



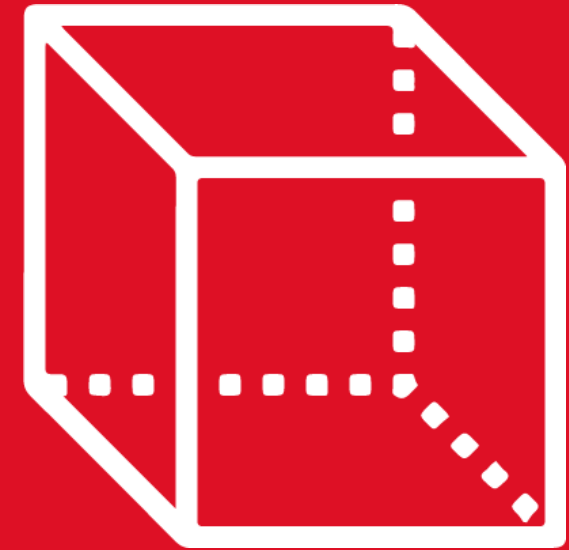
# GEOMETRÍA

## RETROALIMENTACIÓN

**1st**  
SECONDARY

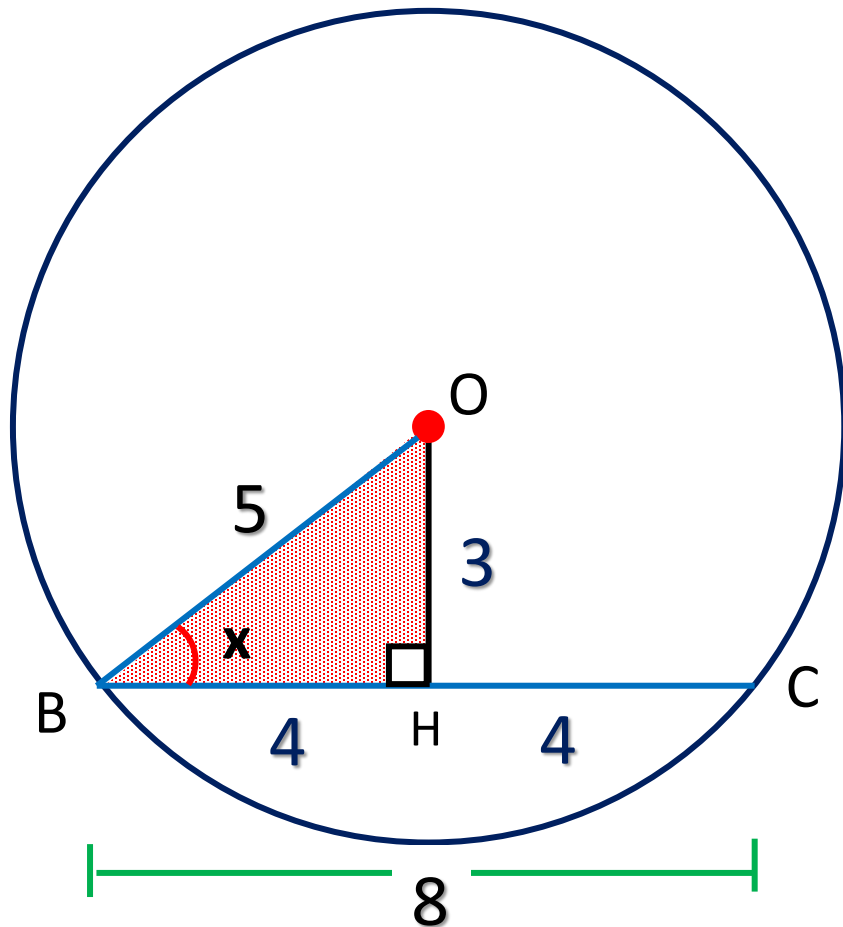
**Tomo 6**

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 **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:  $BH = HC = 4$

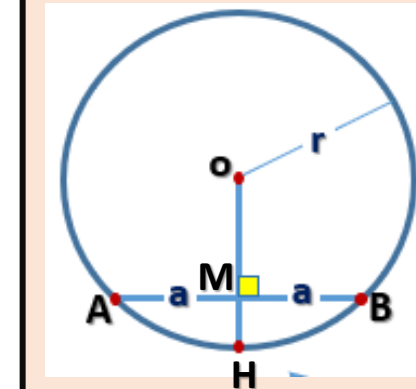
- En el  $\triangle BHO$ , notable ( $37^\circ - 53^\circ$ )

Entonces:  $OH = 3$

$\therefore$

$$x = 37^\circ$$

### RECORDEMOS



Si  $O$  es centro

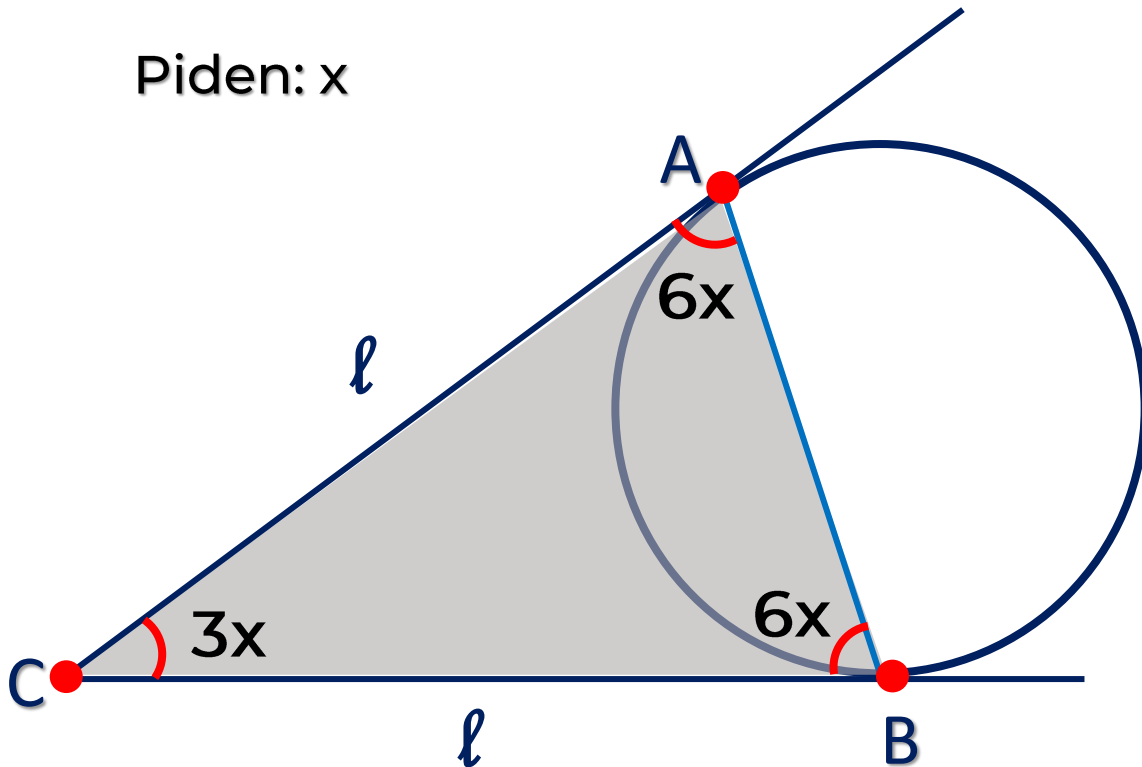
$$\overline{OH} \perp \overline{AB}$$

$$AM = MB = a$$

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

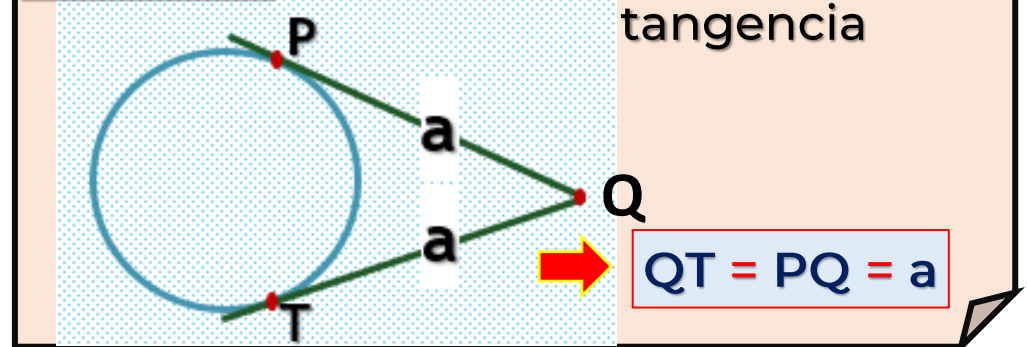
Piden: x



### RECORDEMOS

Teorema:

Si: P y T puntos de tangencia



- Si  $CA = CB = l$  ( $\Delta ACB$  isósceles)



$$m \angle CBA = m \angle CAB = 6x$$

- En el  $\Delta ACB$   $6x + 3x + 6x = 180^\circ$

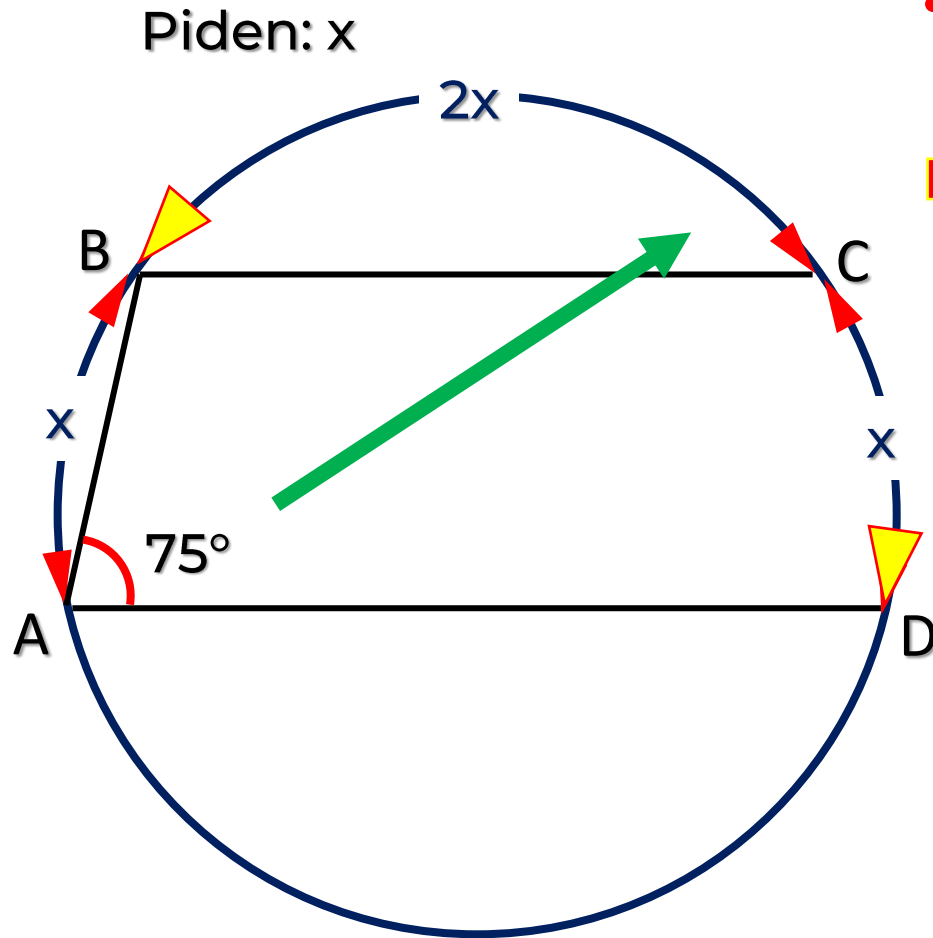
$$15x = 180^\circ$$

$\therefore$

$$x = 12^\circ$$

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

Resolución

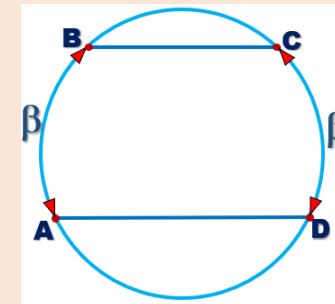


• Si:  $\overline{AD} \parallel \overline{BC}$

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

**RECORDEMOS**

Teorema:



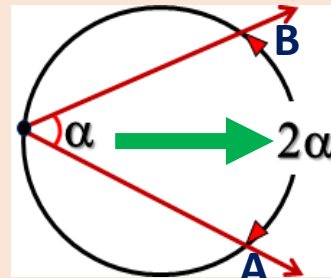
Si:  $\overline{BC} \parallel \overline{AD}$

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

**RECORDEMOS**

Teorema:

Ángulo inscrito



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

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

$2x + x = 150^\circ$

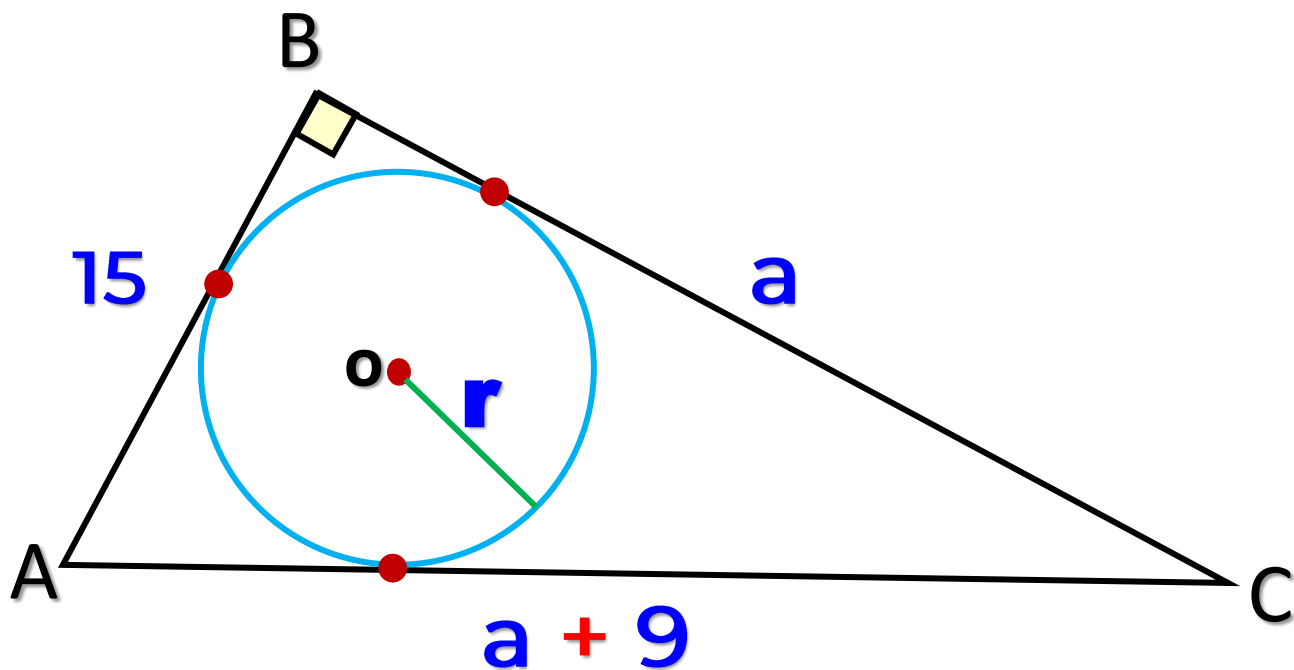
$3x = 150^\circ$

$\therefore \boxed{X = 50^\circ}$

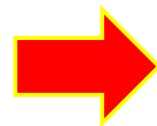
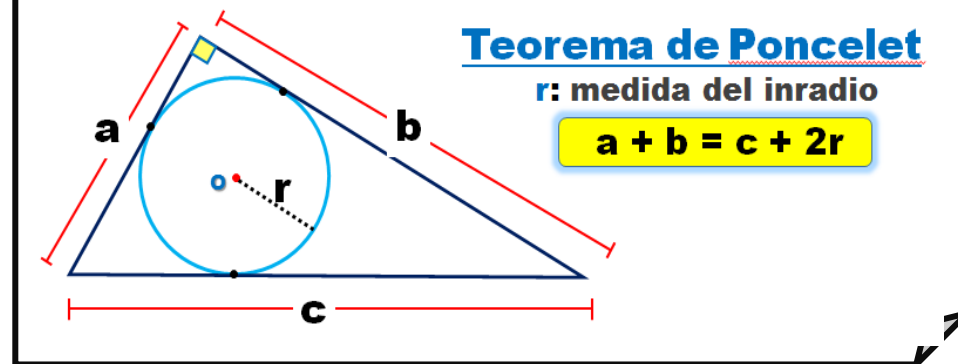
4. Un cateto de un triángulo mide 15 m y los otros dos lados se diferencian en 9. Halle la longitud del inradio.

### Resolución

Piden: Inradio =  $r$



### RECORDEMOS



$$15 + \cancel{a} = \cancel{a} + 9 + 2r$$

$$15 = 9 + 2r$$

$$6 = 2r$$

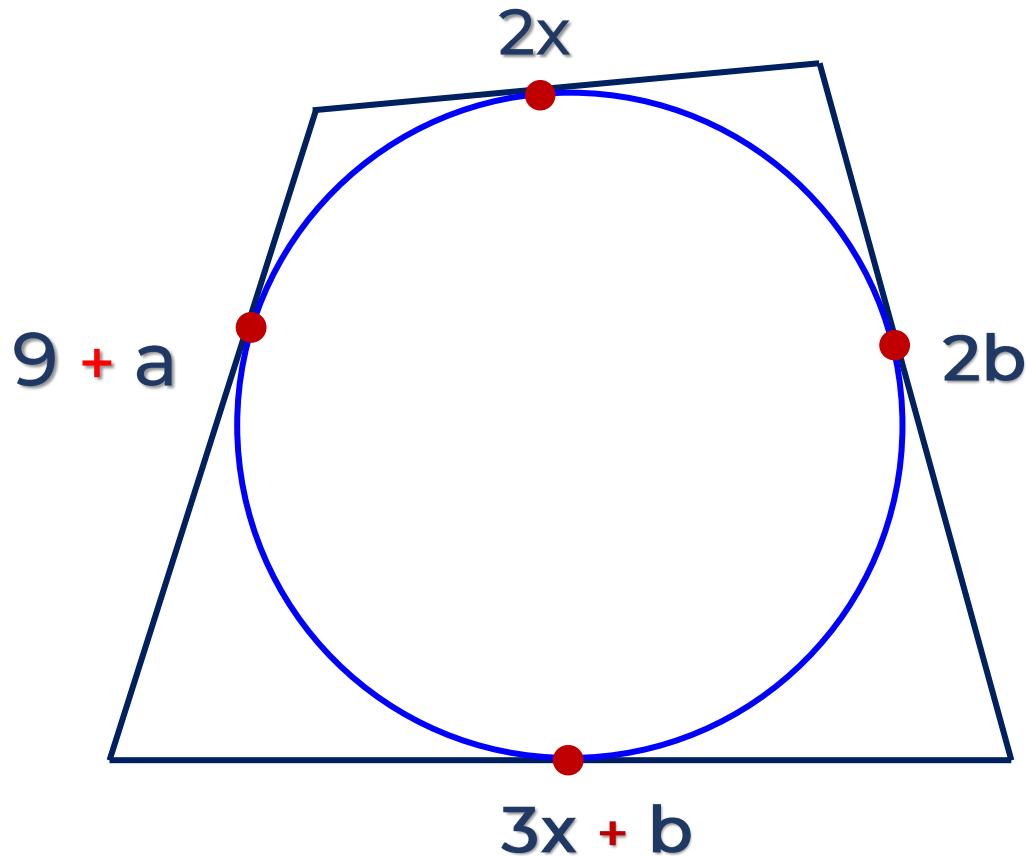
$\therefore$

$$r = 3$$

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

Resolución

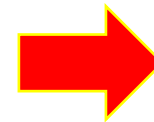
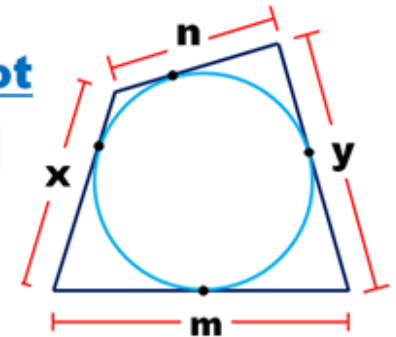
Piden:  $x$



**RECORDEMOS**

Teorema de Pitot

$$x + y = m + n$$



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

$$9 + \underbrace{a + b}_{=16} = 5x$$

$$9 + 16 = 5x$$

$$25 = 5x$$

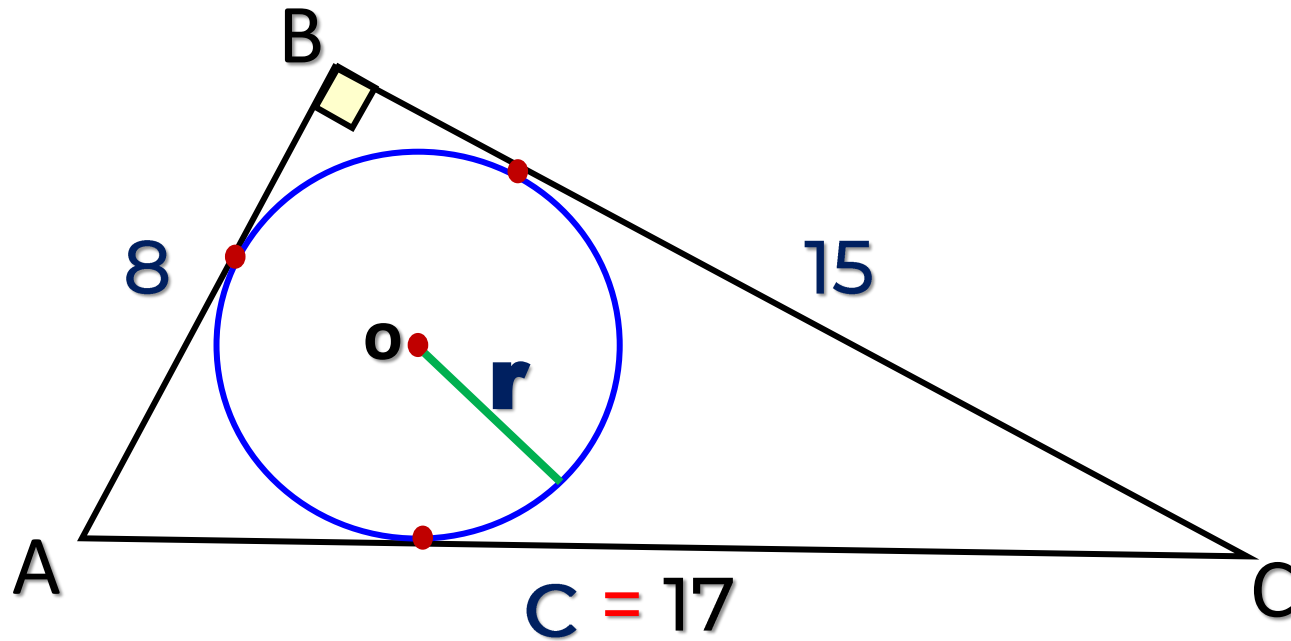
$\therefore$

$$x = 5$$

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

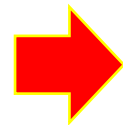
Resolución

Piden: inradio =  $r$



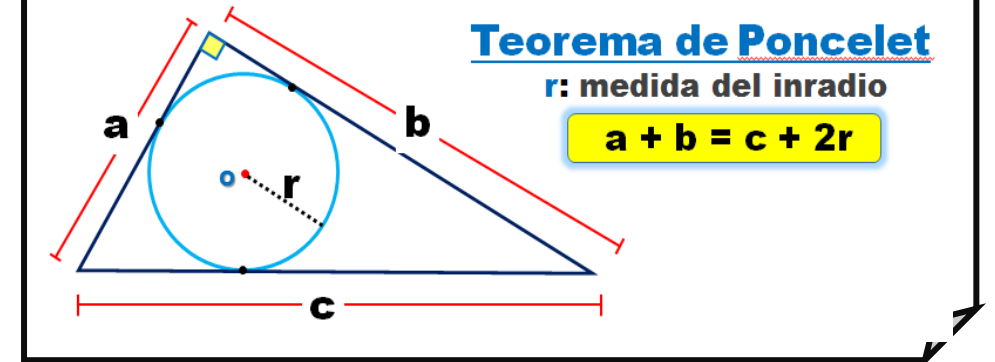
Teorema de Pitágoras

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



$$c = 17$$

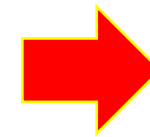
**RECORDEMOS**



Teorema de Poncelet

$r$ : medida del inradio

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



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

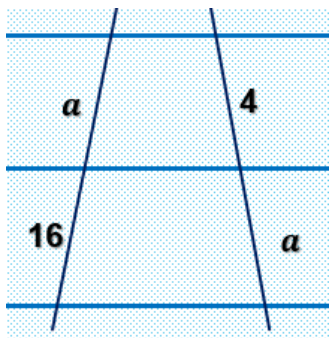
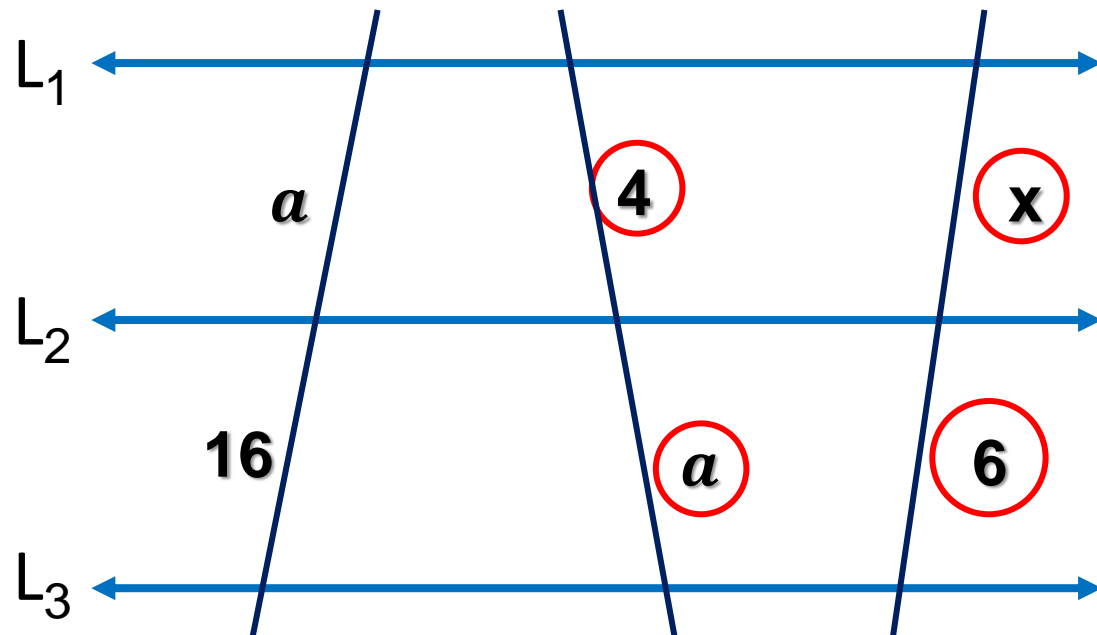
$$23 = 17 + 2r$$

$$6 = 2r$$

$\therefore$

$$r = 3$$

7. En el gráfico,  $\vec{L}_1 \parallel \vec{L}_2 \parallel \vec{L}_3$ , halle el valor de  $x$ .



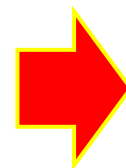
$$\frac{a}{16} = \frac{4}{a}$$

$$a^2 = 64$$

$$a = 8$$

Resolución

Piden:  $x$



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

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

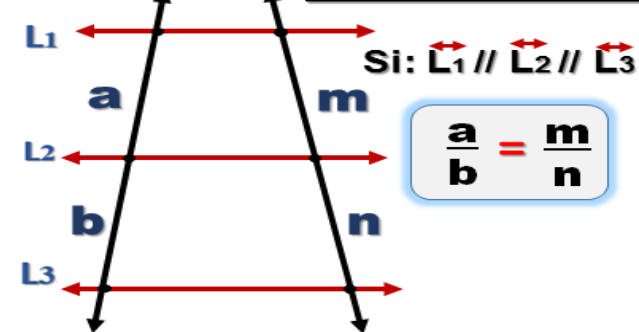
$$2x = 6$$

$\therefore$

$$x = 3$$

**RECORDEMOS**

Teorema de Tales

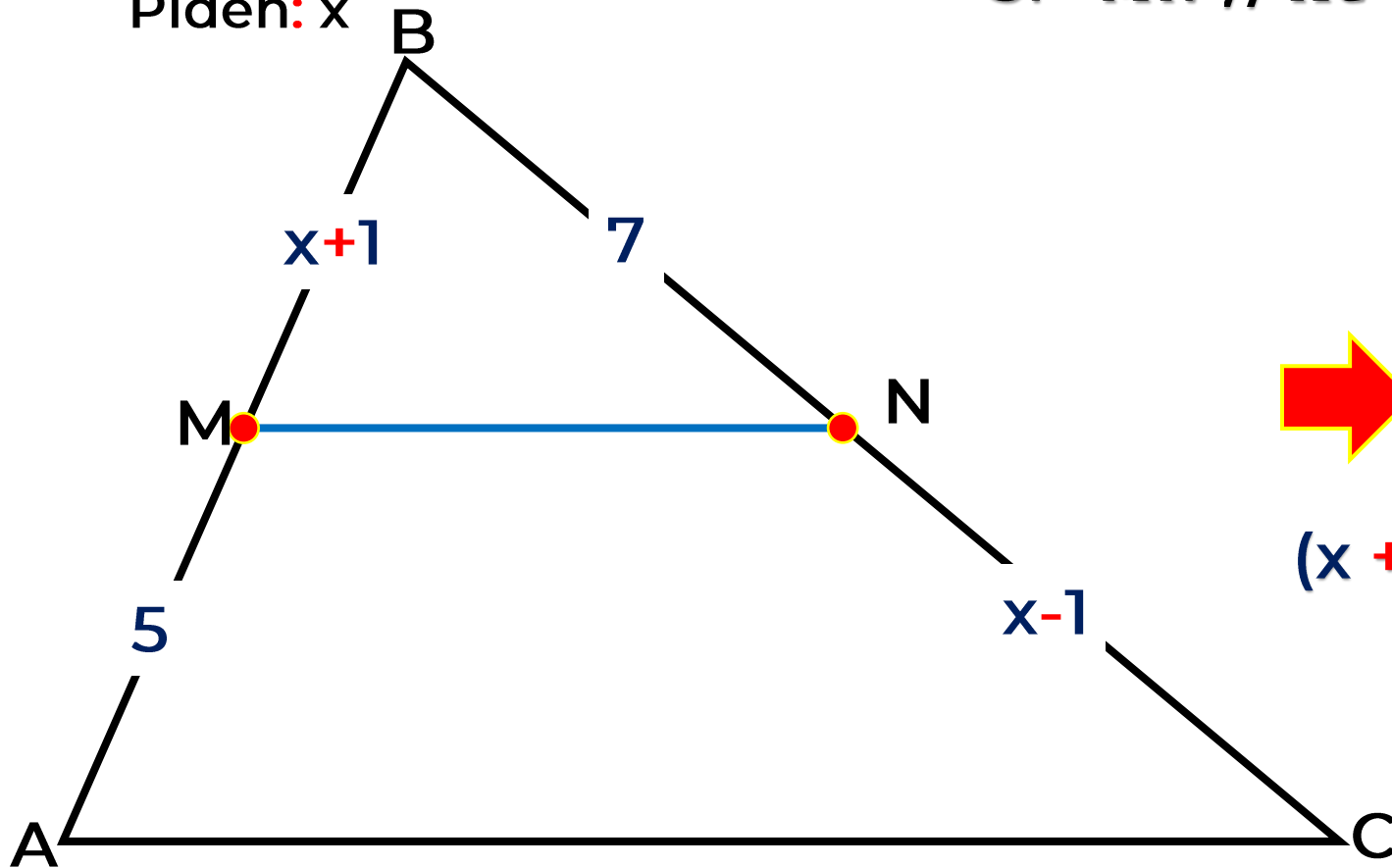




8. En un triángulo ABC,  $M \in \overline{AB}$  y  $N \in \overline{BC}$ . Si  $\overline{MN} \parallel \overline{AC}$  y  $AM = 5m$ ,  $MB = x+1$ ,  $BN = 7m$  y  $NC = x-1m$ ; halle el valor de  $x$ .

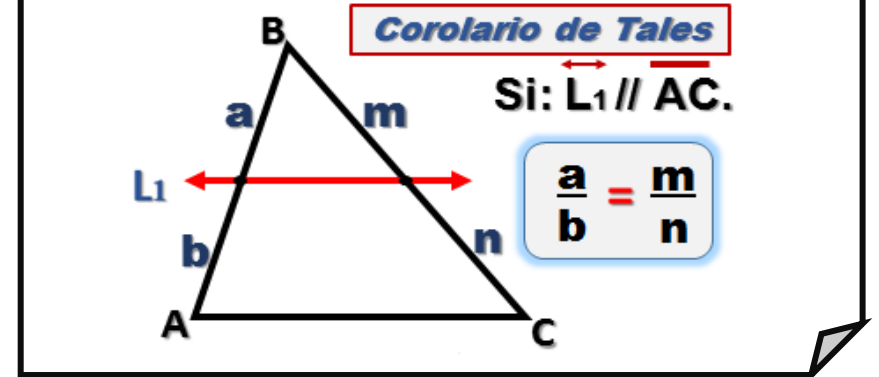
### Resolución

Piden:  $x$



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

### RECORDEMOS



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

$$x^2 - 1 = 35$$

$$x^2 = 36$$

$\therefore$

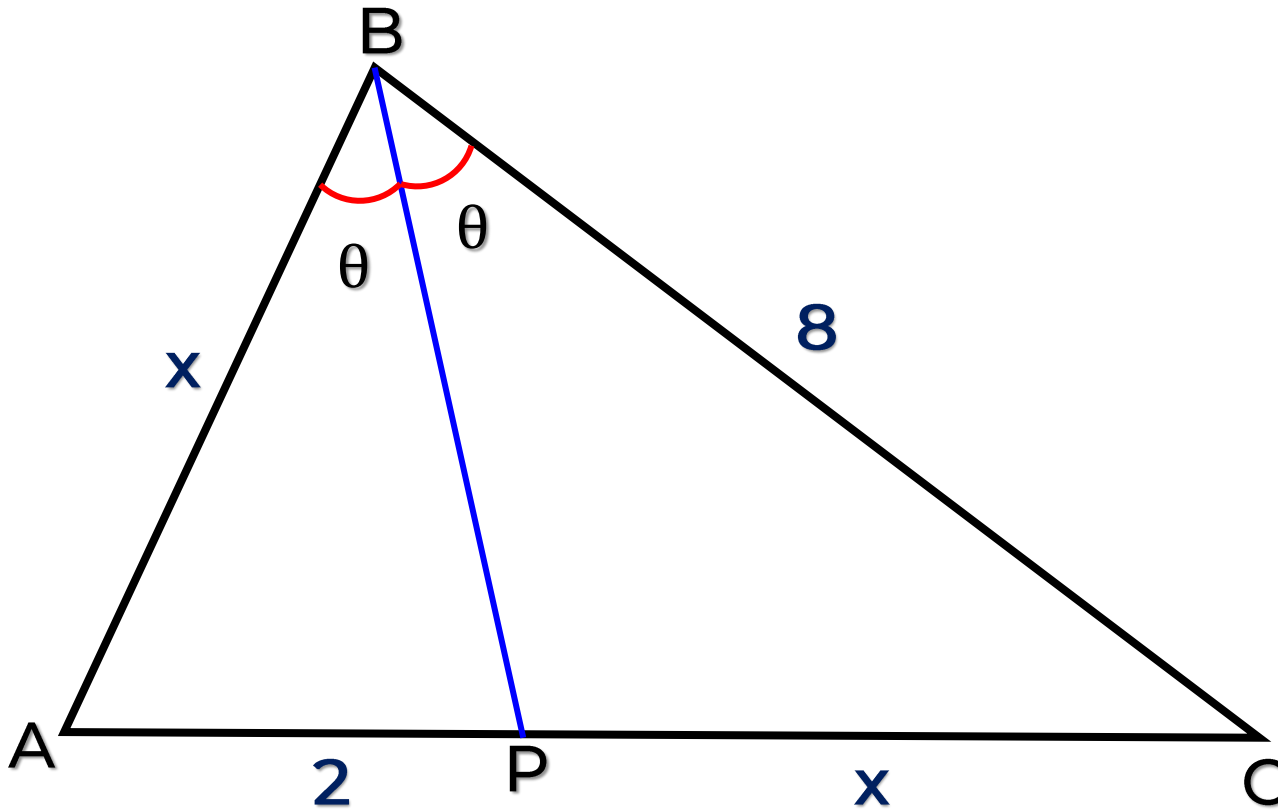
$$x = 6$$

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

Resolución

Piden:  $x$

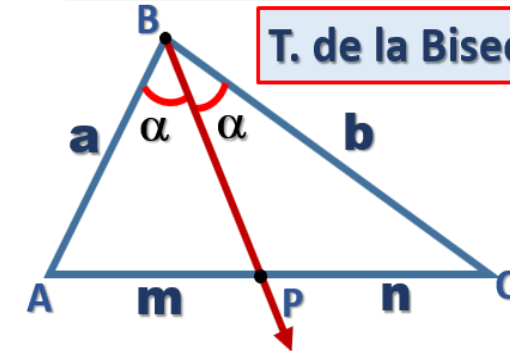
Si  $\overline{BP}$ : bisectriz interior



**RECORDEMOS**

T. de la Bisectriz Interior

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



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

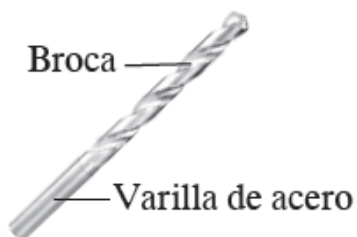
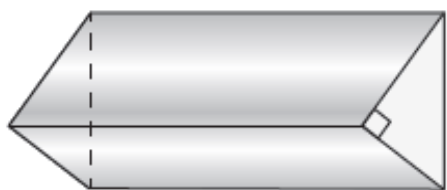
$$x \cdot x = (8) \cdot (2)$$

$$x^2 = 16$$

$\therefore$

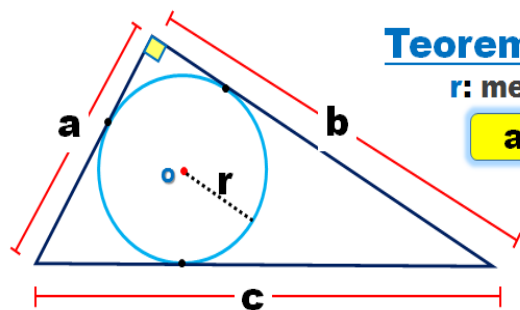
$$x = 4$$

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

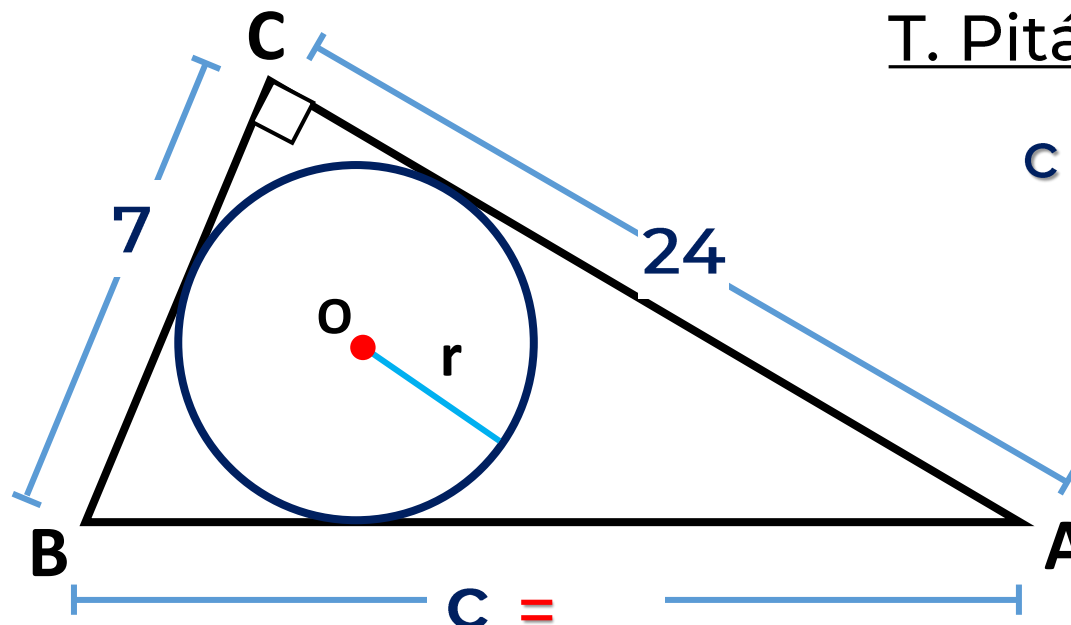
Piden: La longitud del diámetro



**Teorema de Poncelet**

$r$ : medida del inradio

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



T. Pitágoras

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

$$c = 25$$

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

$$31 = 25 + 2r$$

$$6 = 2r$$

$\therefore$

**Diámetro = 6 mm**



