# GEOMETRÍA

## ASESORIA

**4th**

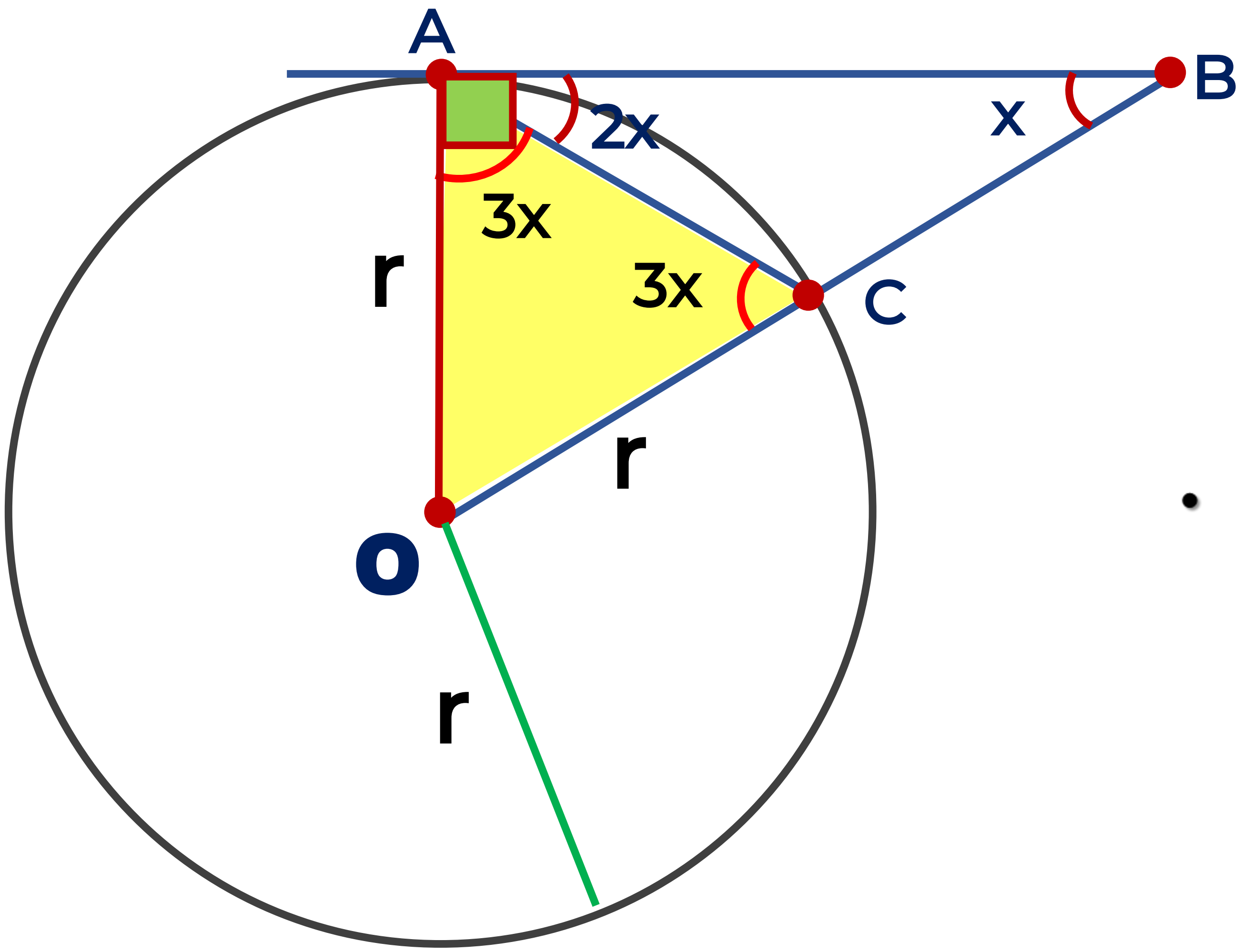
**SECONDARY**

**Tomo 4**

SACO OLIVEROS

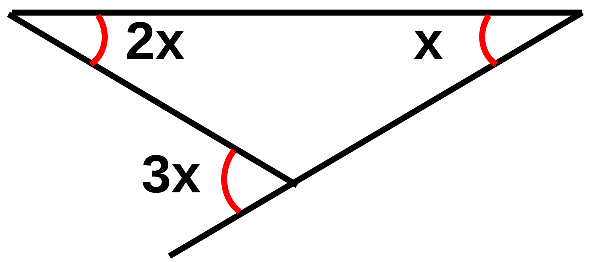
1. Si O es centro y A es punto de tangencia, halle el valor de x

Resolución




RECORDEMOS

Ángulo externo




- El $\Delta$ AOC : Isósceles

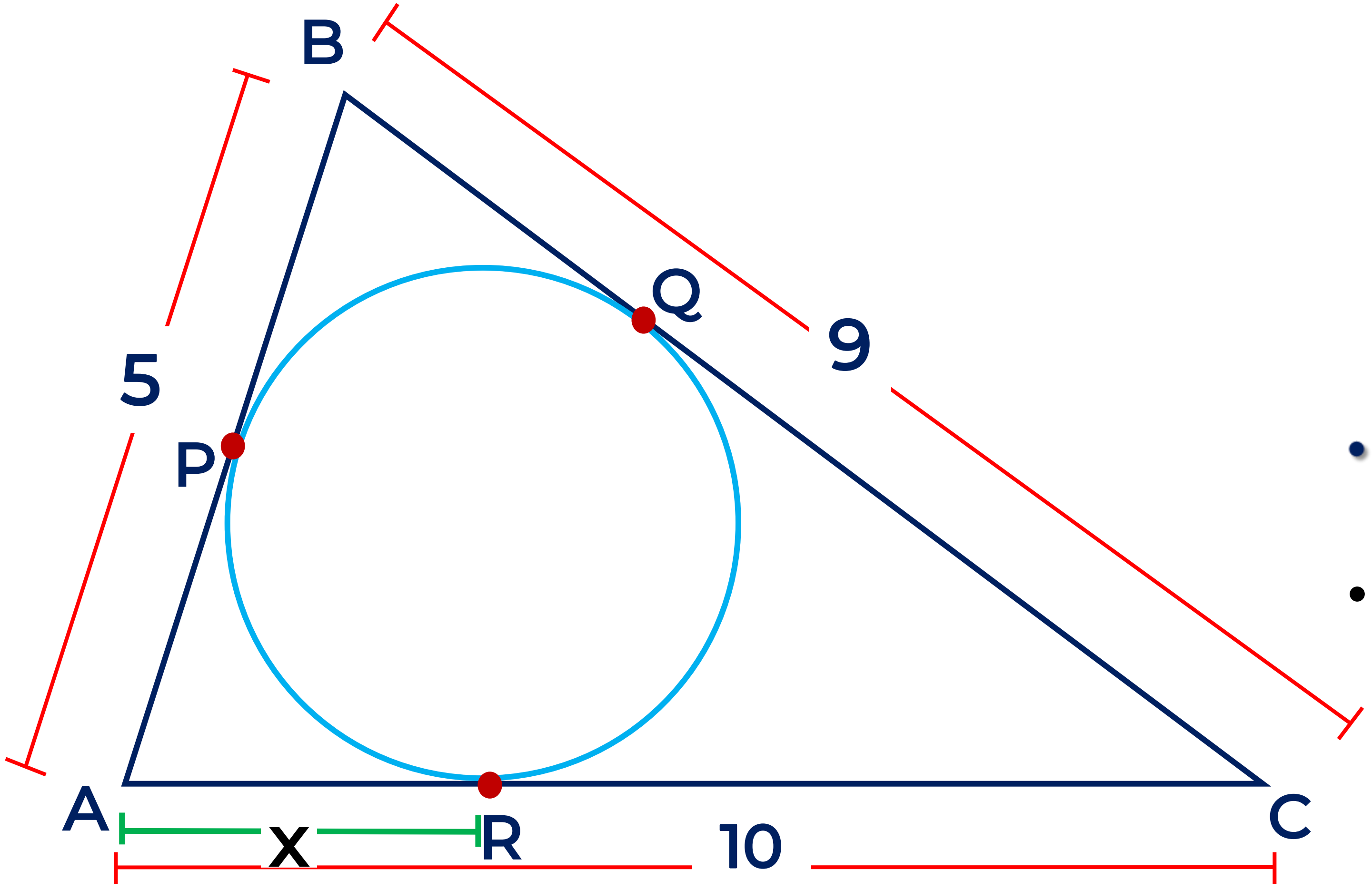
$$3x + 2x = 90°$$

$$5x = 90°$$

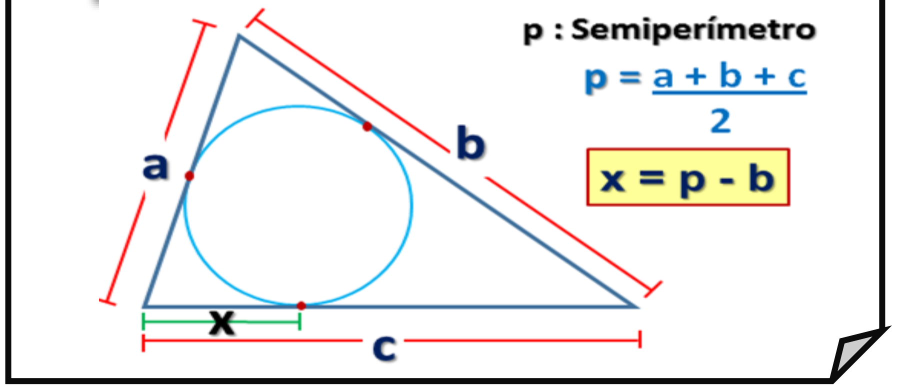
$$\boxed{x = 18°}$$

2. En un triángulo ABC, donde AB = 5, BC = 9 y AC = 10, la circunferencia inscrita es tangente a $\overline{AB}$, $\overline{BC}$ y $\overline{AC}$ en los puntos P, Q y R, respectivamente. Halle AR.

Resolución




**RECORDEMOS**



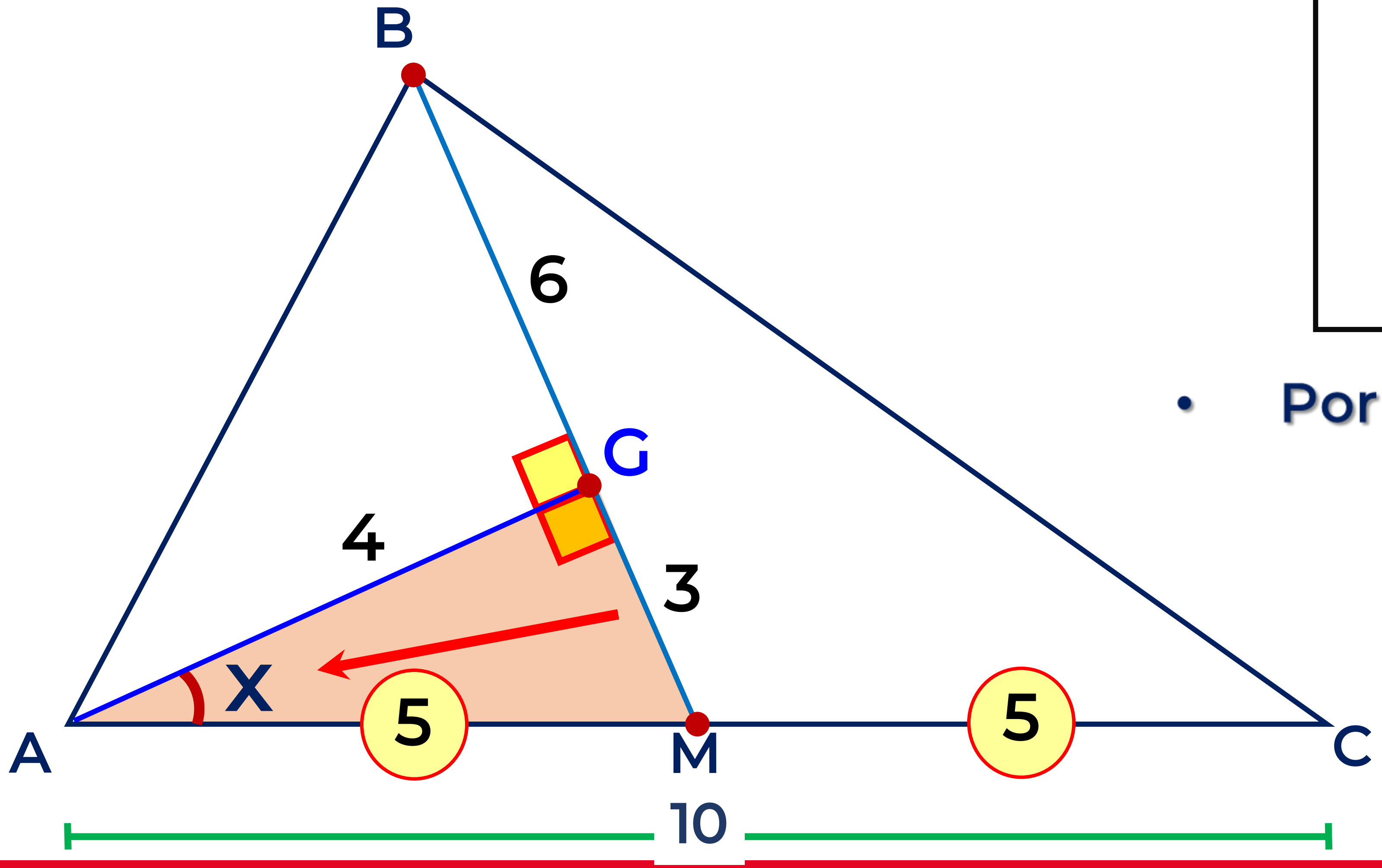

- $p = \dfrac{5+9+10}{2}$ → $\boxed{p = 12}$
- $x = p - b$ (Reemplazando)

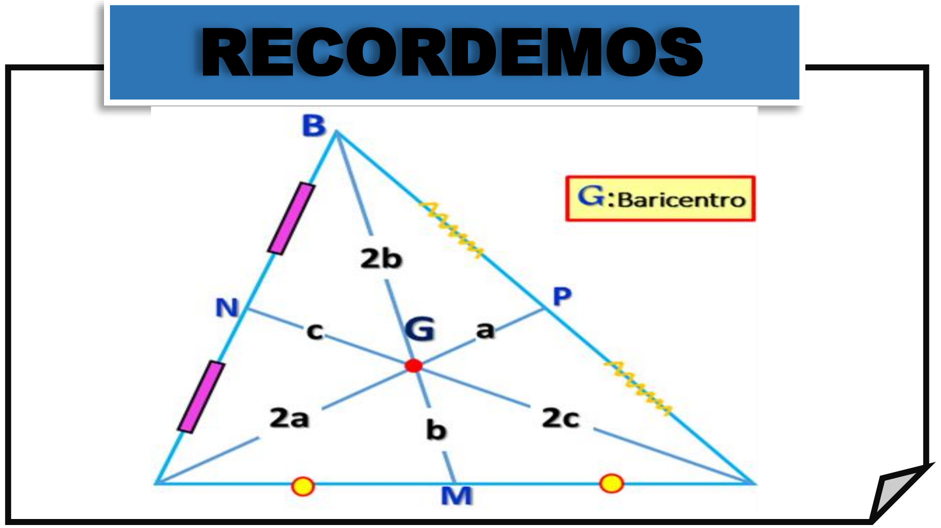
$x = 12 - 9$

$\boxed{x = 3}$

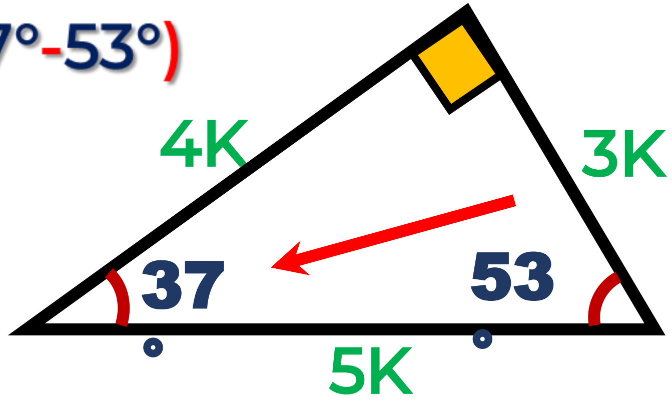
3. En una región triangular ABC de baricentro G, BG = 6 ; AC = 10 y m∢AGB=90°. Halle m<GAC.

Resolución



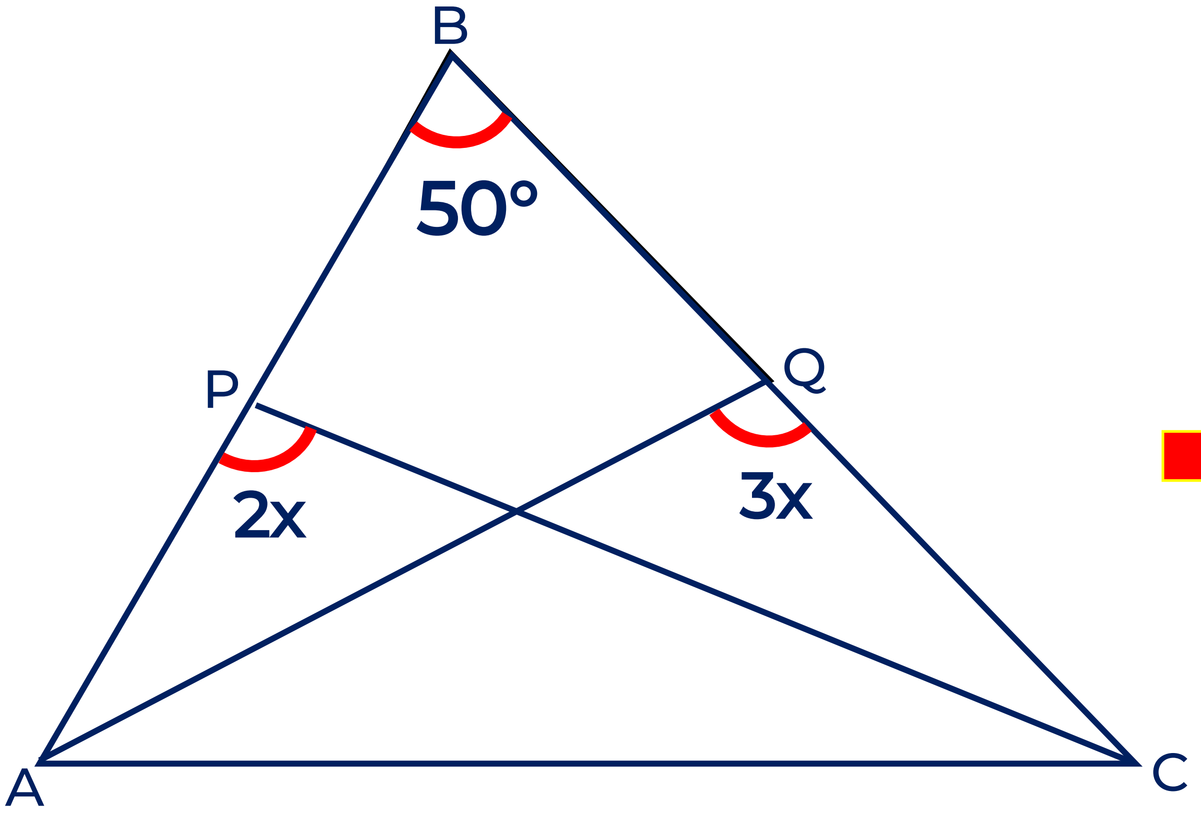

• Por ⊿ (37°-53°)



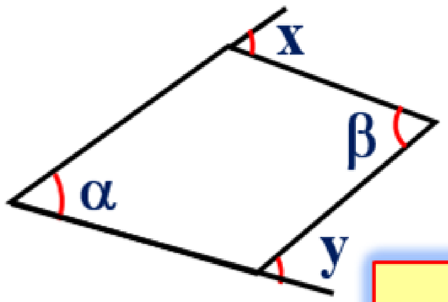

$x = 37°$

4. Si O es circuncentro del triángulo ABC, halle el valor de x.

Resolución




**RECORDEMOS**




$$x + y = \alpha + \beta$$

- $m\measuredangle AOC = 2(50°)$

  $m\measuredangle AOC = 100°$

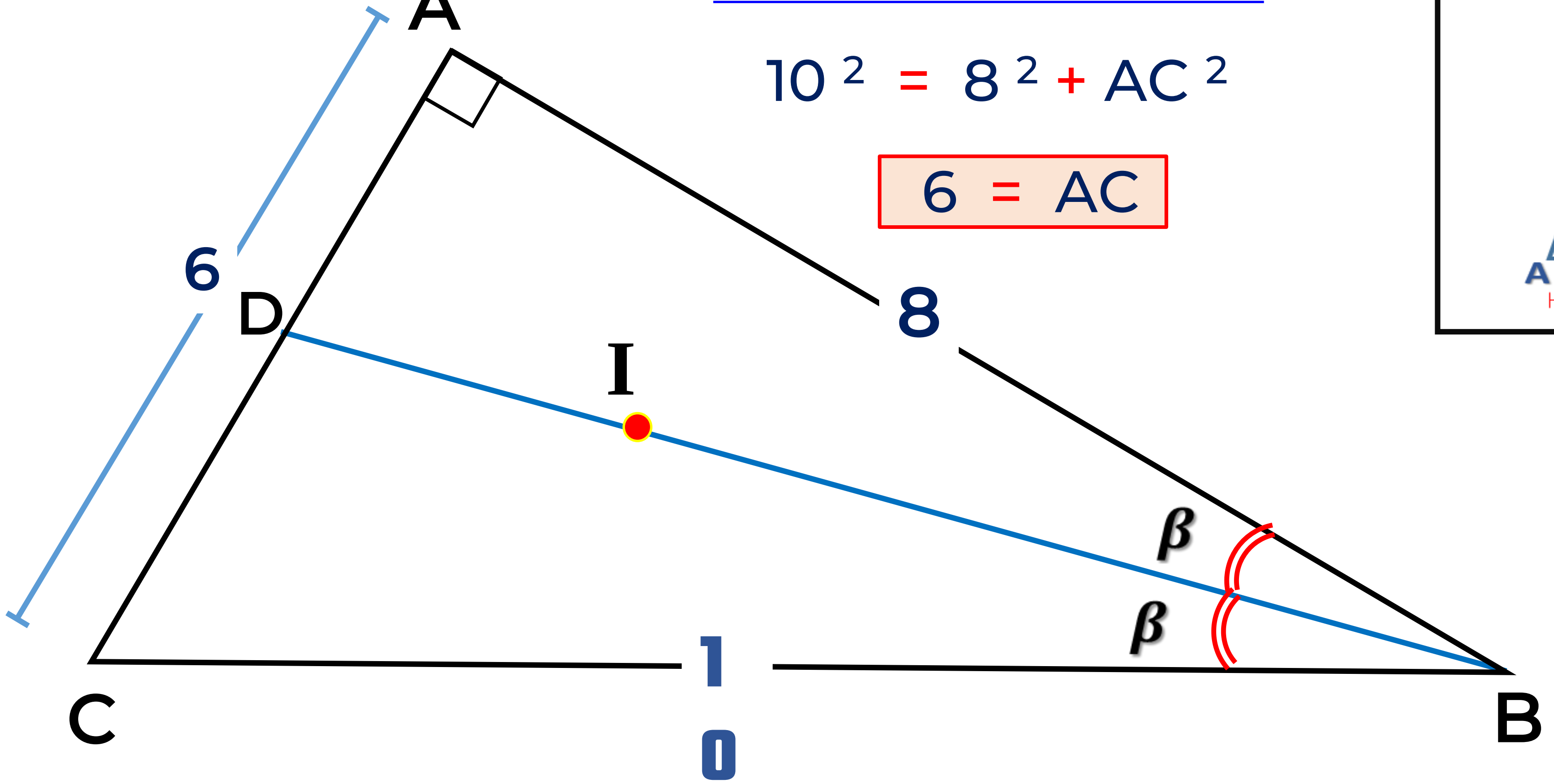
- $3x + 2x = 50° + 100°$

  $5x = 150°$

$$\boxed{x = 30°}$$

5. En un triángulo rectángulo ABC, recto en A, se traza la bisectriz interior BD. Halle (BI/ID) si AB=8, BC=10 y, además, I es incentro del triángulo ABC.

Resolución



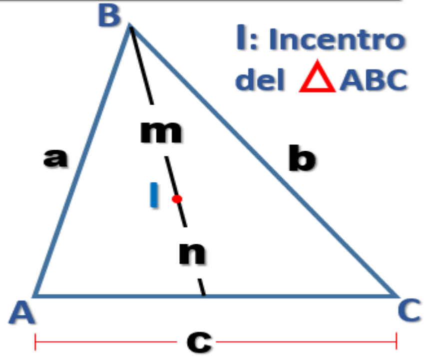

TEOREMA PITÁGORAS

$$10^2 = 8^2 + AC^2$$

$$\boxed{6 = AC}$$

**RECORDEMOS**

**Teorema del Incentro**




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

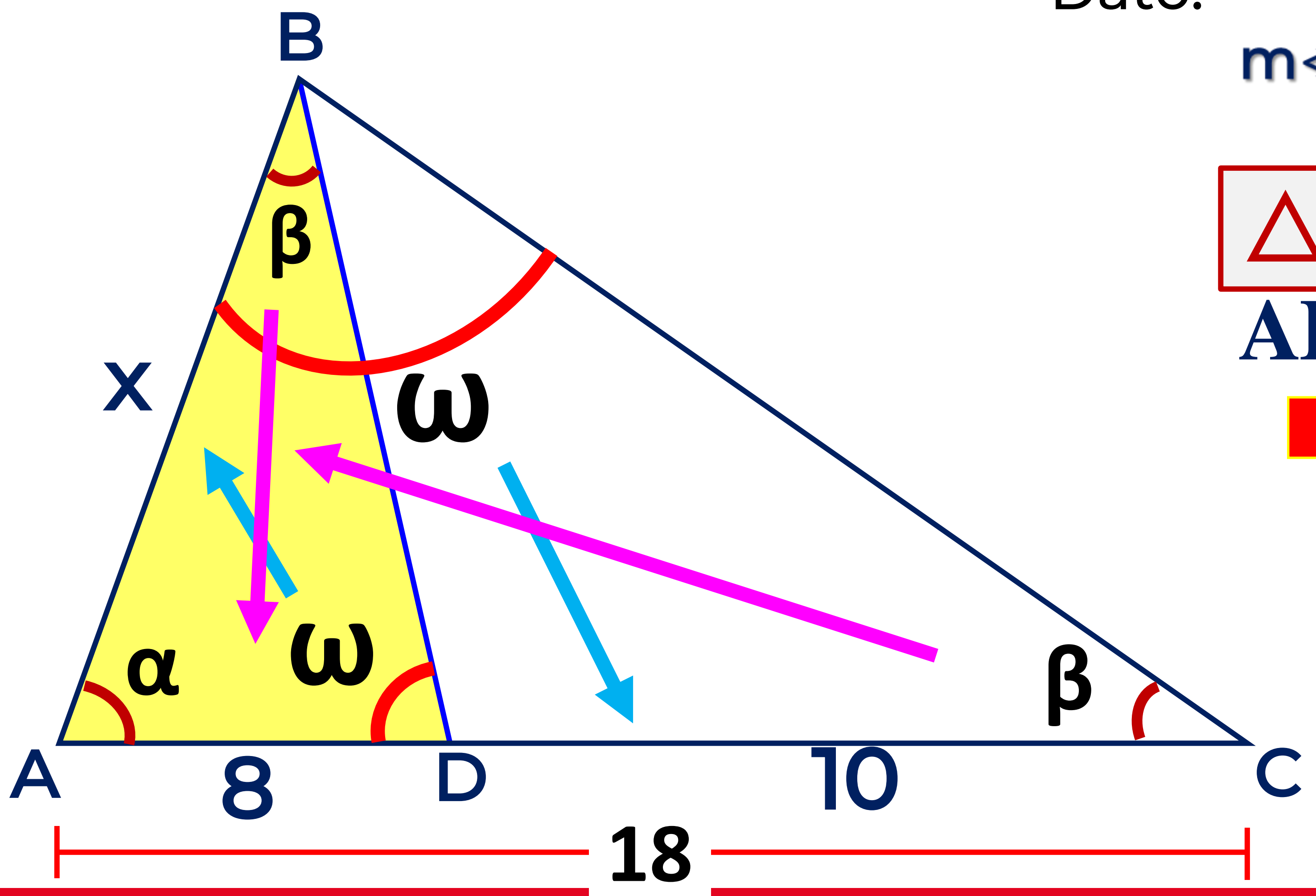
$$\frac{BI}{ID} = \frac{8+10}{6}$$

$$\frac{BI}{ID} = \frac{18}{6}$$

$$\boxed{\frac{BI}{ID} = 3}$$

6. En un triángulo ABC se traza la ceviana interior $\overline{BD}$ tal que AD = 4, DC = 12 y m∢ ABD = m∢ BCD. Halle AB.

Resolución




Dato:

m∢ ABD = m∢ BCD

△ ABD ∼ △ ABC

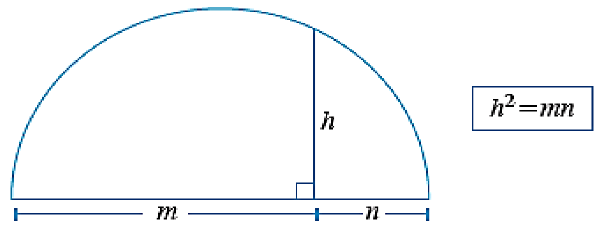
$$\frac{x}{18} = \frac{8}{x}$$

$$x^2 = 144$$

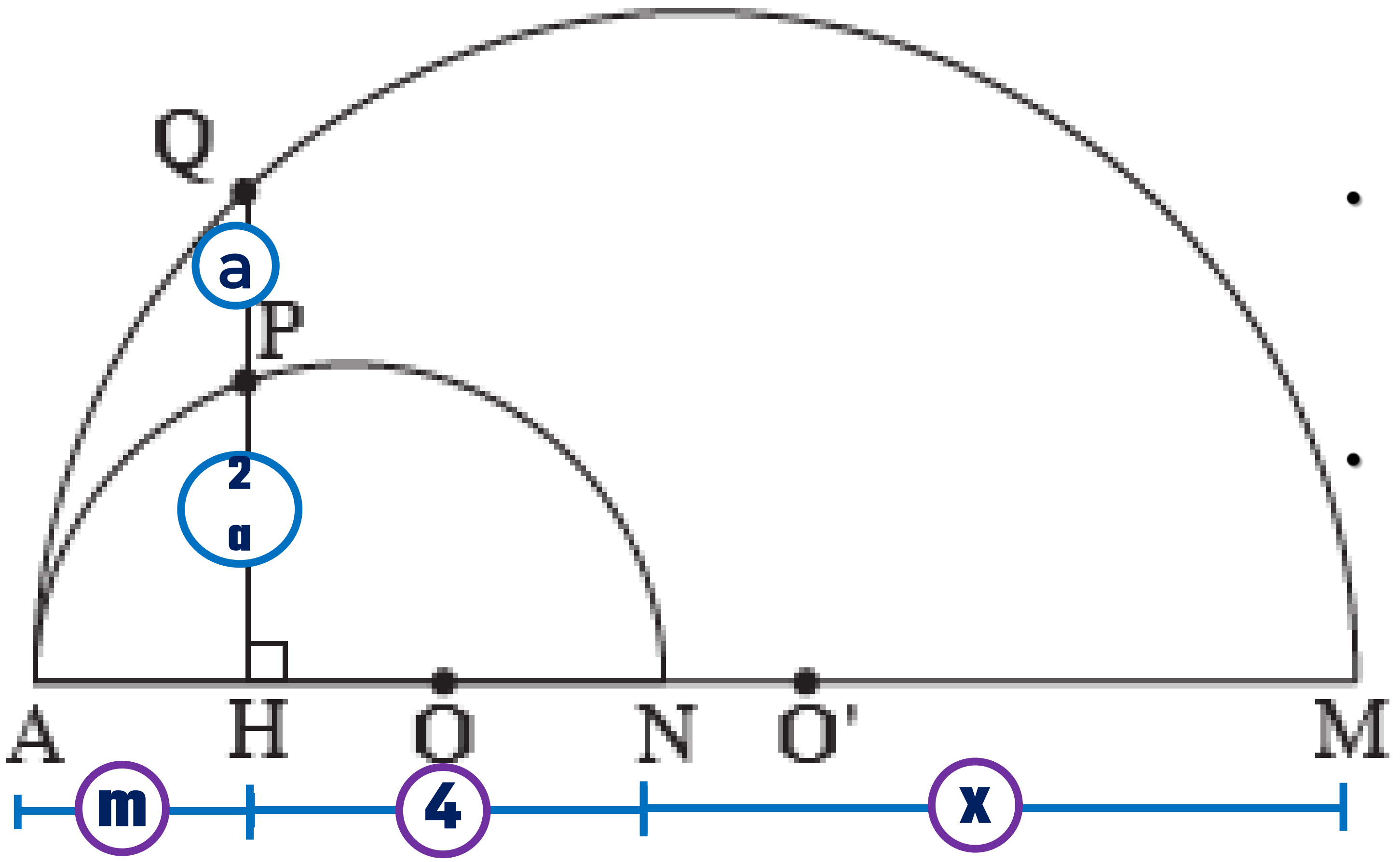
$$\boxed{x = 12}$$

7. En la siguiente figura, PH=2(PQ). Si HN=4. Además O y O' centros de las semicircunferencias , halle MN.

## RECORDEMOS




Resolución




- En el diámetro $\overline{AN}$

$$(2a)^2 = (m)(4)$$

$$\cancel{4}a^2 = (m)(\cancel{4}) \Rightarrow \boxed{a^2 = m}$$

- En el diámetro $\overline{AM}$

$$(3a)^2 = (m)(4+x)$$

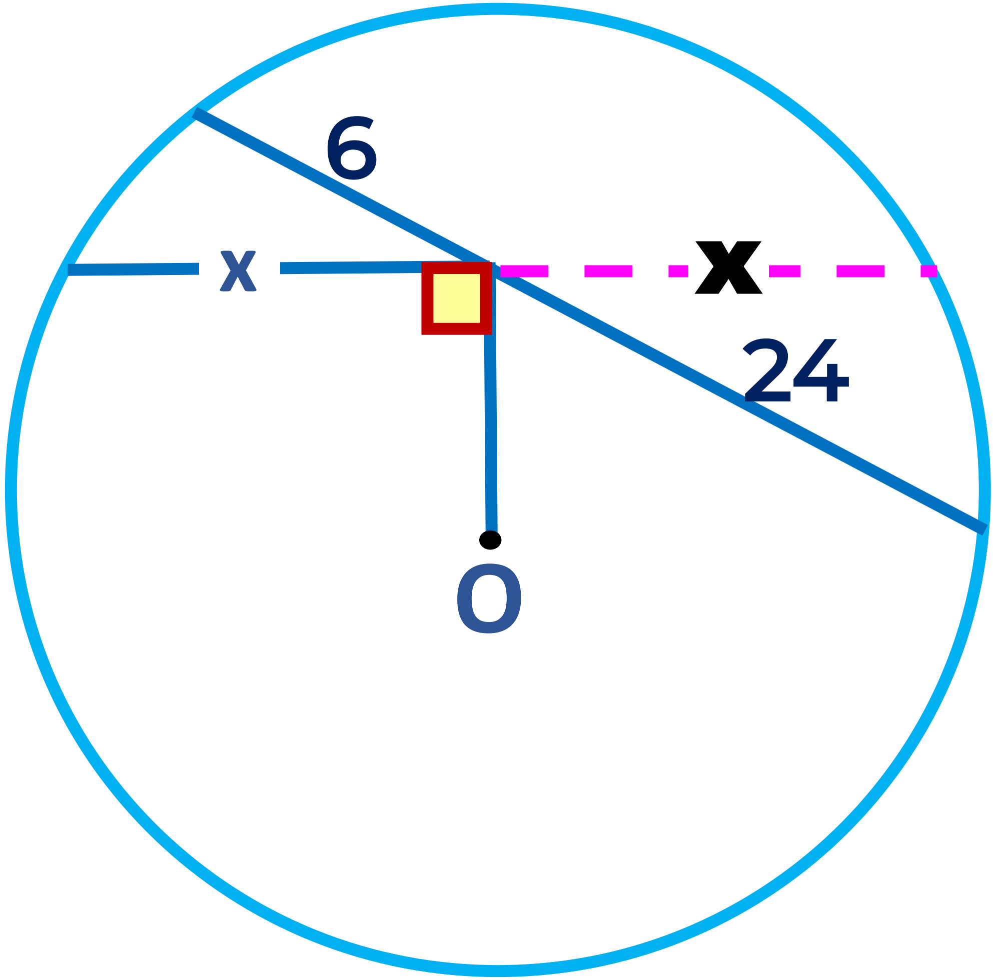
$$9\underbrace{a^2} = (m)(4+x)$$

$$9\cancel{m} = (\cancel{m})(4+x)$$

$$\boxed{x = 5}$$

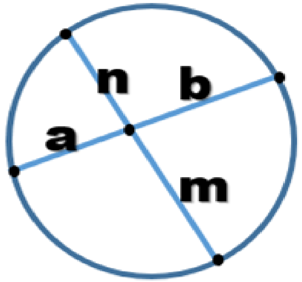
8. Si O es centro , halle el valor de x.

Resolución
Resolución




**RECORDEMOS**

Teorema de las cuerdas




$a \cdot b = m \cdot n$

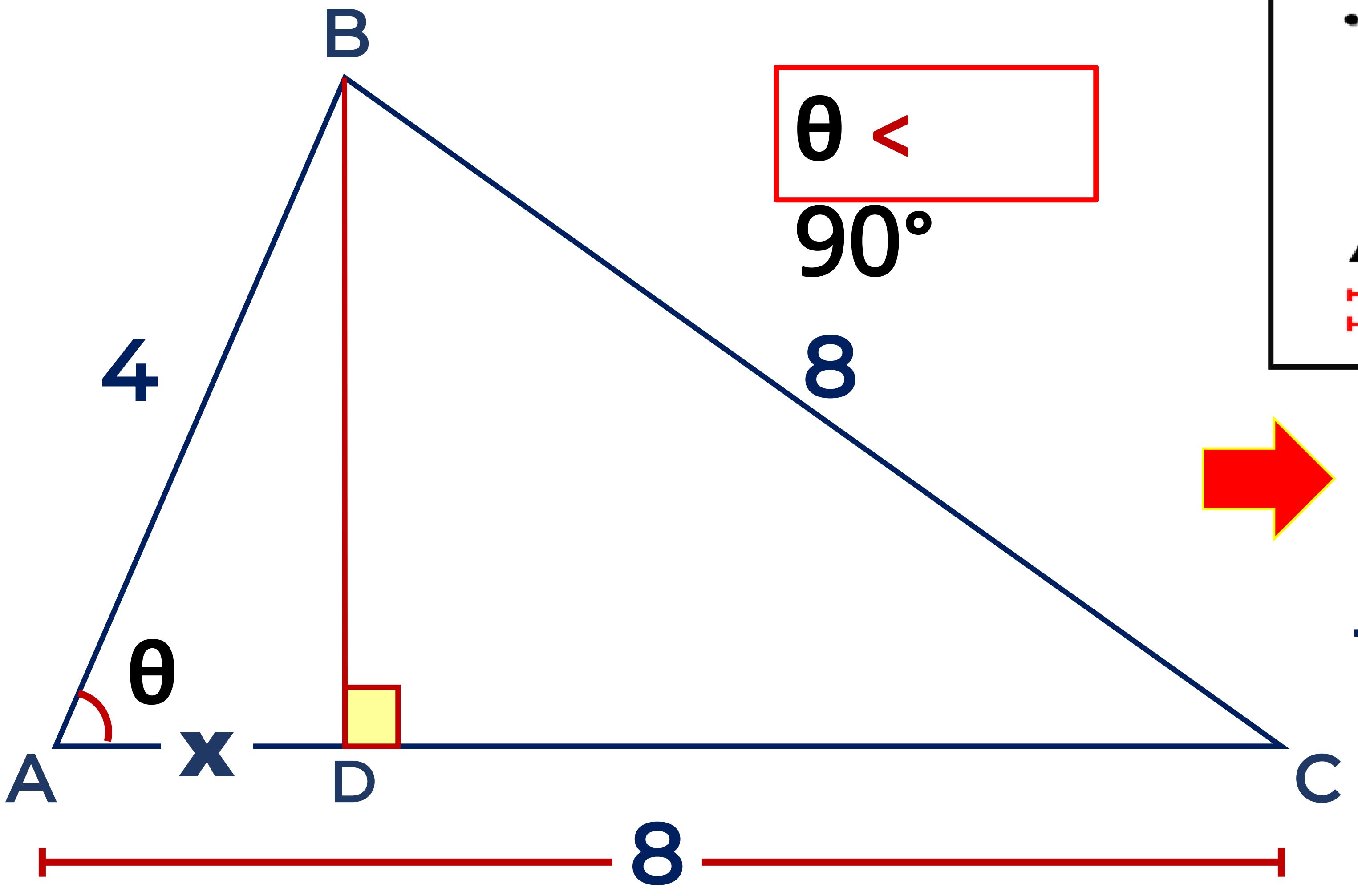
$$x^2 = 6 \cdot 24$$

$$x^2 = 144$$

$$\boxed{x = 12}$$

9. En un triángulo ABC, AB = 4 y BC = AC = 8. Luego se traza la altura $\overline{BD}$. Halle AD.

Resolución

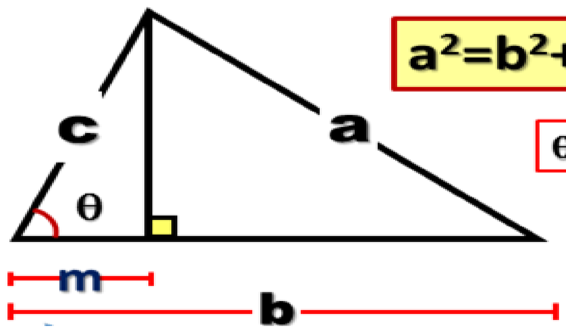



$\boxed{\theta < 90°}$

## RECORDEMOS

- Teorema de Euclides

$\boxed{a^2=b^2+c^2-2bm}$




$\boxed{\theta<90°}$

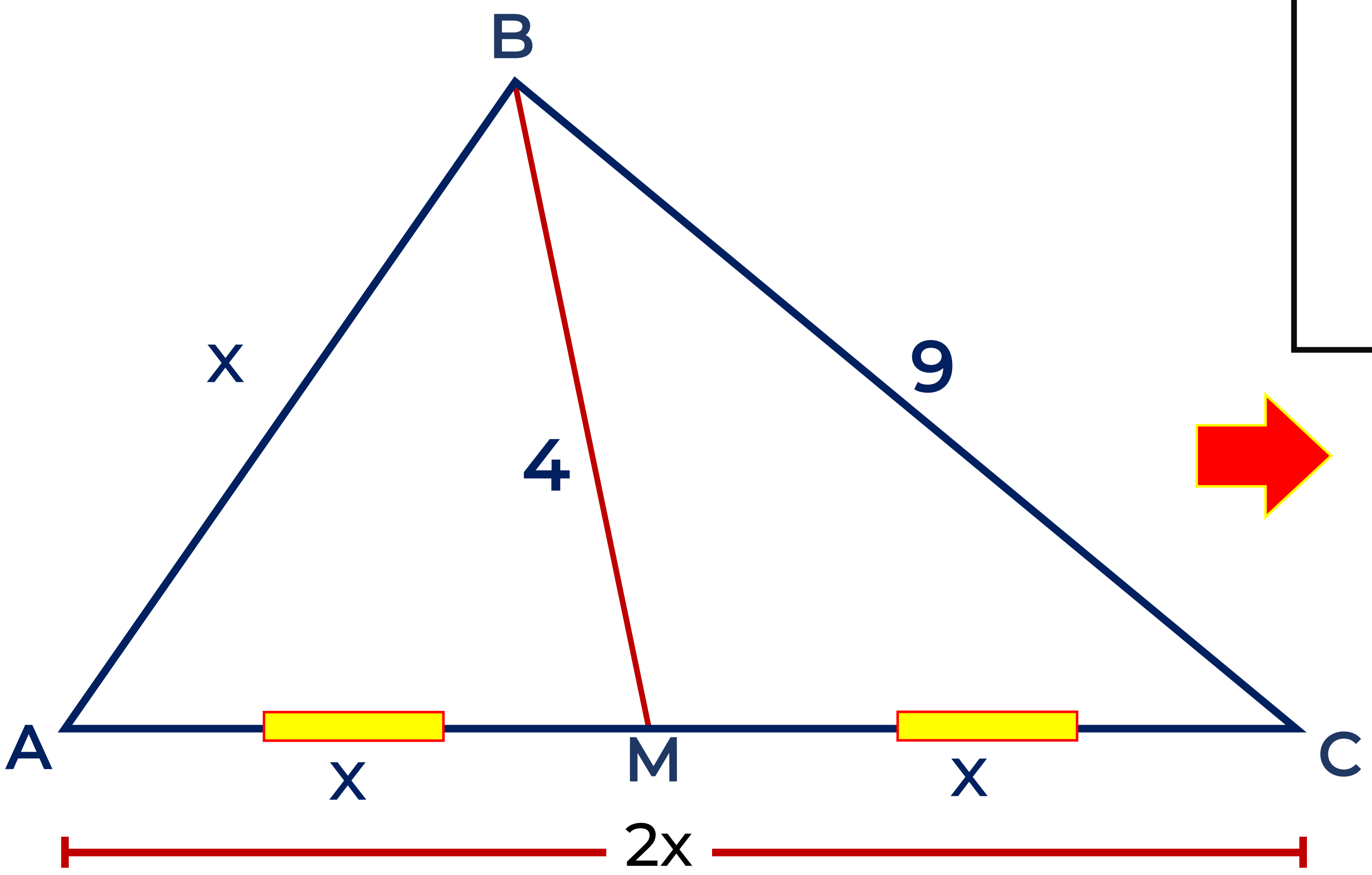
$$\cancel{8^2} = \cancel{8^2} + 4^2 - 2(8)(x)$$

$$16x = 16$$

$$\boxed{x = 1}$$

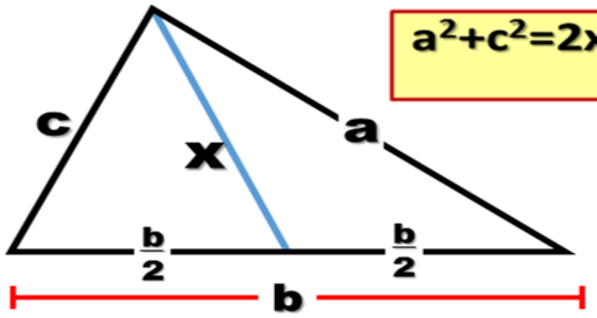
10. En un triángulo ABC, se traza la mediana $\overline{BM}$. Si BM = 4, BC = 9 y AB = AM = MC. Halle AB.

Resolución




**RECORDEMOS**

Teorema de la Mediana




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

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

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

$$49 = x^2$$

$$\boxed{x = 7}$$