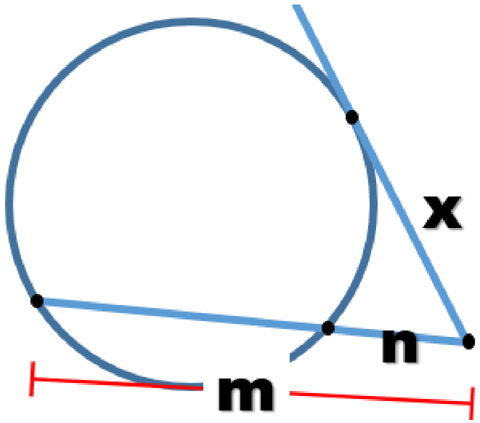
$$(a)(b) = 10(h)$$

3

$$\therefore (a)(b) = 30$$

9. En la figura, P y T son puntos de tangencia. CP = 4 y BP = 2. Calcule AB.





T. de la Tangente

$\boxed{x^2 = m.n}$

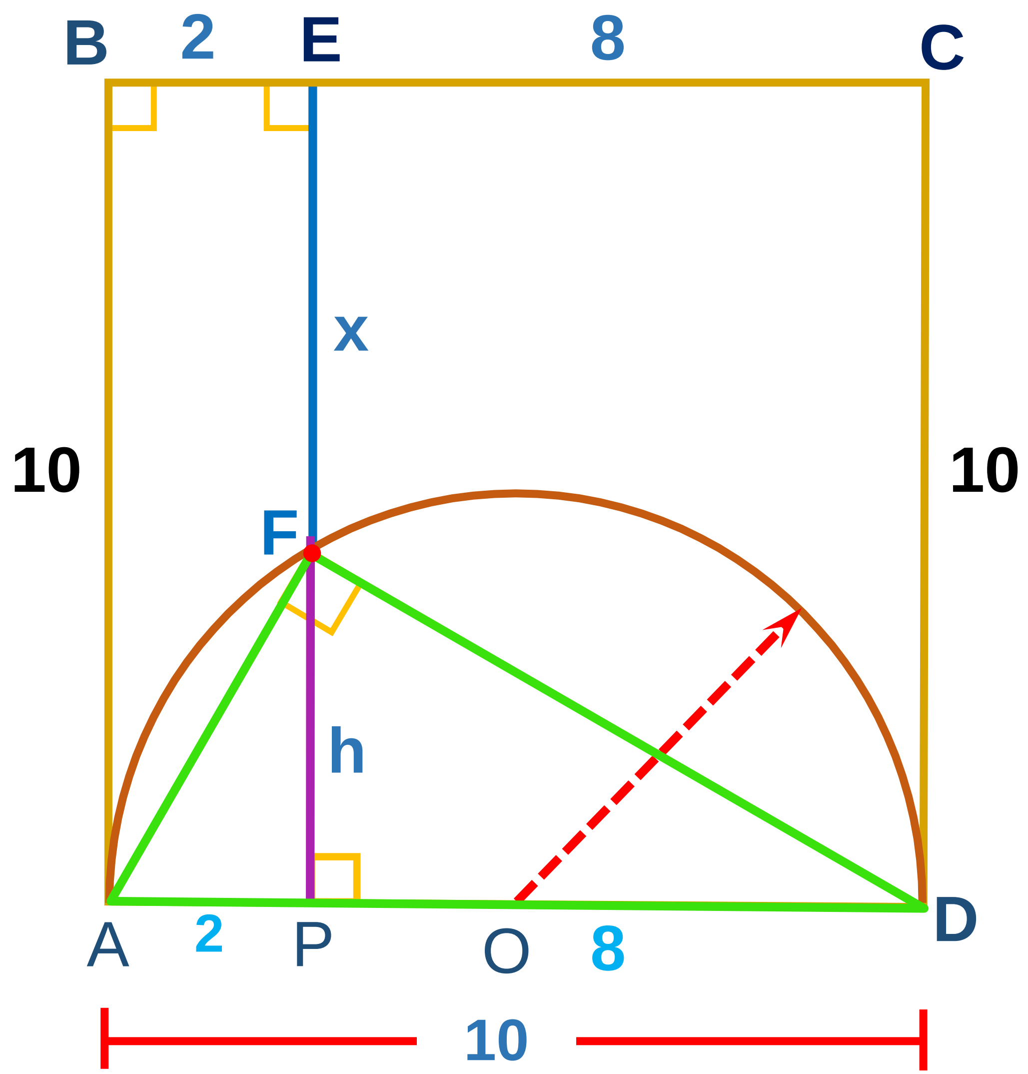
$$(x + 2)^2 = (x + 6)x$$

$$\cancel{x^2} + 4x + 4 = \cancel{x^2} + 6x$$

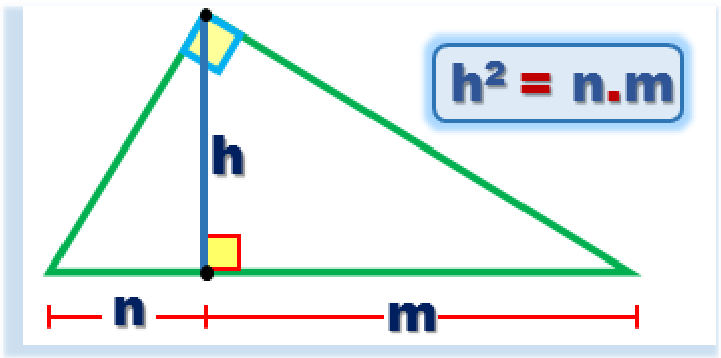
$$4 = 2x$$

$$\boxed{.:\ x = 2}$$

10. Si ABCD es un cuadrado, BE = 2 y EC = 8, calcule EF.



* Prolongamos $\overline{EF}$ hasta P



$h^2 = (2)(8)$

$h = 4$

$x + h = 10$

4

$\therefore x = 6$