



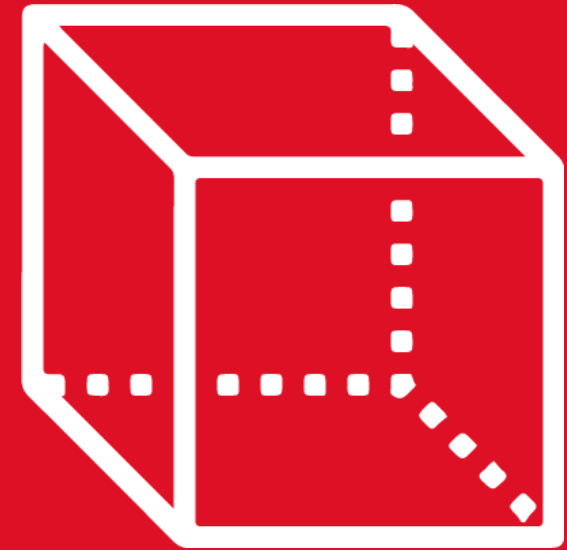
GEOMETRÍA

Tomo 6

1st

SECONDARY

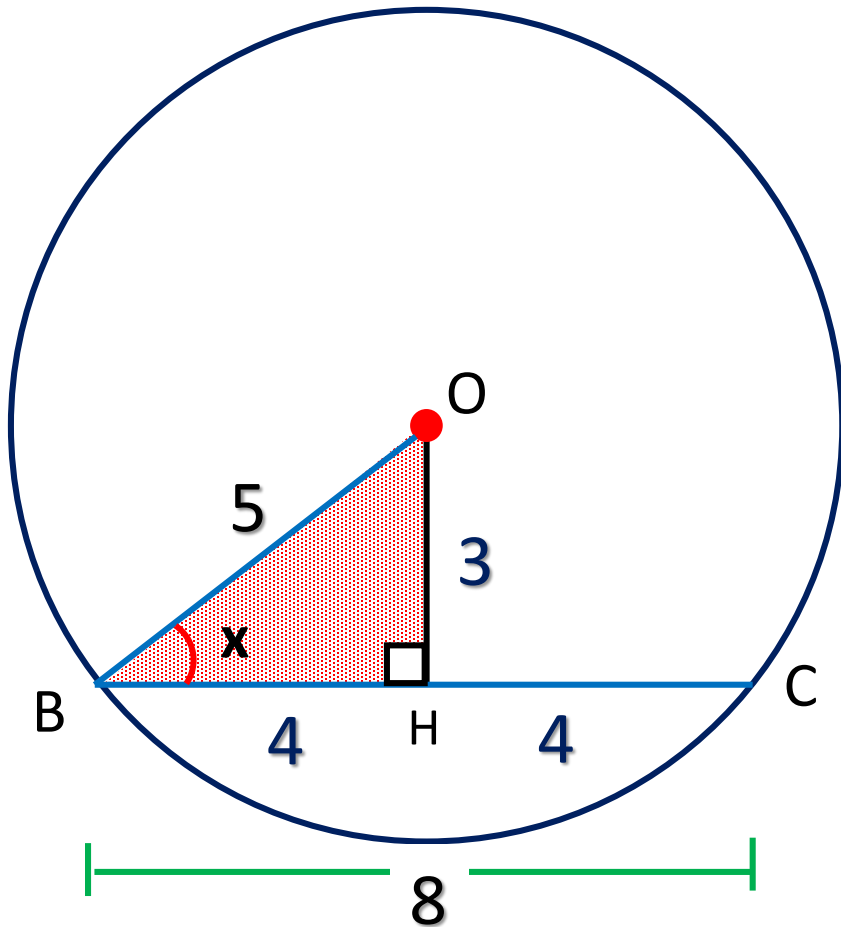
RETROALIMENTACIÓN



 **SACO OLIVEROS**

1. En el gráfico, si O es centro, $OB = 5$ y $BC = 8$, halle el valor de x .

Resolución



Piden: x

- Se traza $\overline{OH} \perp \overline{BC}$

Entonces: $BH = HC = 4$

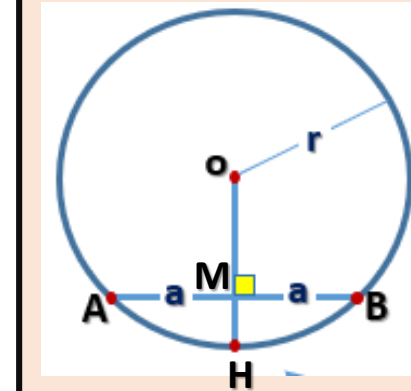
- En el $\triangle BHO$, notable ($37^\circ - 53^\circ$)

Entonces: $OH = 3$

\therefore

$$x = 37^\circ$$

RECORDEMOS



Si O es centro

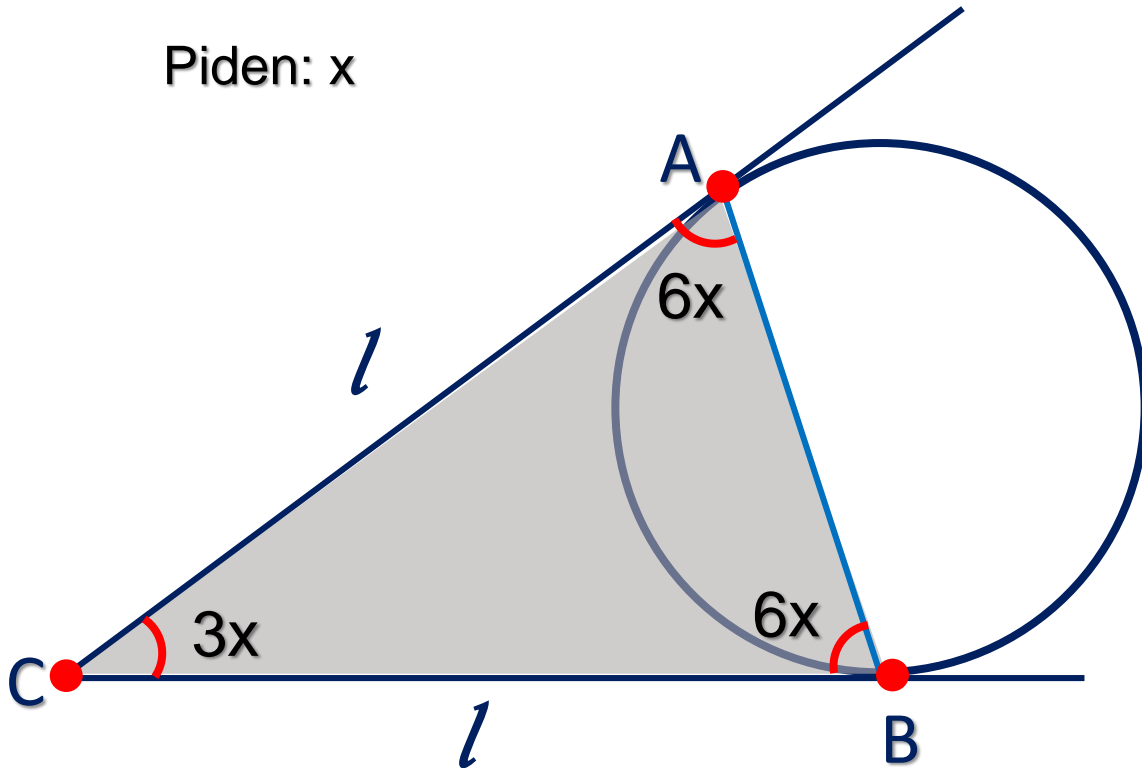
$$\overline{OH} \perp \overline{AB}$$

$$AM = MB = a$$

2. Desde un punto C exterior a una circunferencia se trazan los segmentos tangentes \overline{CA} y \overline{CB} (A y B son puntos de tangencia). Si $m\angle ACB = 3x$ y $m\angle CAB = 6x$, halle el valor de x.

Resolución

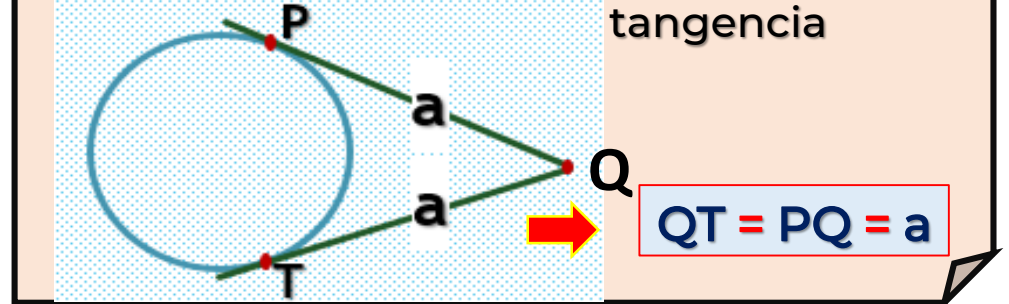
Piden: x



RECORDEMOS

Teorema:

Si: P y T puntos de tangencia

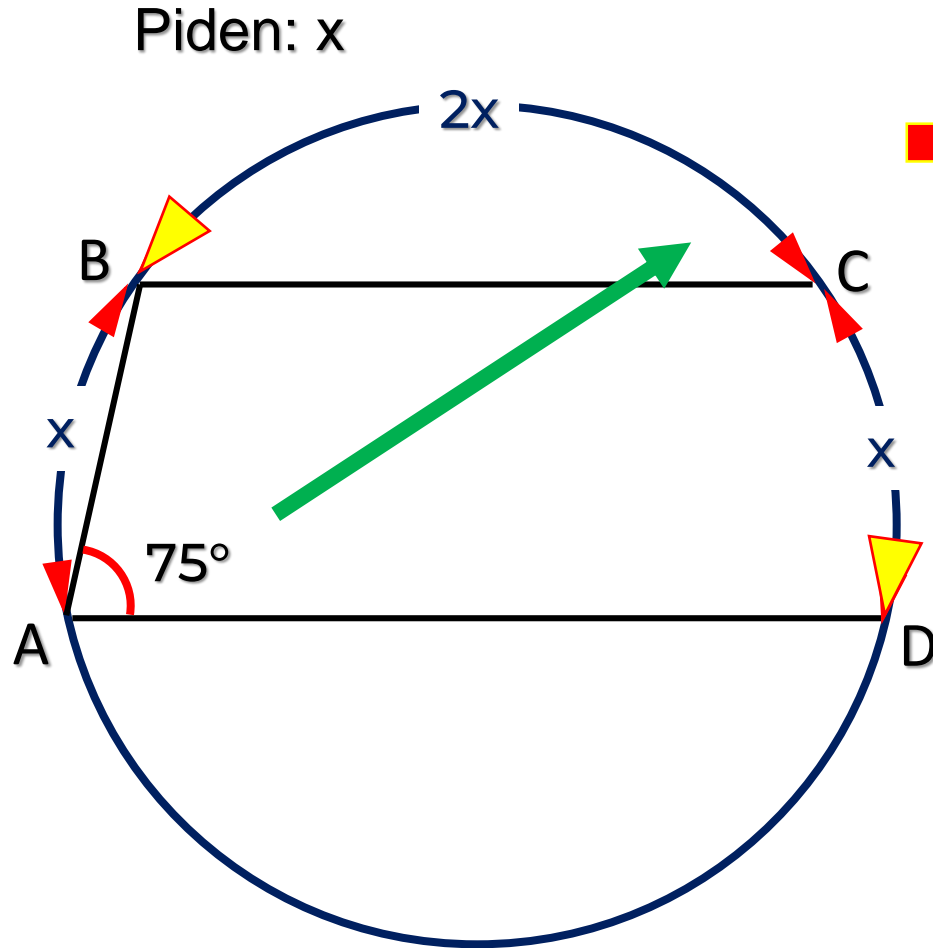


- Si $CA = CB = l$ (ΔACB isósceles)
 $\Rightarrow m\angle CBA = m\angle CAB = 6x$
- En el ΔACB $6x + 3x + 6x = 180^\circ$
 $15x = 180^\circ$

$$X = 12^\circ$$

3. En el gráfico, si $\overline{AD} \parallel \overline{BC}$. halle el valor de x

Resolución

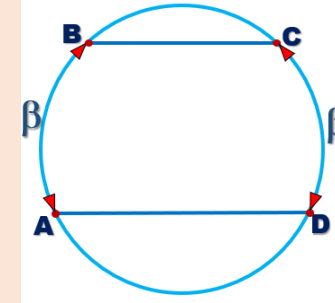


• Si: $\overline{AD} \parallel \overline{BC}$

$\Rightarrow m \widehat{CD} = x$

RECORDEMOS

Teorema:



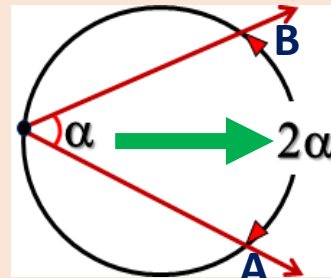
Si: $\overline{BC} \parallel \overline{AD}$

$\Rightarrow \widehat{AB} = \widehat{CD}$

RECORDEMOS

Teorema:

Ángulo inscrito



$\Rightarrow \widehat{AB} = 2\alpha$

$m \widehat{BD} = 2(75^\circ)$

$2x + x = 150^\circ$

$3x = 150^\circ$

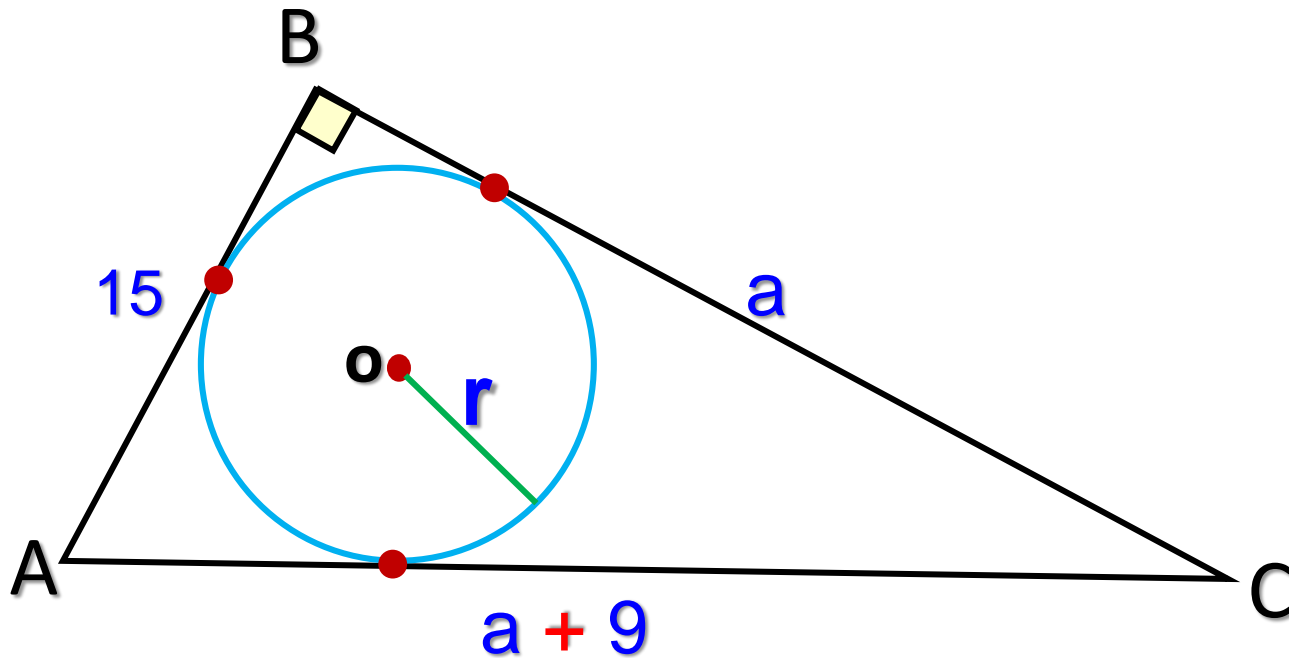
\therefore

$x = 50^\circ$

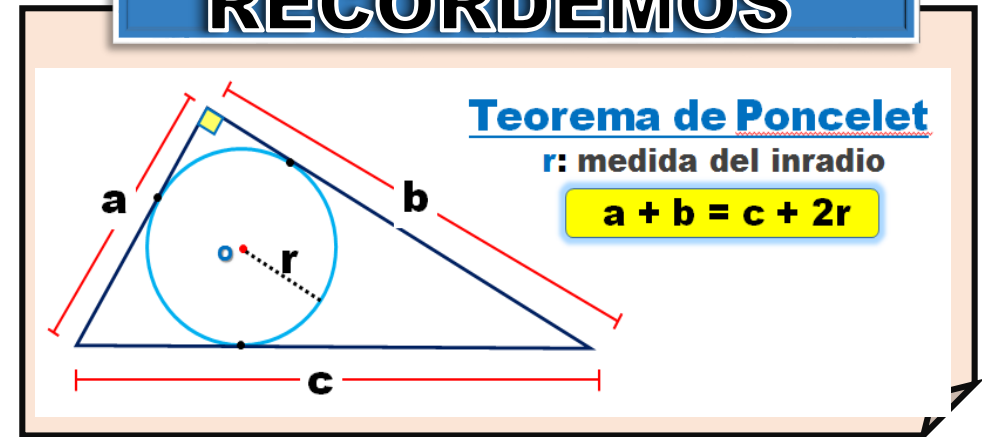
4. Un cateto de un triángulo mide 15 m y los otros dos lados se diferencian en 9. Halle la longitud del inradio.

Resolución

Piden: Inradio = r



RECORDEMOS



Teorema de Poncelet

r : medida del inradio

$$a + b = c + 2r$$

$$\Rightarrow 15 + a = a + 9 + 2r$$

$$15 = 9 + 2r$$

$$6 = 2r$$

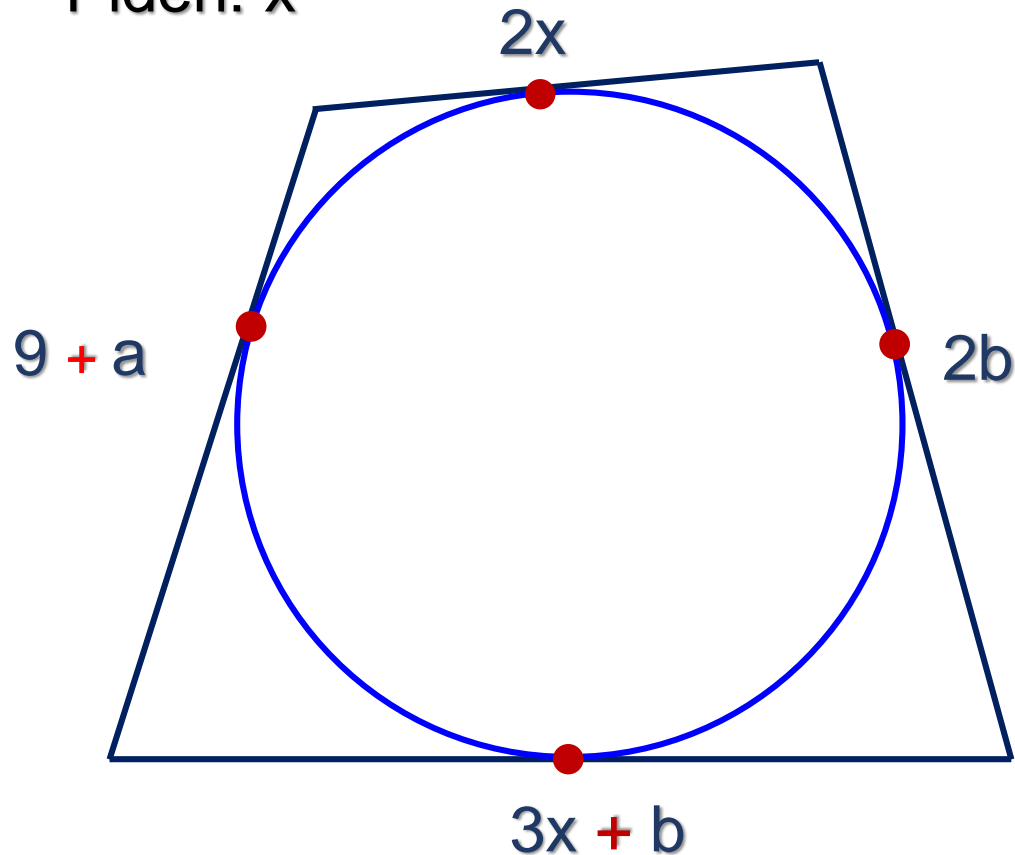
\therefore

$$r = 3$$

5. Si $a + b = 16$, halle el valor de x si la circunferencia está inscrita en el cuadrilátero.

Resolución

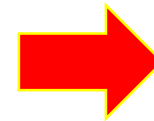
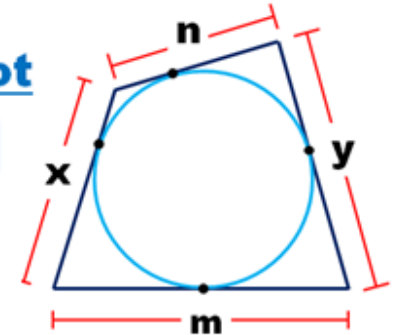
Piden: x



RECORDEMOS

Teorema de Pitot

$$x + y = m + n$$



$$9 + a + 2b = 3x + b + 2x$$

$$9 + a + b = 5x$$

$$9 + 16 = 5x$$

$$25 = 5x$$

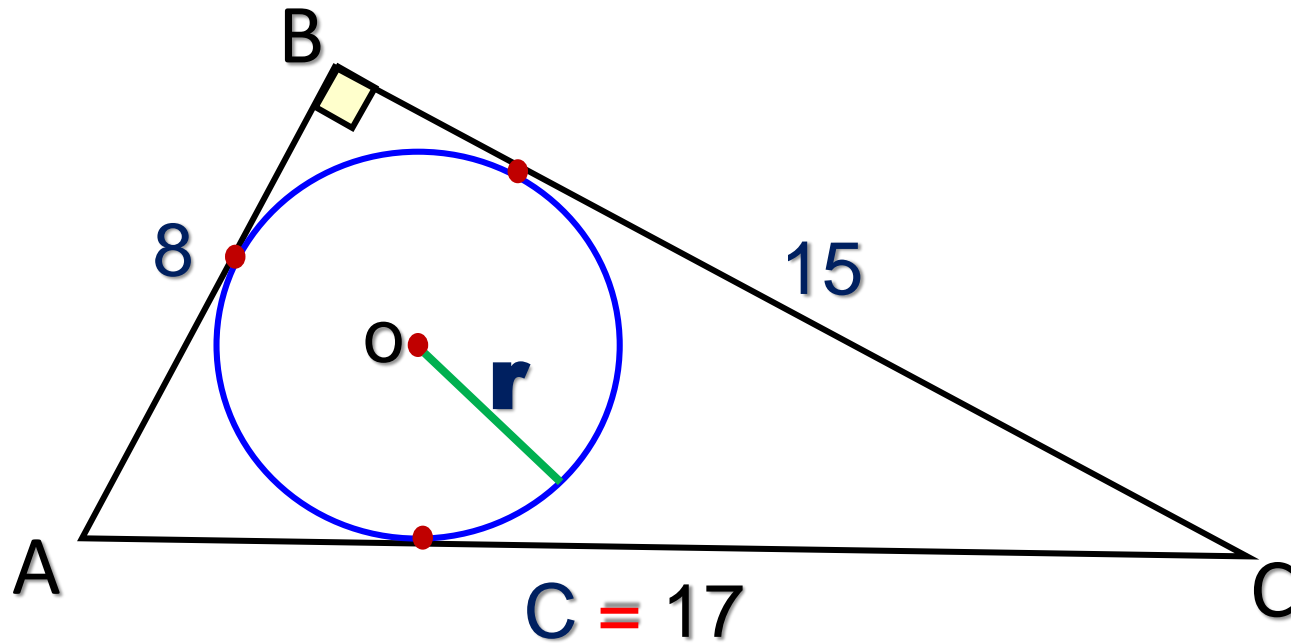
\therefore

$$x = 5$$

6. Los catetos de un triángulo miden 15 m y 8 m. Halle la longitud del inradio.

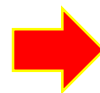
Resolución

Piden: inradio = r



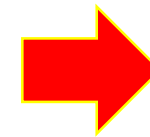
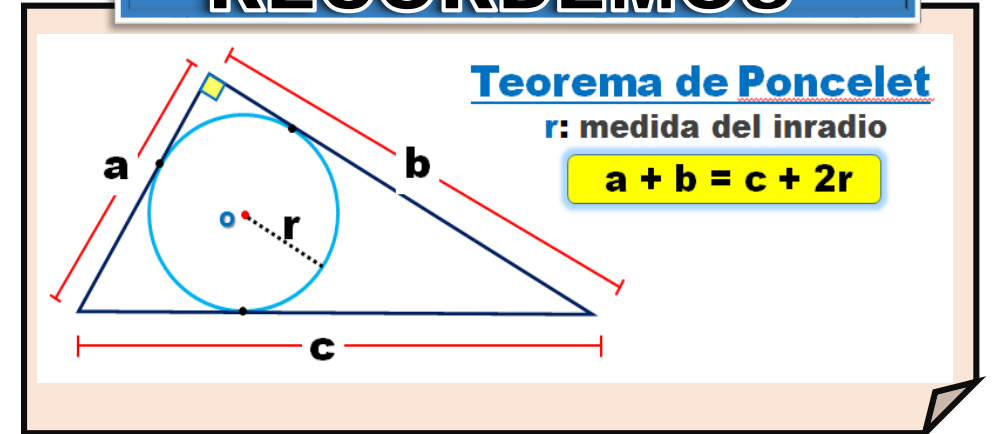
Teorema de Pitágoras

$$c^2 = 8^2 + 15^2$$



$$c = 17$$

RECORDEMOS



$$8 + 15 = 17 + 2r$$

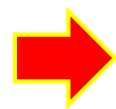
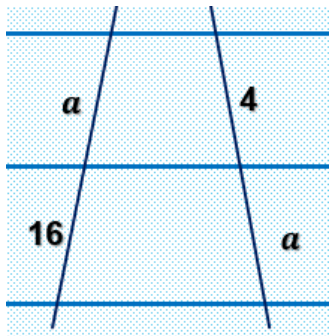
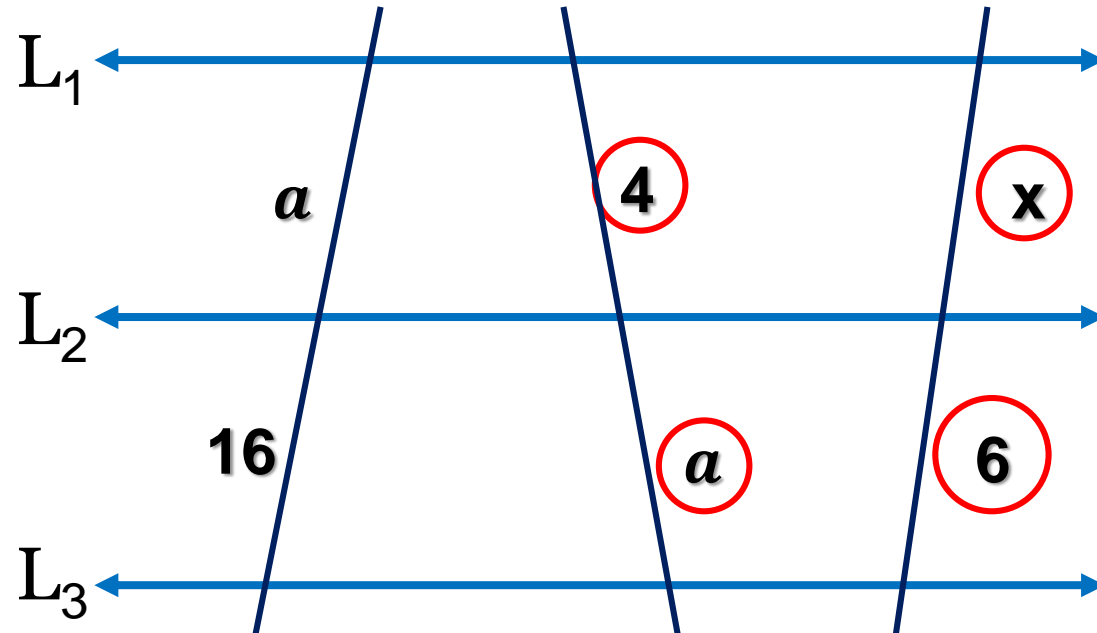
$$23 = 17 + 2r$$

$$6 = 2r$$

\therefore

$$r = 3$$

7. En el gráfico, $\vec{L_1} \parallel \vec{L_2} \parallel \vec{L_3}$, halle el valor de x .



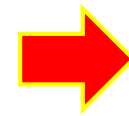
$$\frac{a}{16} = \frac{4}{a}$$

$$a^2 = 64$$

$$a = 8$$

Resolución

Piden: x



$$\frac{4}{a} = \frac{x}{6}$$

$$\frac{1}{2} \cdot \frac{4}{8} = \frac{x}{6}$$

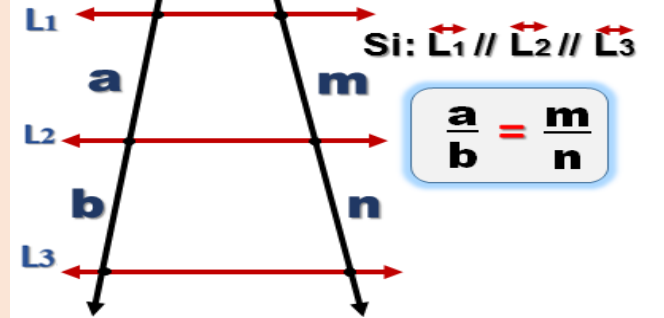
$$2x = 6$$

\therefore

$$x = 3$$

RECORDEMOS

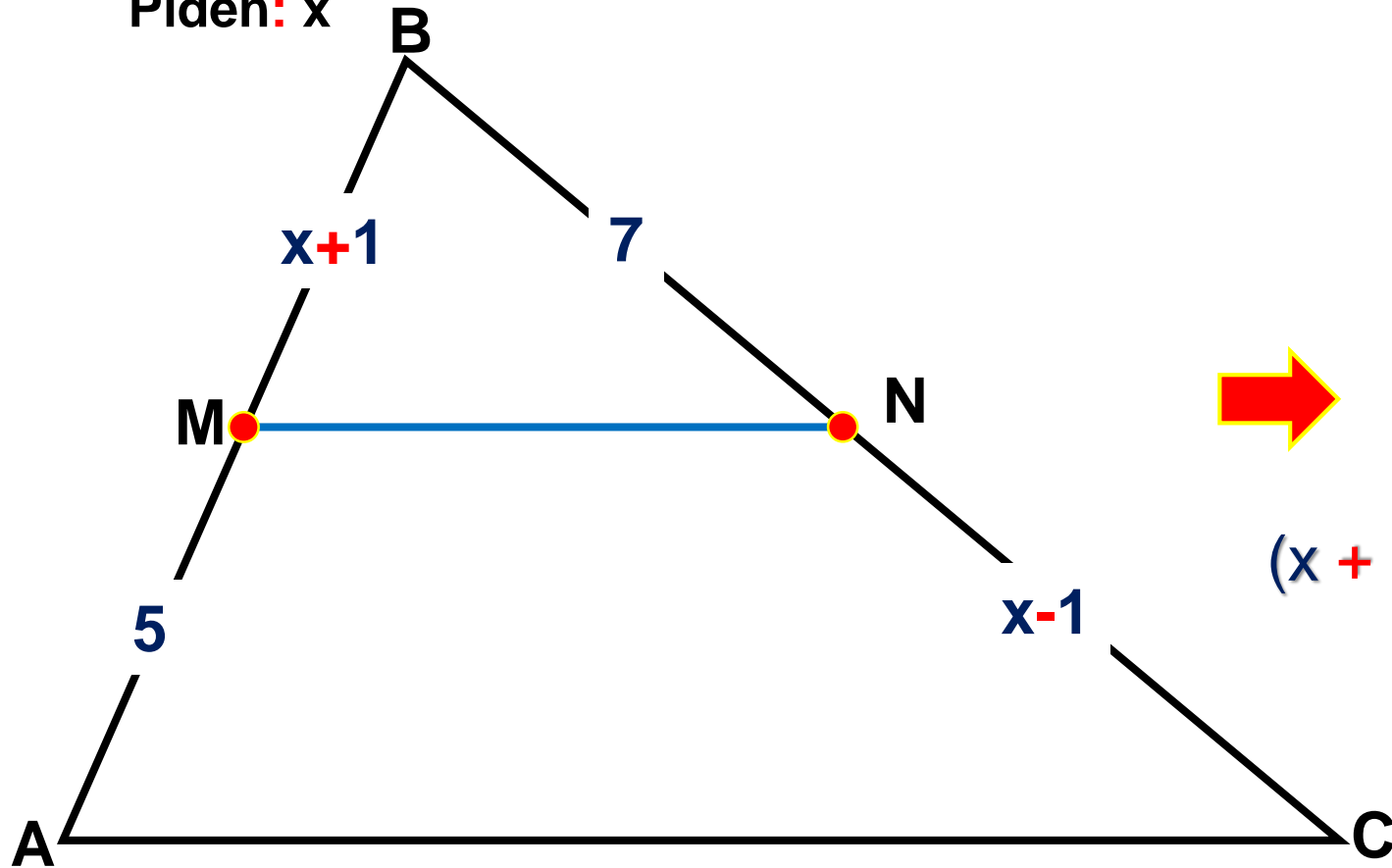
Teorema de Tales



8. En un triángulo ABC, $M \in \overline{AB}$ y $N \in \overline{BC}$. Si $\overline{MN} \parallel \overline{AC}$ y $AM = 5m$, $MB = x+1$, $BN = 7m$ y $NC = x-1 m$; halle el valor de x .

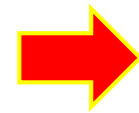
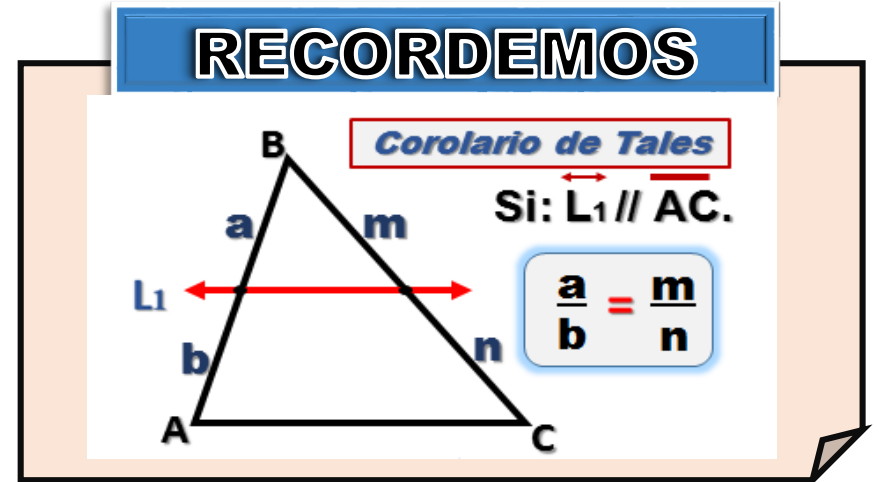
Resolución

Piden: x



Si $\overline{MN} \parallel \overline{AC}$

RECORDEMOS



$$\frac{x+1}{5} = \frac{7}{x-1}$$

$$(x+1)(x-1) = (7)(5)$$

$$x^2 - 1 = 35$$

$$x^2 = 36$$

\therefore

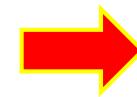
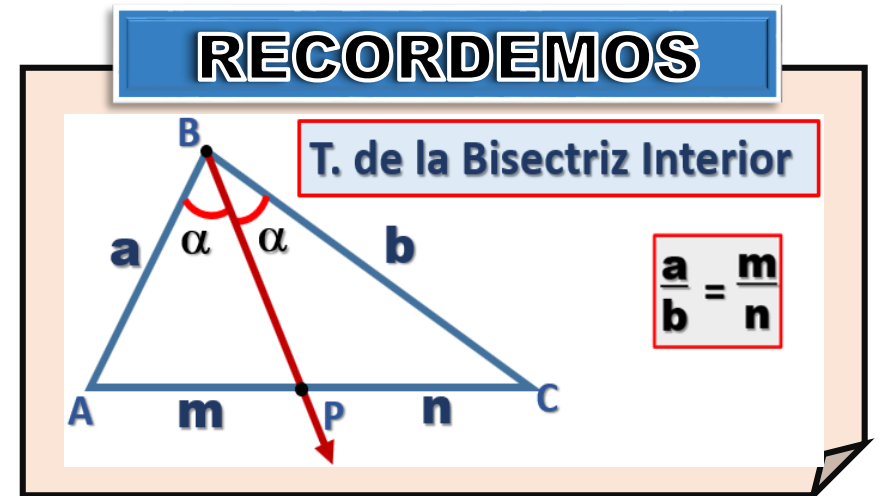
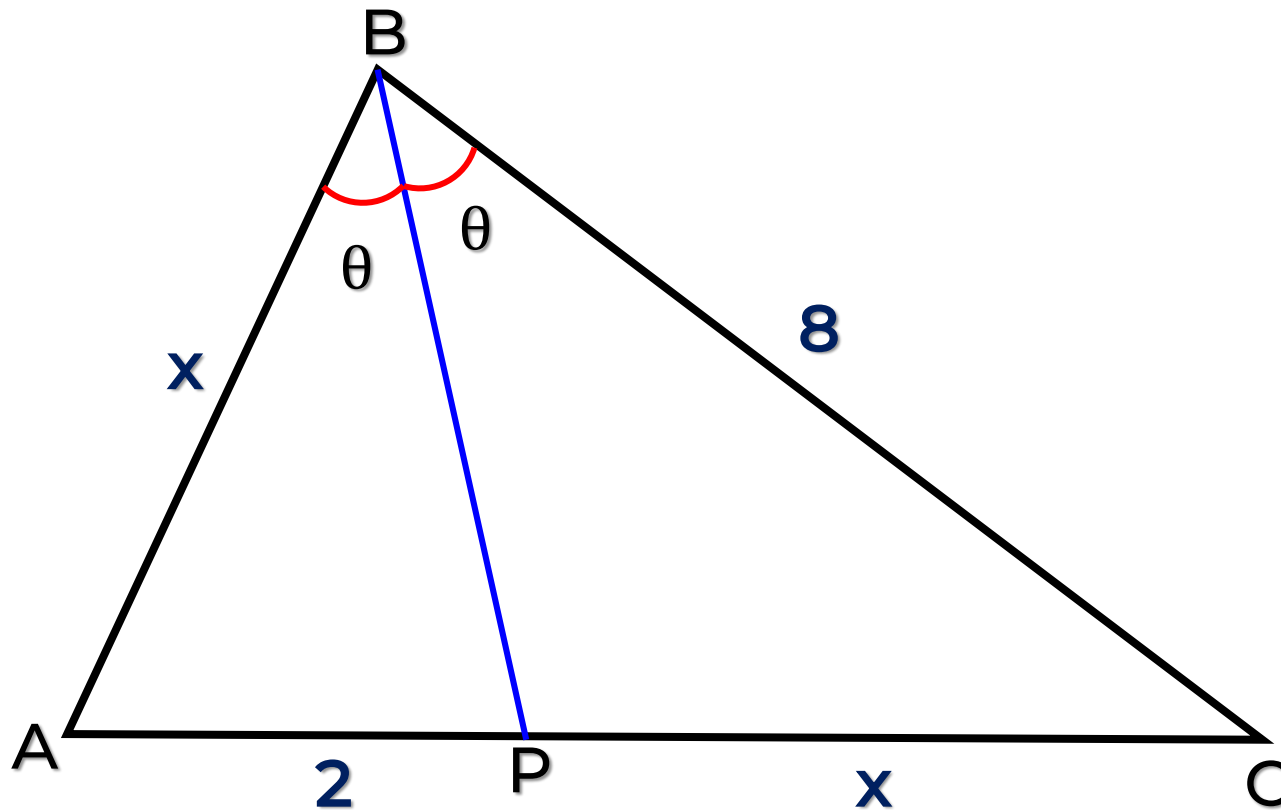
$$x = 6$$

9. En el gráfico, halle el valor de x .

Resolución

Piden: x

Si \overline{BP} : bisectriz interior



$$\frac{x}{8} = \frac{2}{x}$$

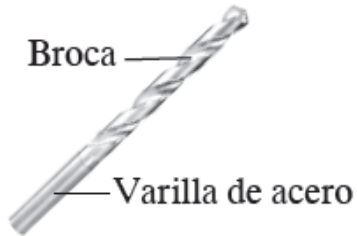
$$x \cdot x = (8) \cdot (2)$$

$$x^2 = 16$$

\therefore

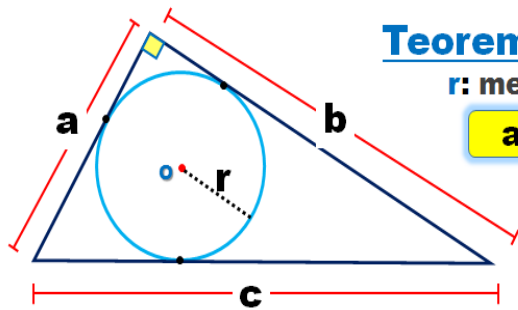
$$x = 4$$

10. Se introduce la broca en el prisma recto hueco metálico de sección un triángulo rectángulo de catetos 7mm y 24mm. Determine el diámetro de la broca, si queda inscrito.



Resolución

Piden: La longitud del diámetro



Teorema de Poncelet

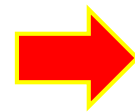
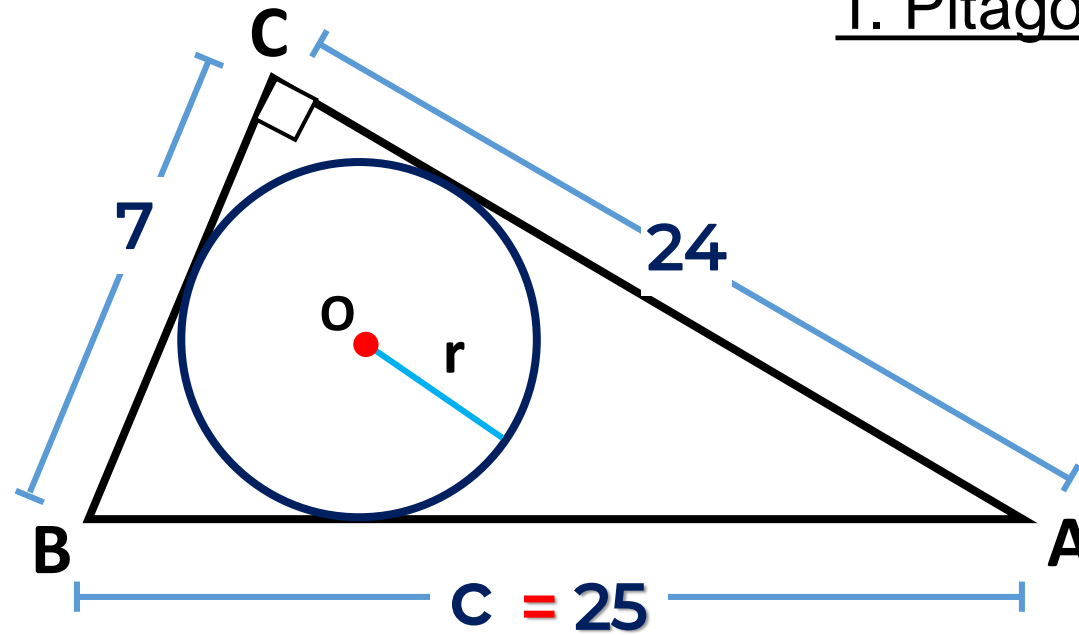
r : medida del inradio

$$a + b = c + 2r$$

T. Pitágoras

$$c^2 = 7^2 + 24^2$$

$$c = 25$$



$$24 + 7 = 25 + 2r$$

$$31 = 25 + 2r$$

$$6 = 2r$$

$$\therefore \text{Diámetro} = 6 \text{ mm}$$

