



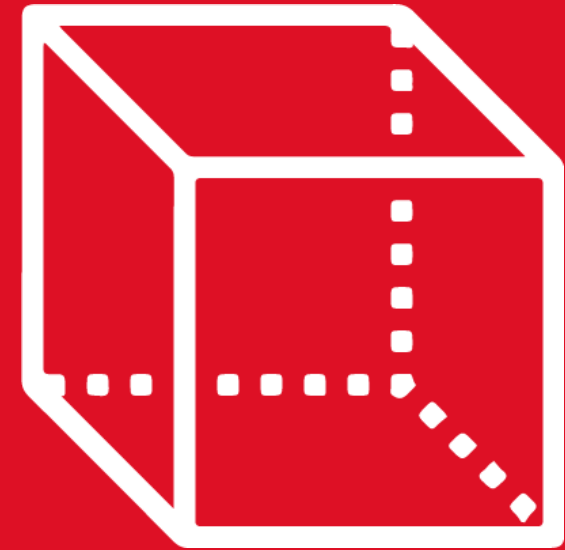
GEOMETRÍA

ASESORIA

4th

SECONDARY

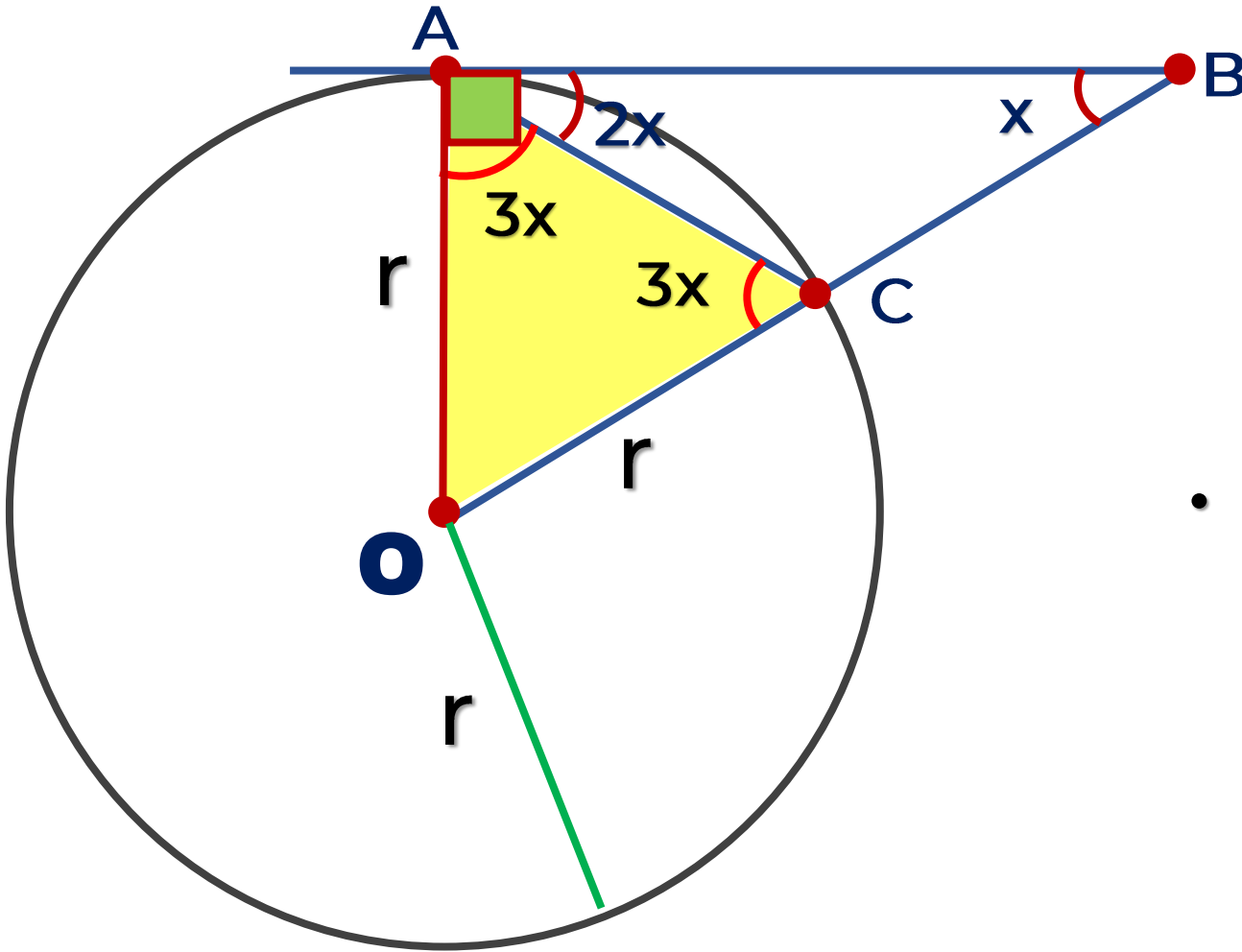
Tomo 4



 **SACO OLIVEROS**

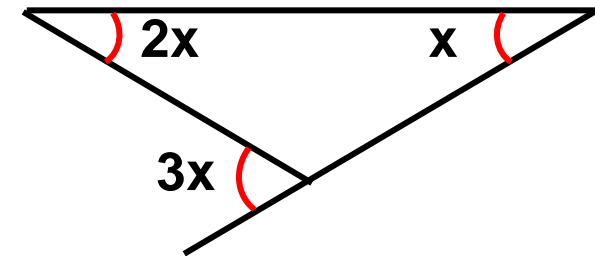
1. Si O es centro y A es punto de tangencia, halle el valor de x

Resolución

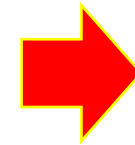


RECORDEMOS

Ángulo externo



• El $\triangle AOC$: Isósceles



$$3x + 2x =$$

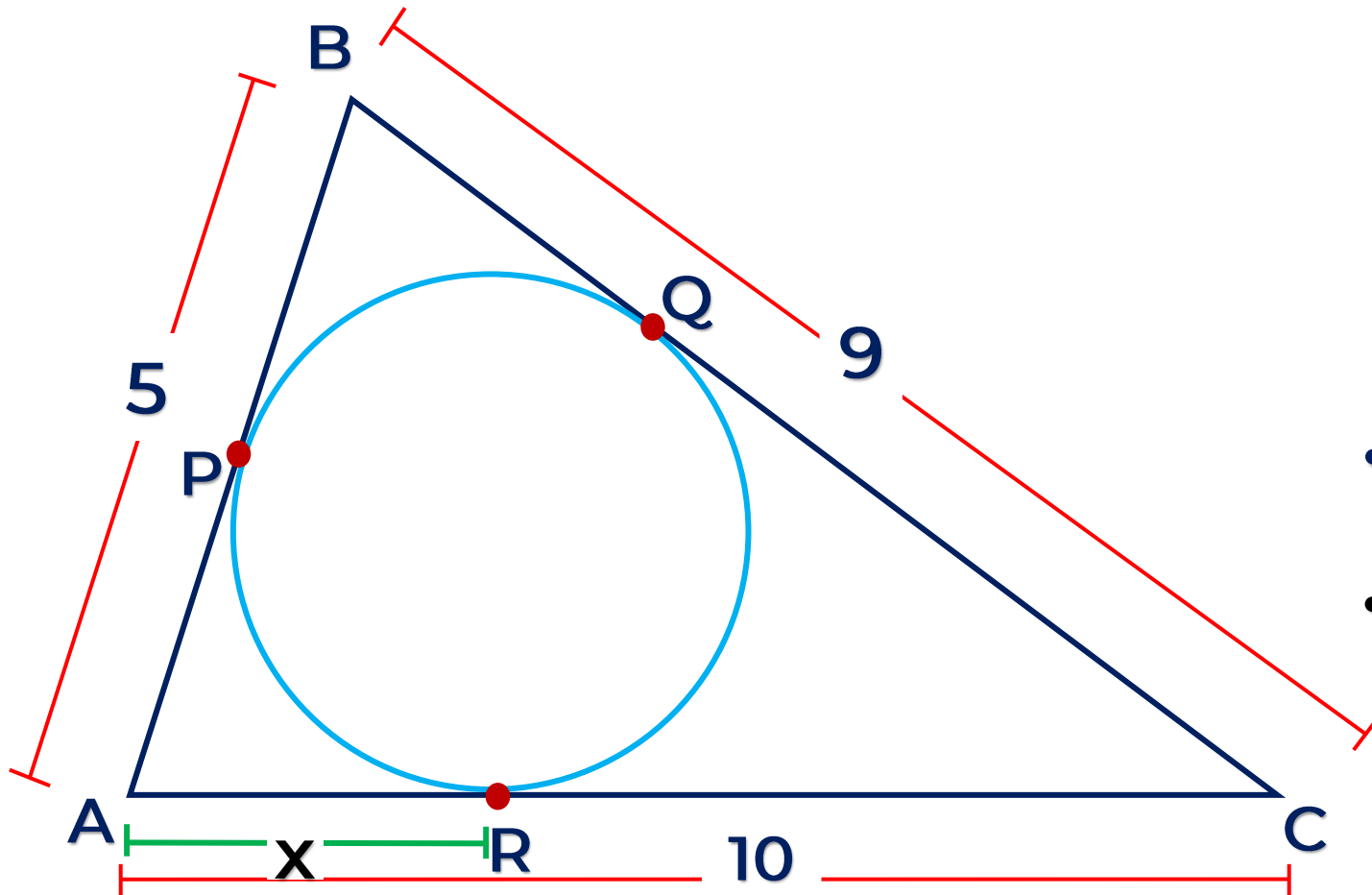
$$90^\circ$$

$$5x = 90^\circ$$

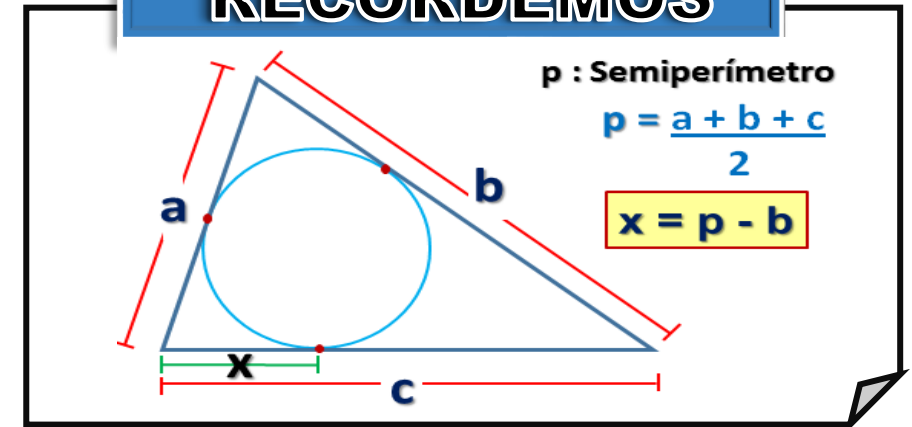
$$x = 18^\circ$$

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

Resolución



RECORDEMOS



$$p = \frac{5+9+10}{2} \Rightarrow p = 12$$

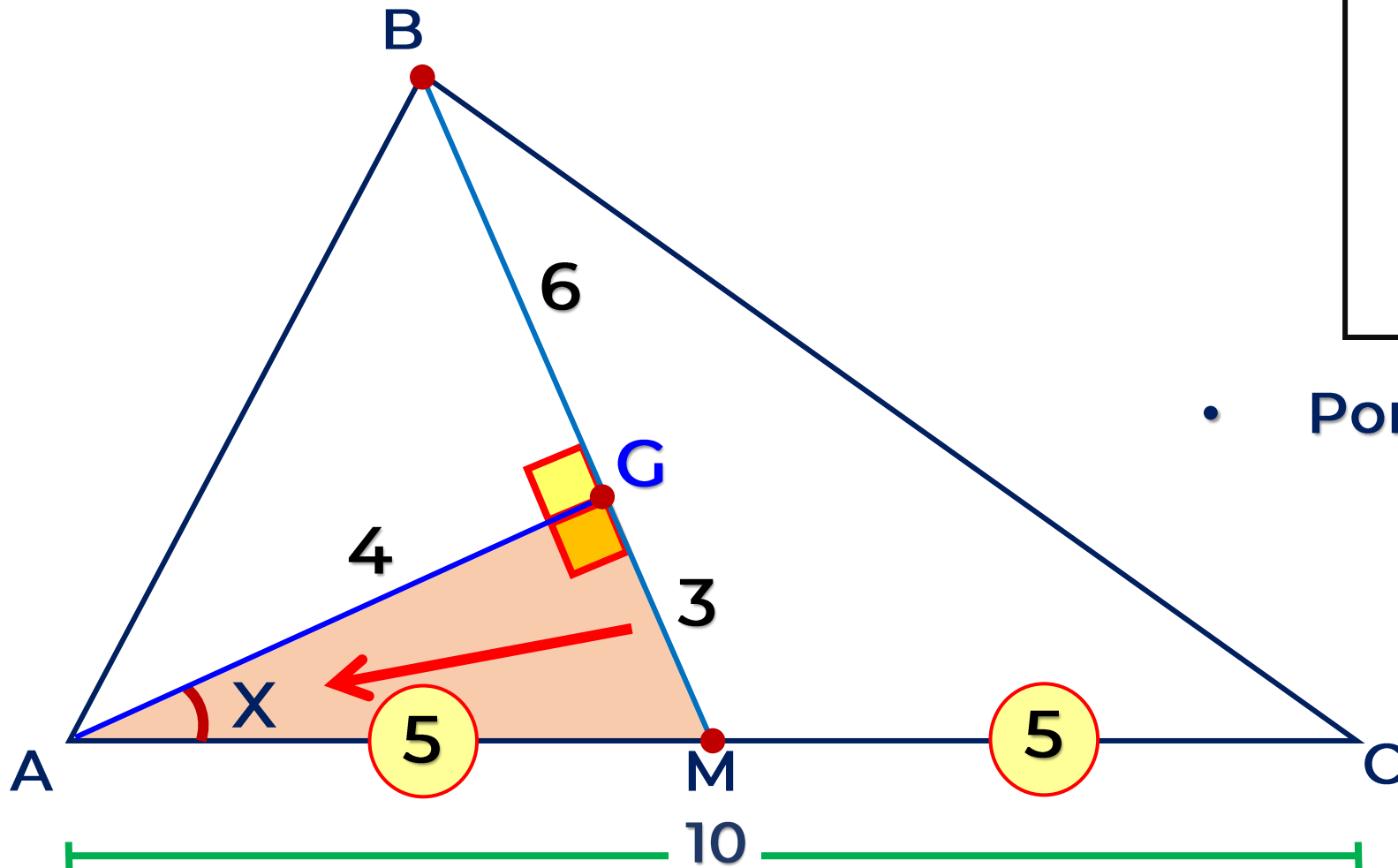
$$x = p - b \quad (\text{Reemplazando})$$

$$x = 12 - 9$$

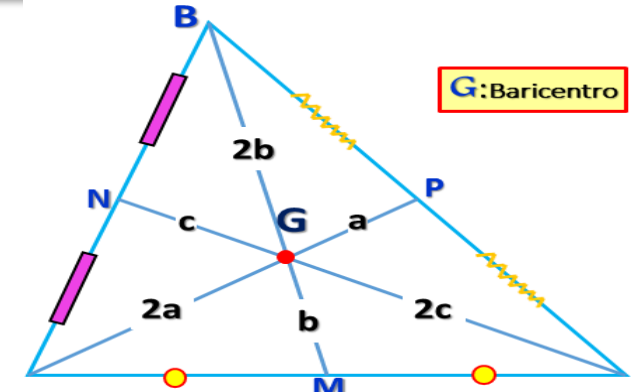
$$x = 3$$

3. En una región triangular ABC de baricentro G, $BG = 6$; $AC = 10$ y $m\angle AGB = 90^\circ$. Halle $m\angle GAC$.

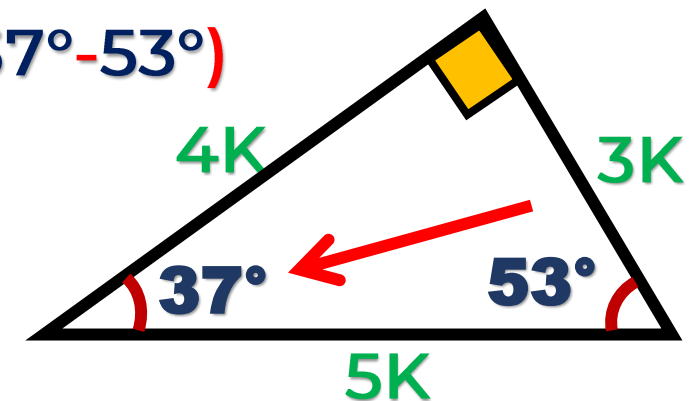
Resolución



RECORDEMOS



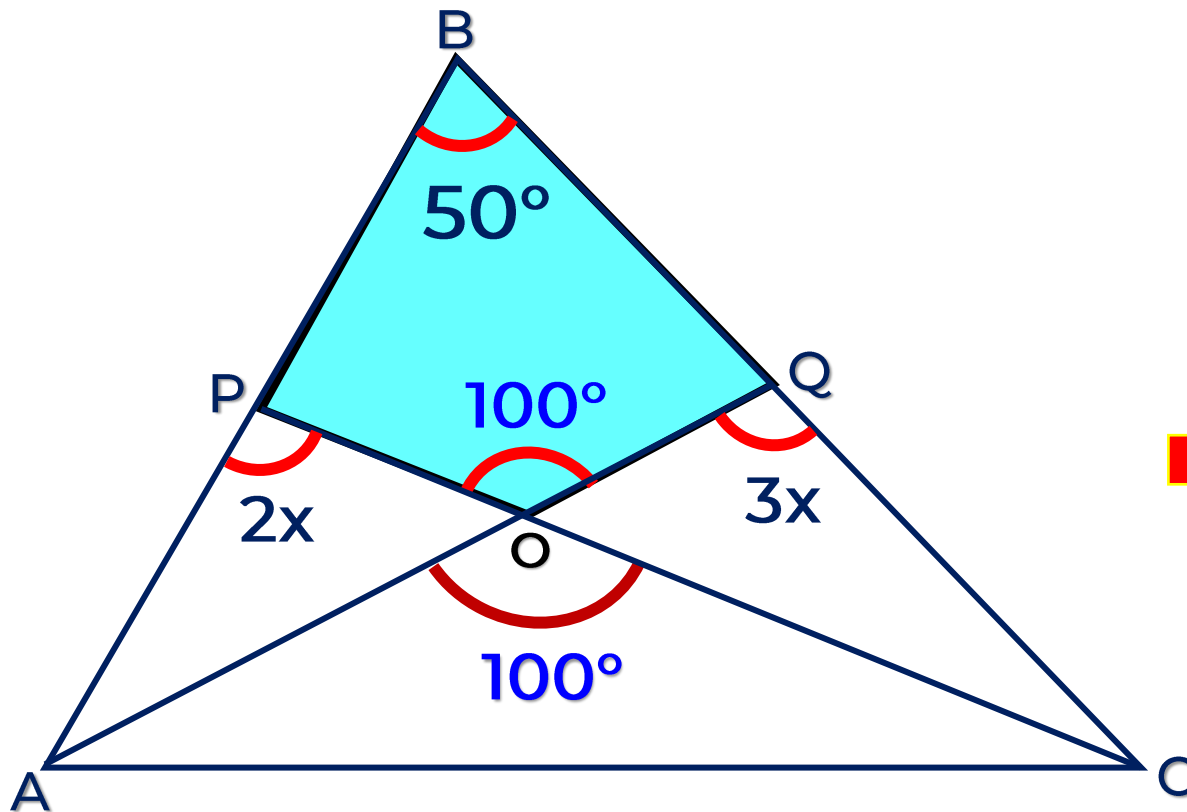
• Por Δ (37° - 53°)



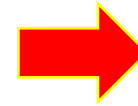
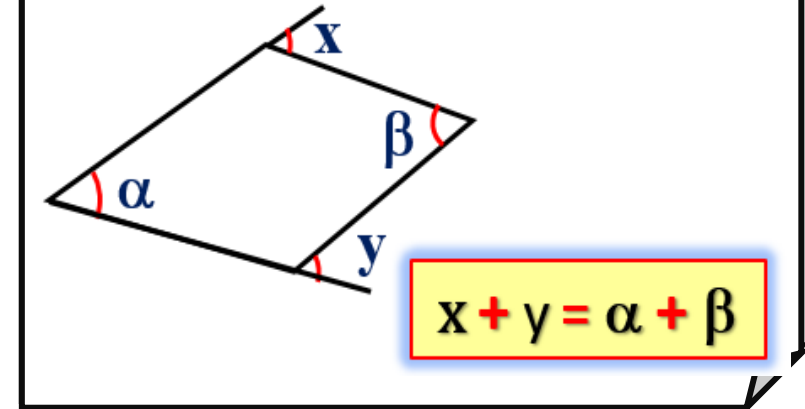
$$x = 37^\circ$$

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

Resolución



RECORDEMOS



- $m\angle AOC = 2(50^\circ)$
 $m\angle AOC = 100^\circ$
- $3x + 2x = 50^\circ + 100^\circ$
 $5x = 150^\circ$

$$x = 30^\circ$$

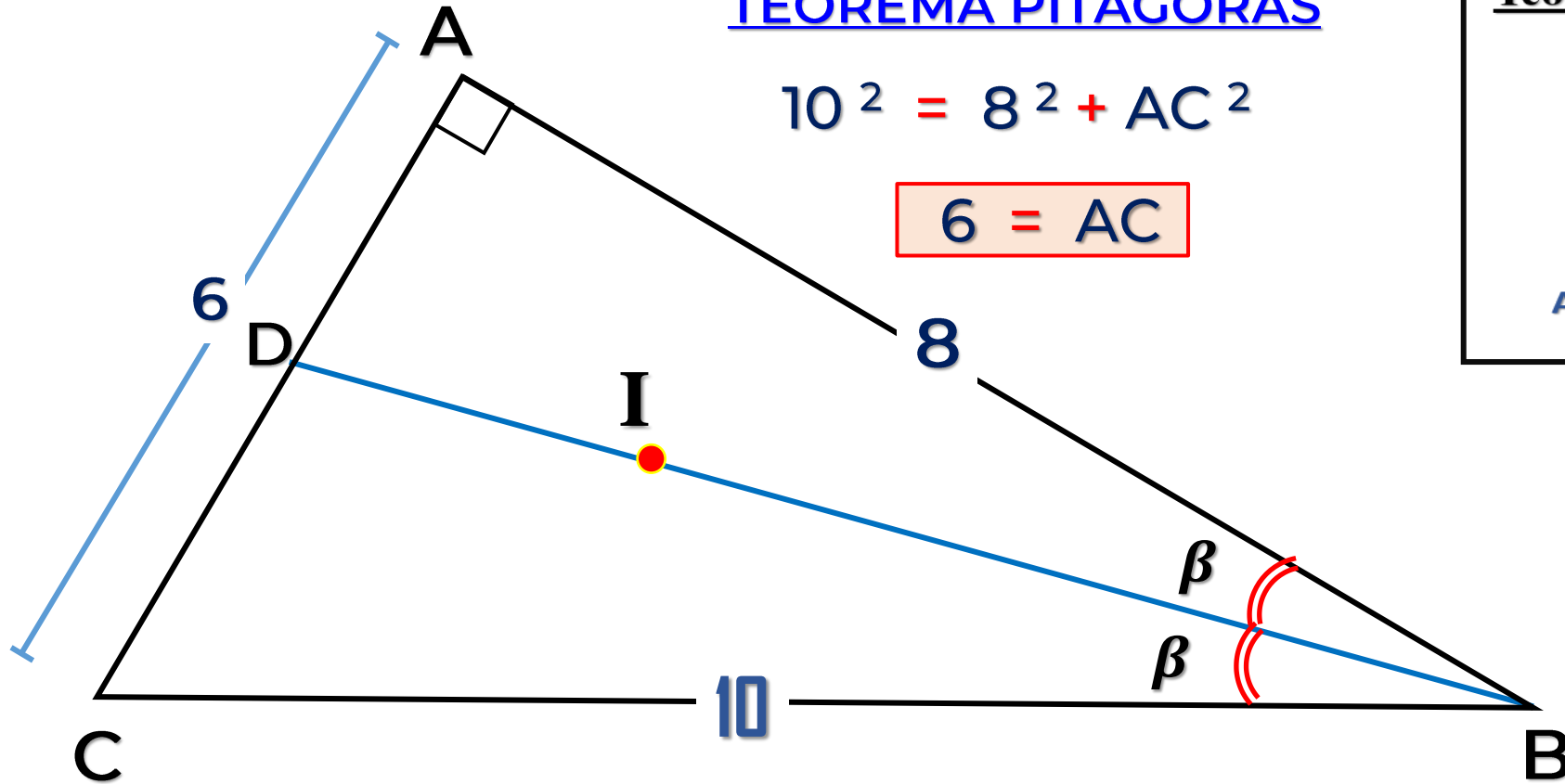
5. En un triángulo rectángulo ABC, recto en A, se traza la bisectriz interior BD. Halle (BI/ID) si $AB=8$, $BC=10$ y, además, I es incentro del triángulo ABC.

Resolución

TEOREMA PITÁGORAS

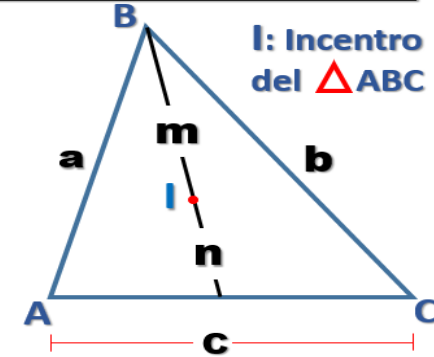
$$10^2 = 8^2 + AC^2$$

$$6 = AC$$



RECORDEMOS

Teorema del Incentro



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

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

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

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

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

Resolución

Dato:

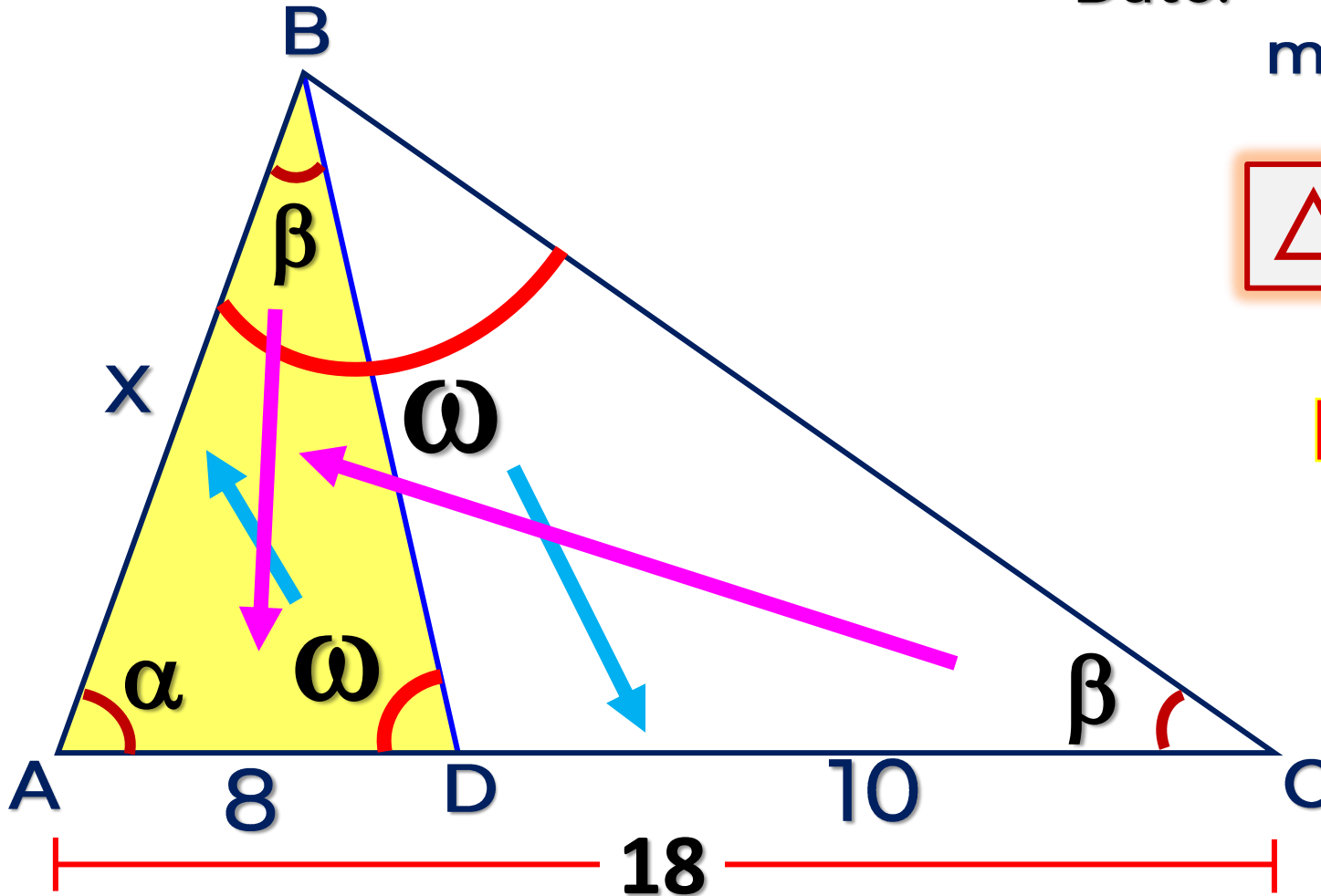
$$m\angle ABD = m\angle BCD$$

$$\triangle ABD \sim \triangle ABC$$

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

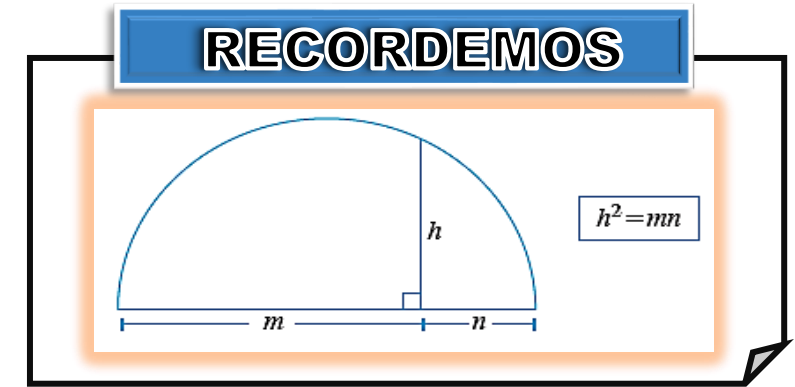
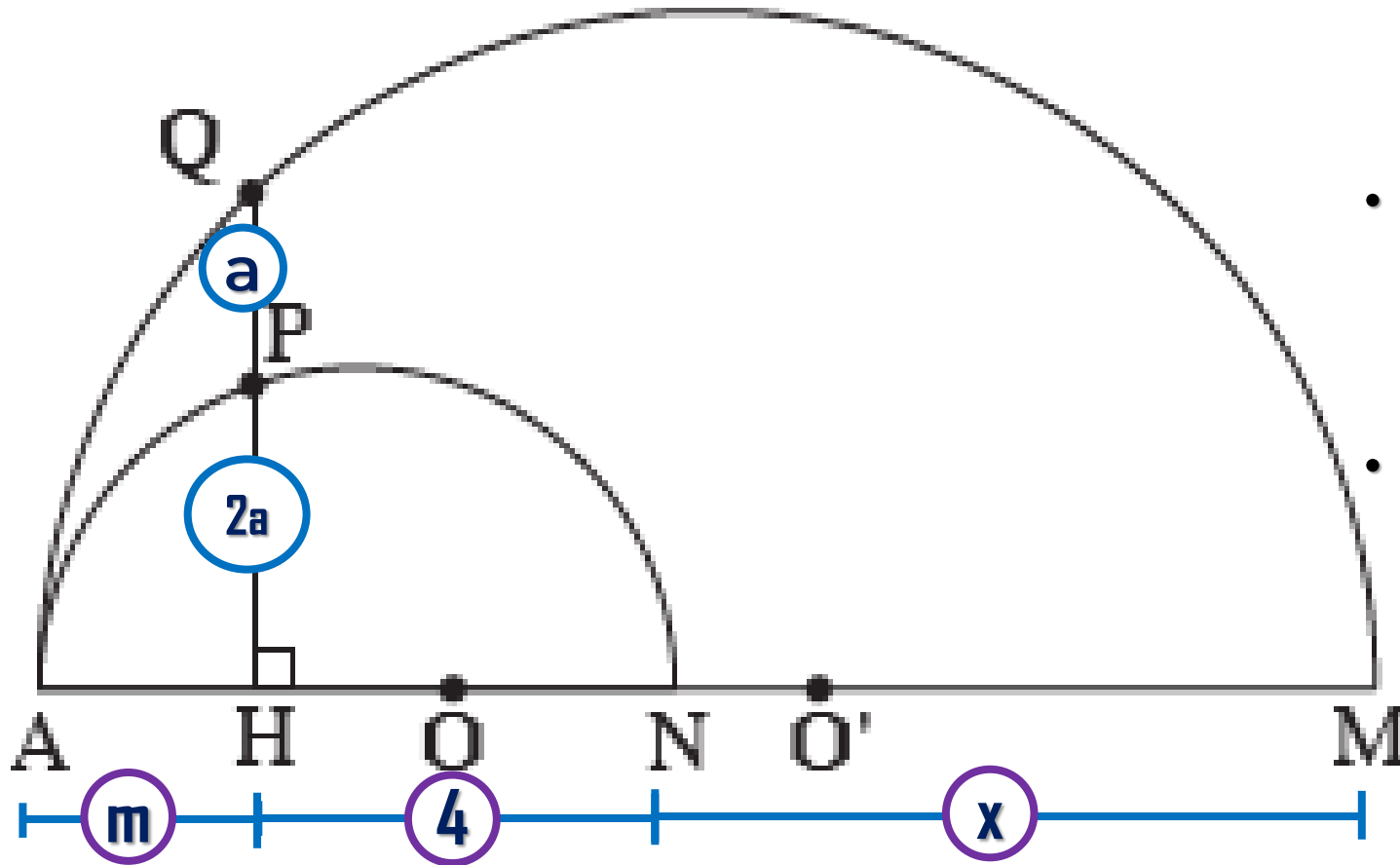
$$x^2 = 144$$

$$x = 12$$



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

Resolución



- En el diámetro \overline{AN}

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

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

- En el diámetro \overline{AM}

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

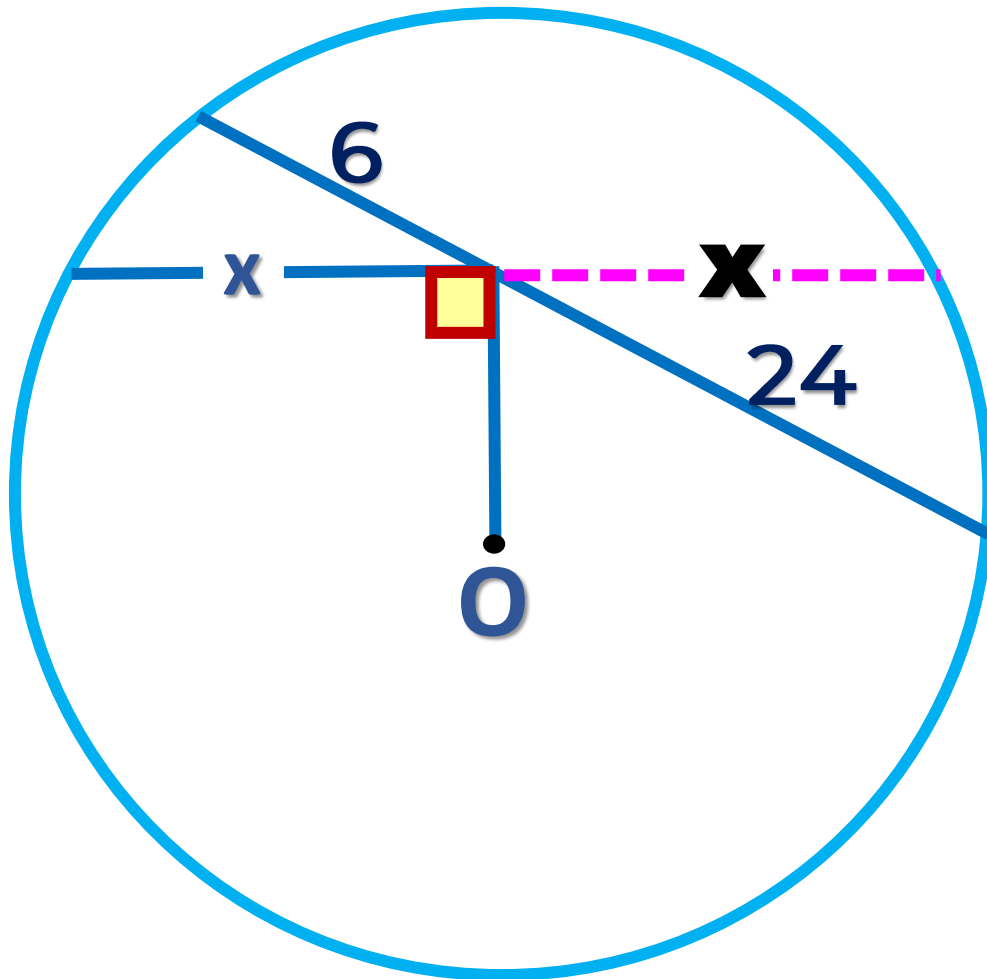
$$9a^2 = (m)(4+x)$$

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

$$x = 5$$

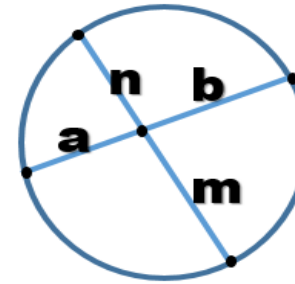
8. Si O es centro , halle el valor de x.

Resolución
Resolución

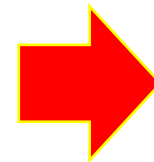


RECORDEMOS

Teorema de las cuerdas



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



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

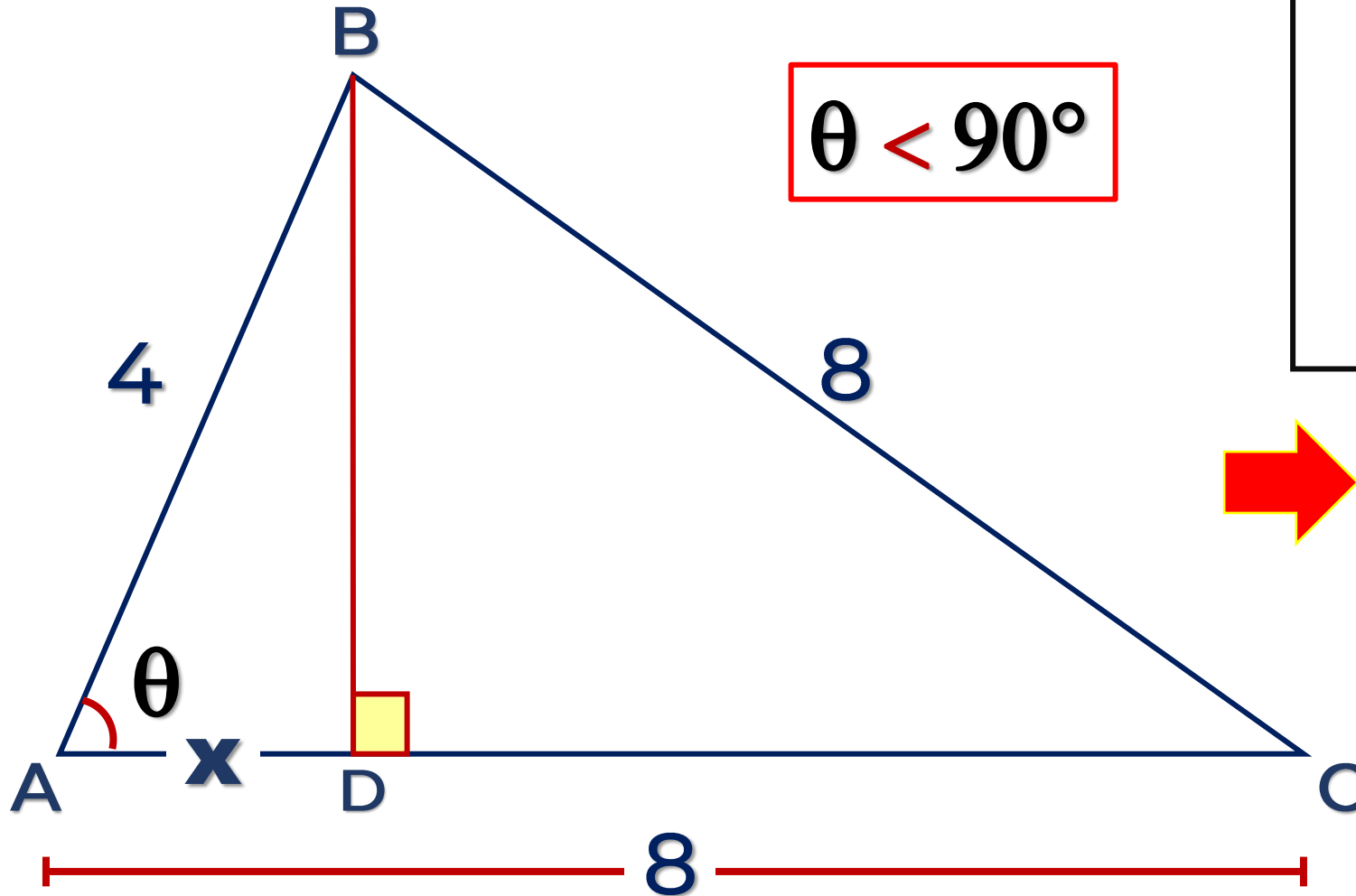
$$x^2 = 144$$

$$x = 12$$

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

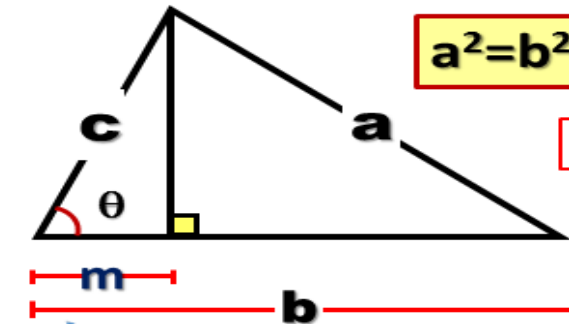
Resolución

$$\theta < 90^\circ$$



RECORDEMOS

• Teorema de Euclides



$$a^2 = b^2 + c^2 - 2bm$$

$$\theta < 90^\circ$$

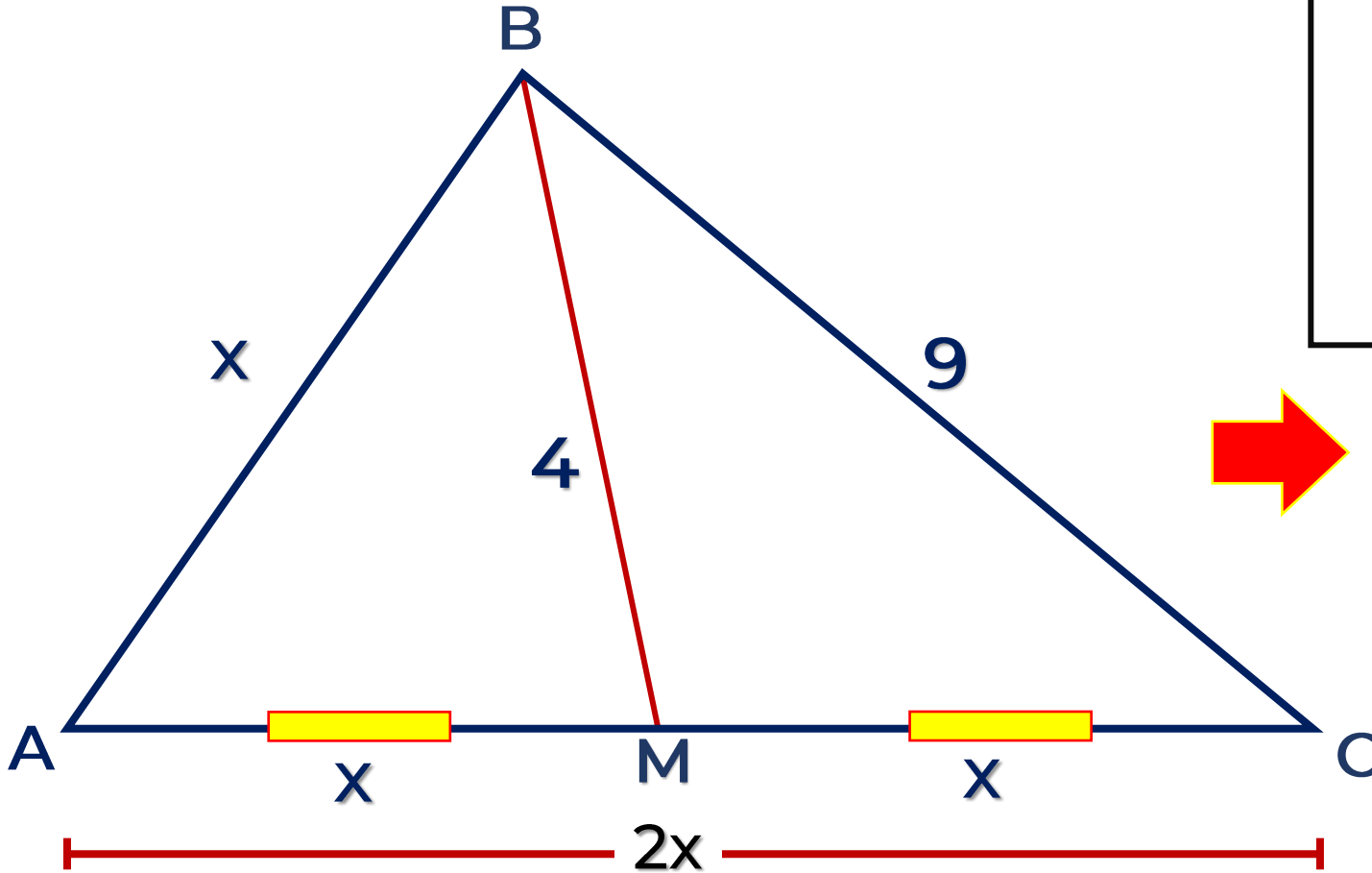
$$\Rightarrow 8^2 = 8^2 + 4^2 - 2(8)(x)$$

$$16x = 16$$

$$x = 1$$

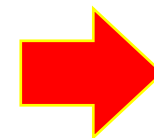
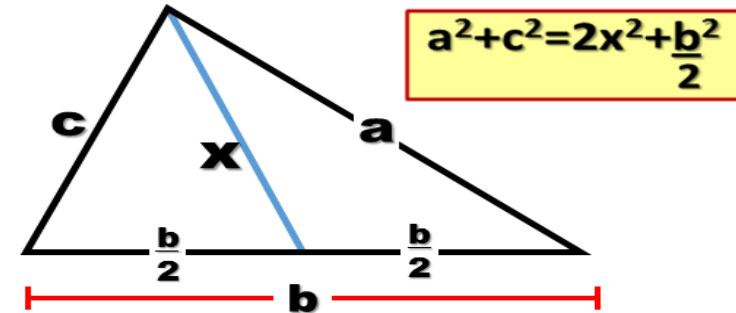
10. En un triángulo ABC, se traza la mediana \overline{BM} . Si $BM = 4$, $BC = 9$ y $AB = AM = MC$. Halle AB.

Resolución



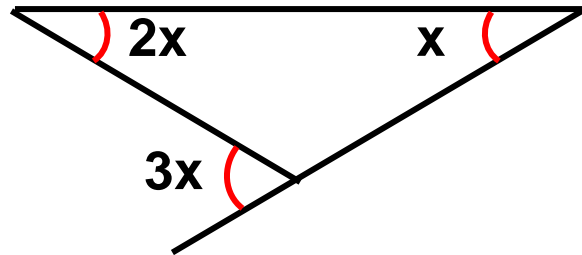
RECORDEMOS

Teorema de la Mediana



$$\begin{aligned} 9^2 + x^2 &= 2(4)^2 + \frac{(2x)^2}{2} \\ 81 + x^2 &= 32 + 2x^2 \\ 49 &= x^2 \end{aligned}$$

$$x = 7$$



RECORDEMOS

Teorema de la Mediana

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

