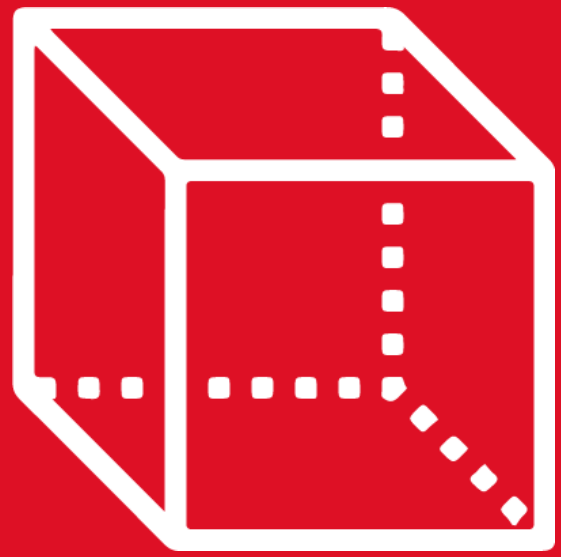
GEOMETRÍA

Capítulo 15
Sesión II

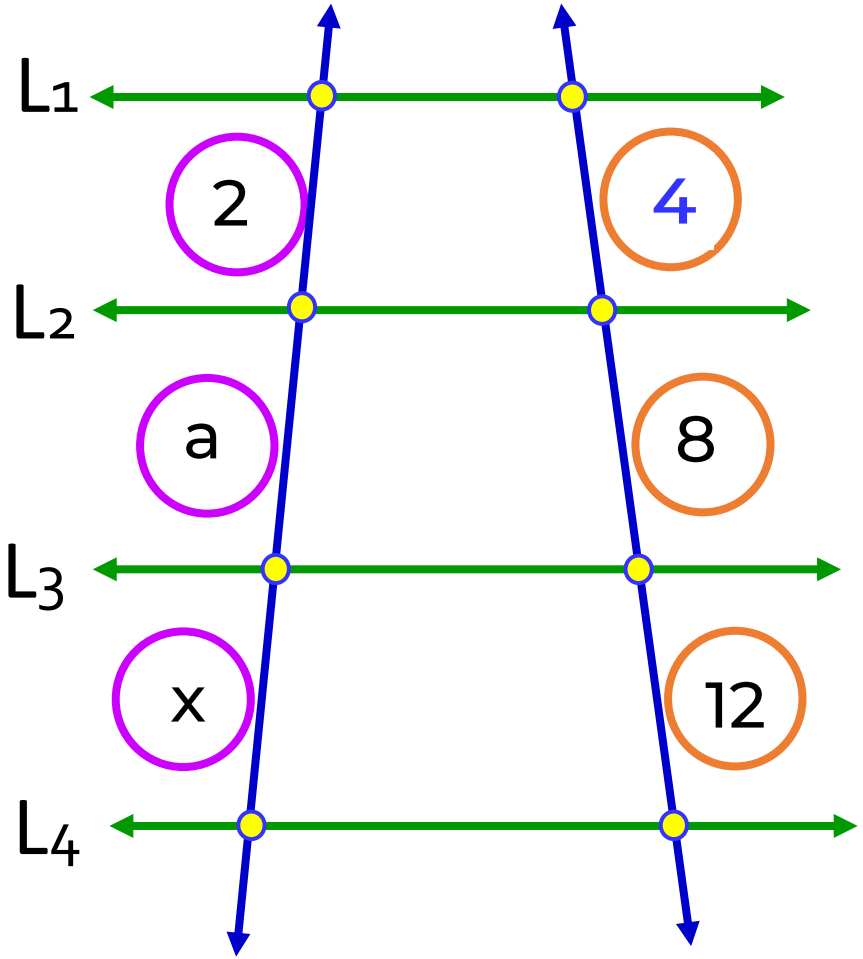


3rd
SECONDARY

SEGMENTOS PROPORCIONALES

SACO OLIVEROS

1. Del gráfico; si $L_1 // L_2 // L_3 // L_4$, halle el valor de x.



Resolución

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

$$a^2 = 16$$

$$a = 4$$

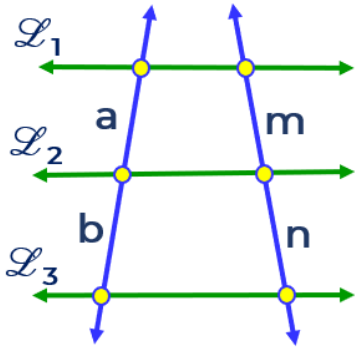
$$\frac{2}{x} = \frac{4}{12}$$

$$24 = 4x$$

$$x = 6$$

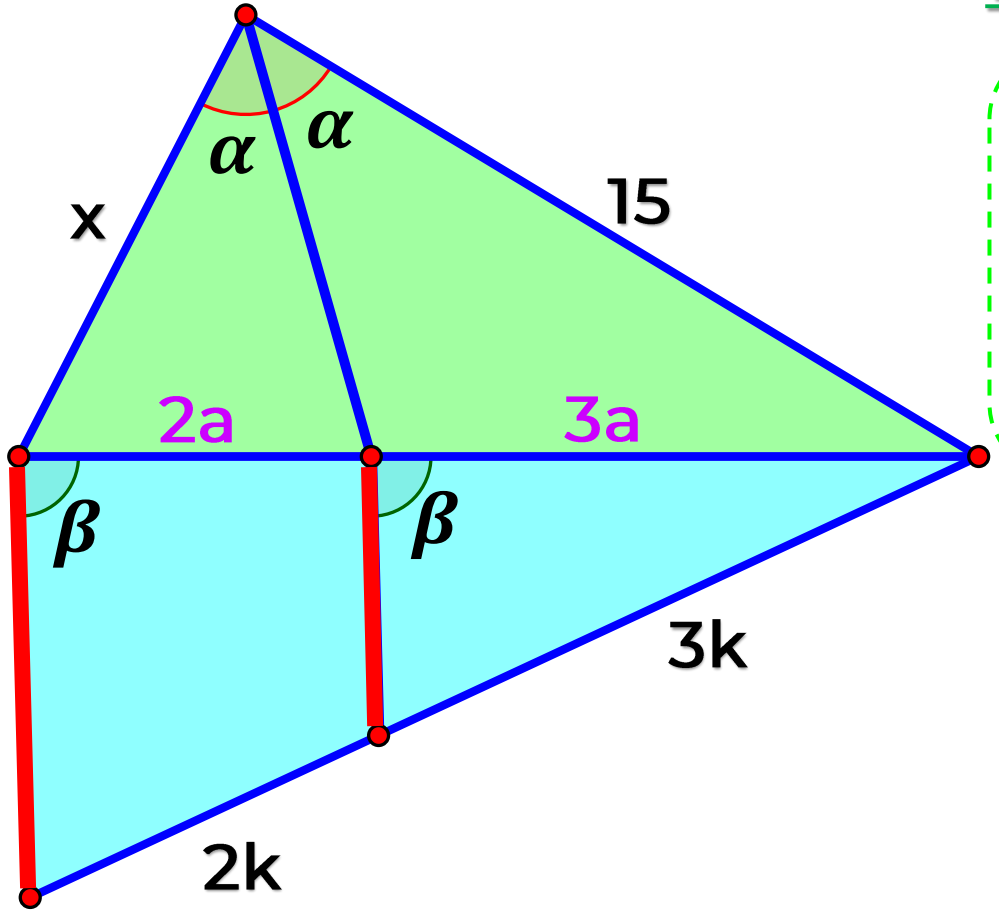
Teorema de Tales

$\overleftrightarrow{\mathscr{L}_1} // \overleftrightarrow{\mathscr{L}_2} // \overleftrightarrow{\mathscr{L}_3}$



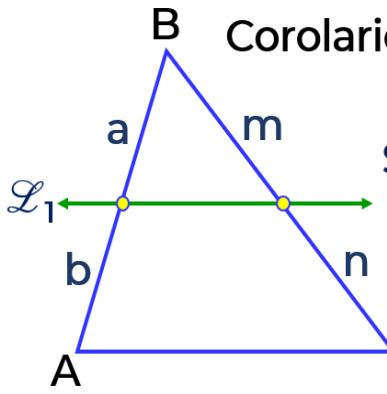
$$\frac{a}{b} = \frac{m}{n}$$

2. Del gráfico, halle el valor de x.



Resolución

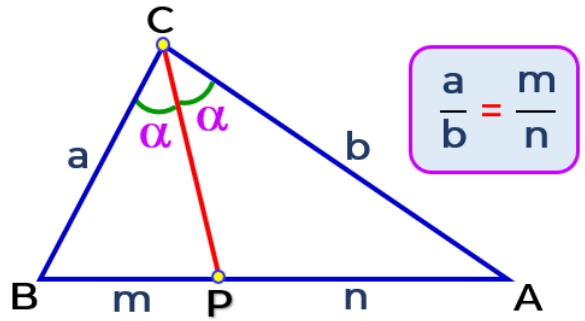
Corolario de Tales



Si: $\overleftrightarrow{\mathscr{L}_1} \parallel \overline{AC}$

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

Teorema de la bisectriz Interior



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

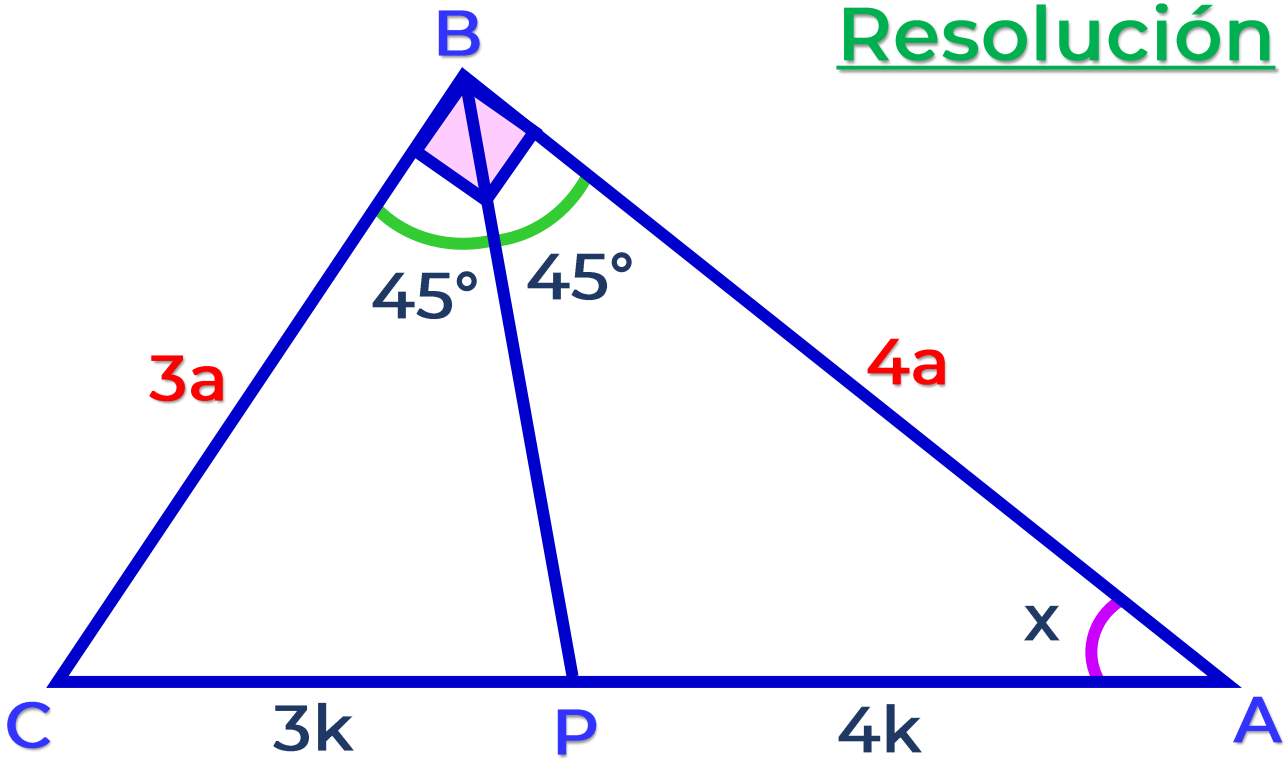
$$\frac{x}{15} = \frac{2a}{3a}$$

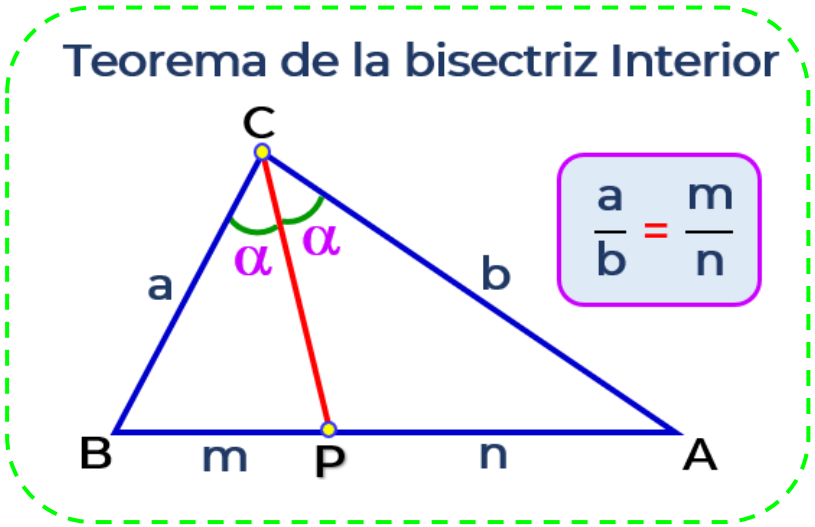
$$3x = 30$$

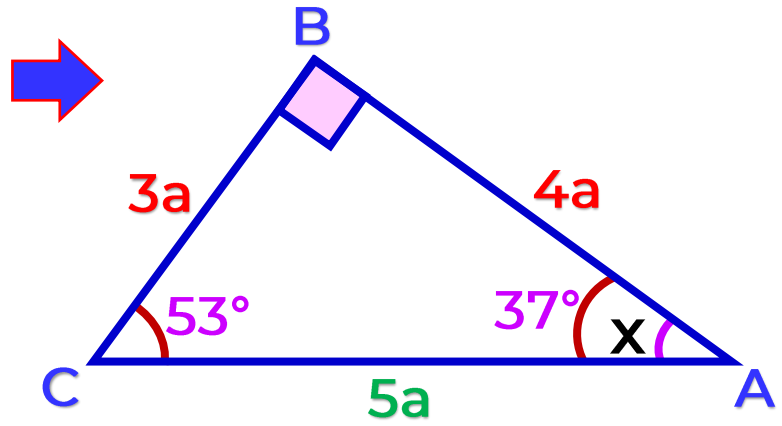
$$x = 10$$

3. Del gráfico, halle el valor de x

Resolución

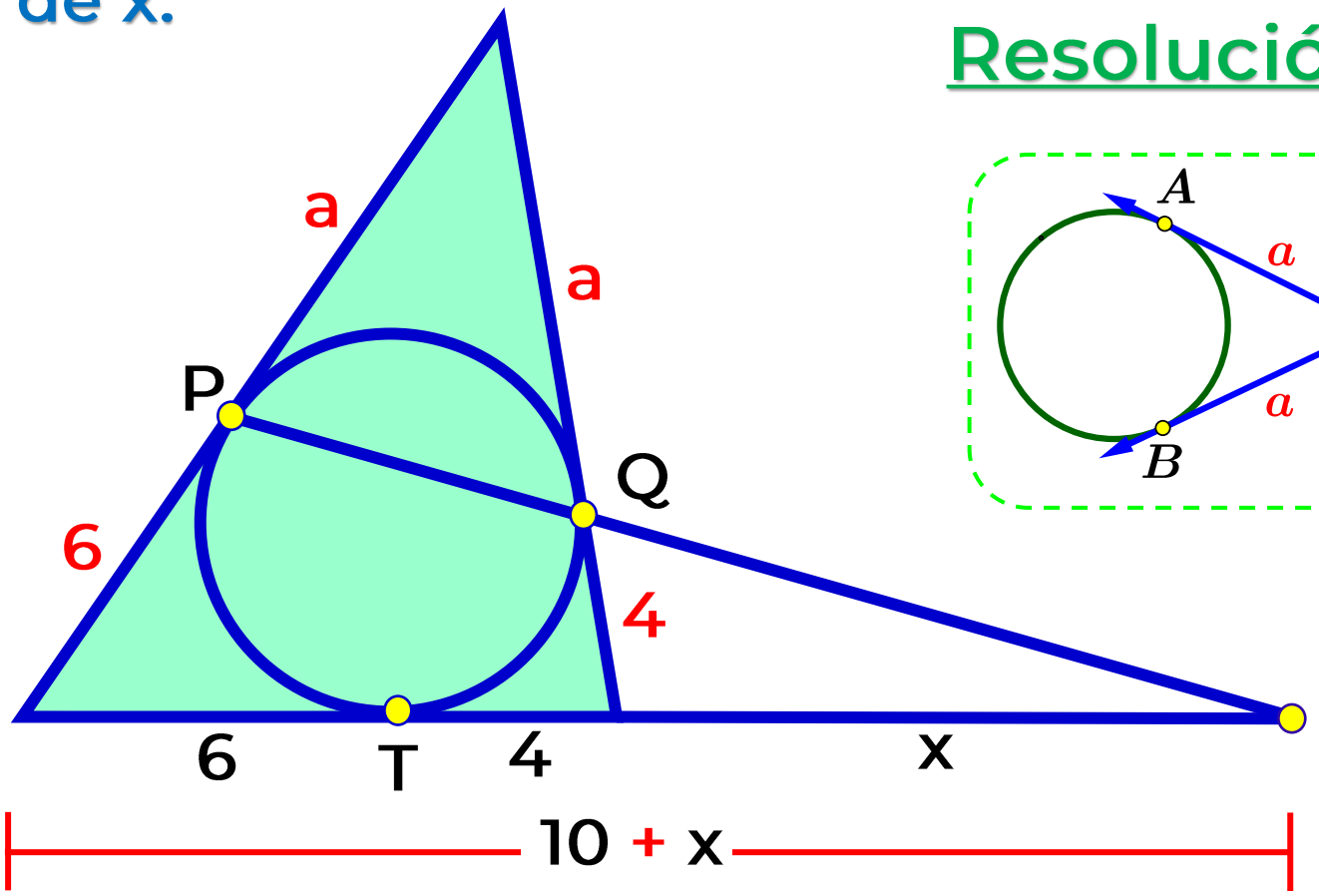




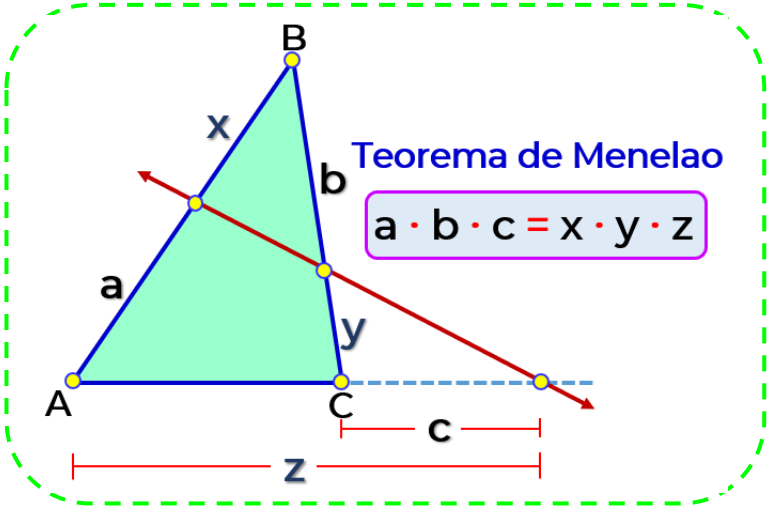


x = 37°

4. Según el gráfico; P, Q y T son puntos de tangencia; halle el valor de x.



Resolución



$$(6)(a)(x) = (a)(4)(10+x)$$

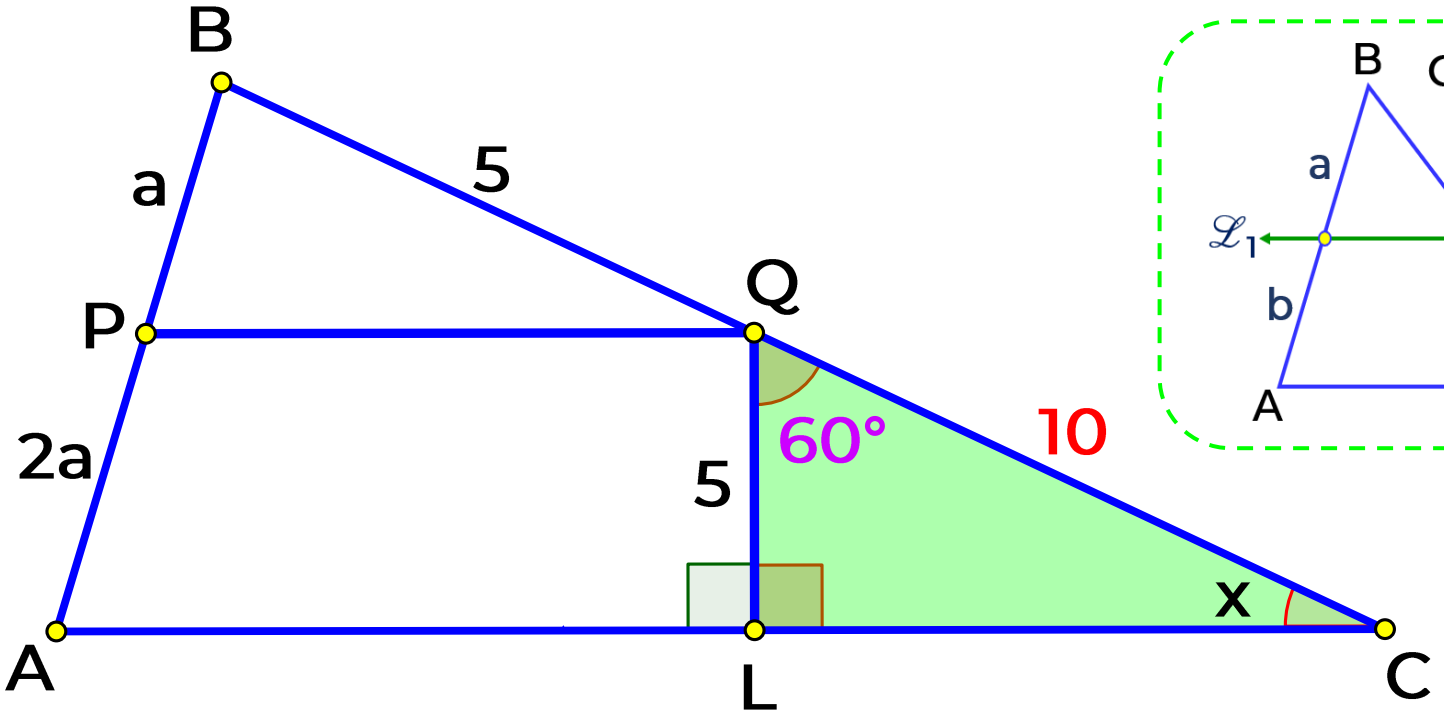
$$6x = 40 + 4x$$

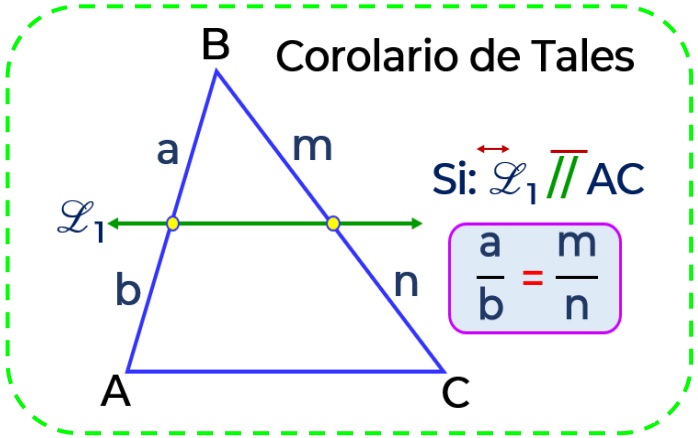
$$2x = 40$$

$$x = 20$$

5. Del gráfico, halle el valor de x si $\overline{PQ} \parallel \overline{AC}$.

Resolución





$$\frac{a}{2a} = \frac{5}{QC}$$

$$QC = 10$$

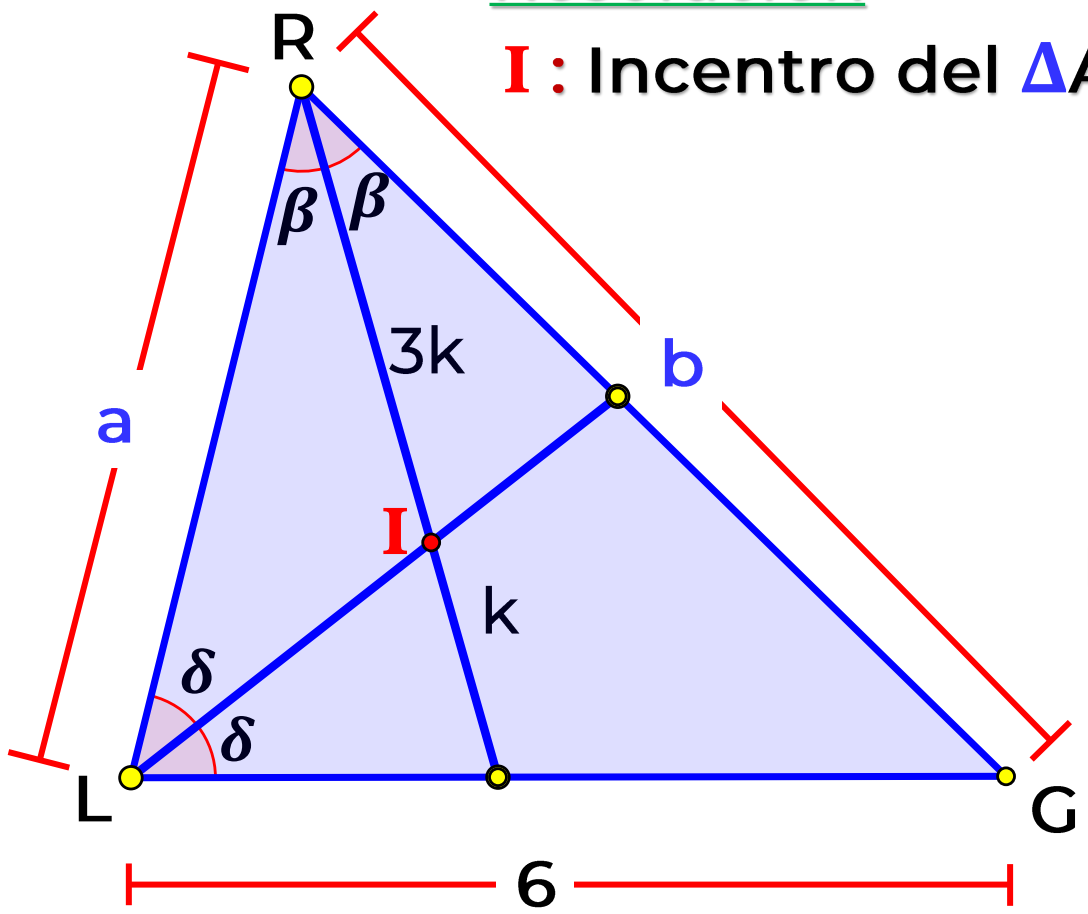
QLC : Notable de 30° y 60°

$x = 30°$

6. Determine el perímetro de la región triangular LRG.

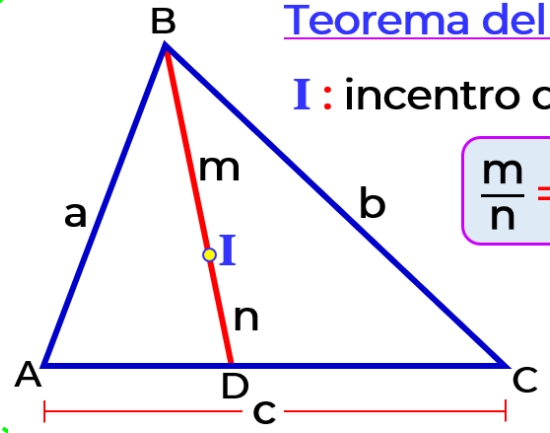
Resolución

I : Incentro del ΔABC



Teorema del incentro

I : incentro del △ABC



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

$$\frac{3k}{k} = \frac{a+b}{6}$$

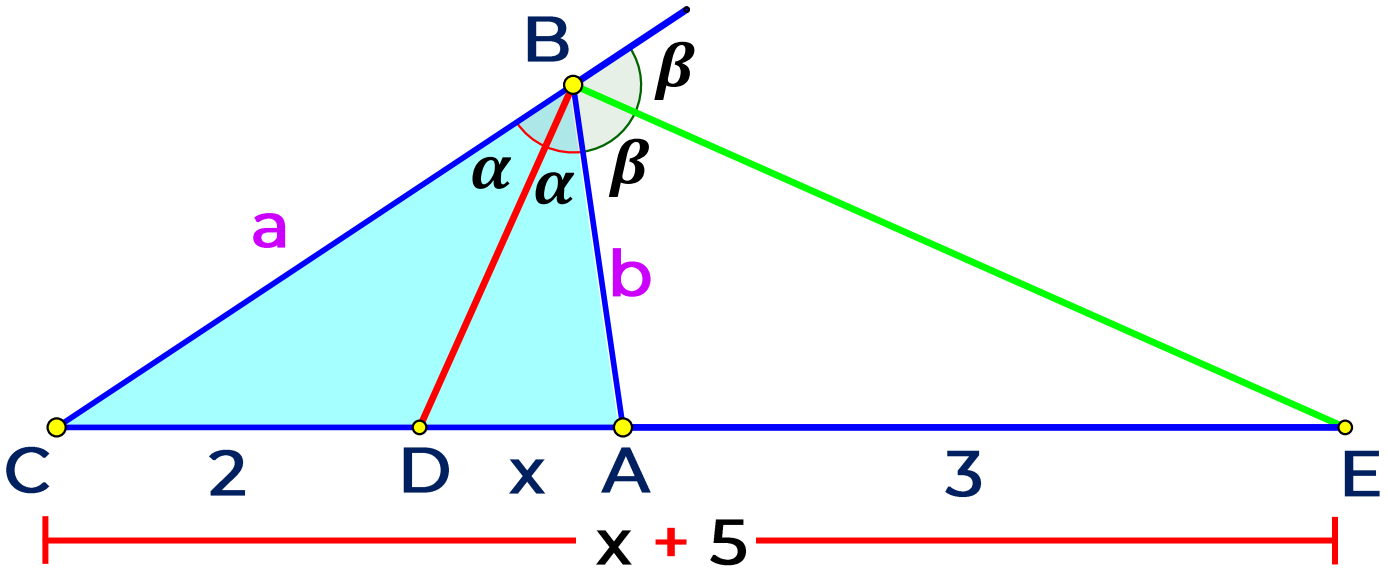
$$18 = a + b$$

Piden:

$$2p_{\triangle} = \underbrace{a + b}_{18} + 6$$

$$2p_{\triangle ABC} = 24$$

7. Halle el valor de x.



Resolución

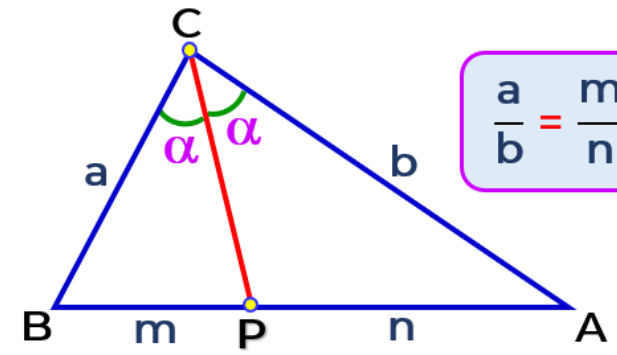
Aplicamos ambos teoremas a la vez

$$\frac{a}{b} = \underbrace{\frac{2}{x} = \frac{x+5}{3}}$$

$2(3) = x(x + 5)$

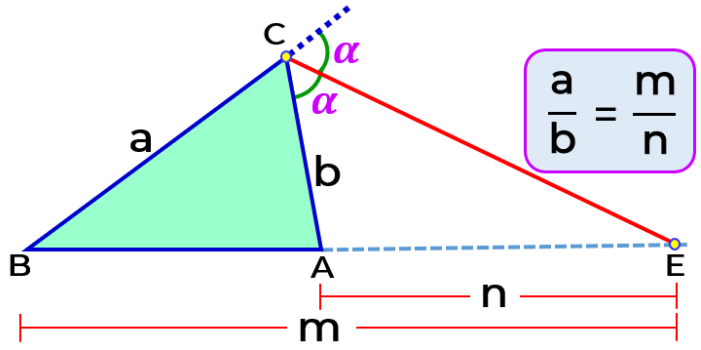
$x = 1$

Teorema de la bisectriz Interior



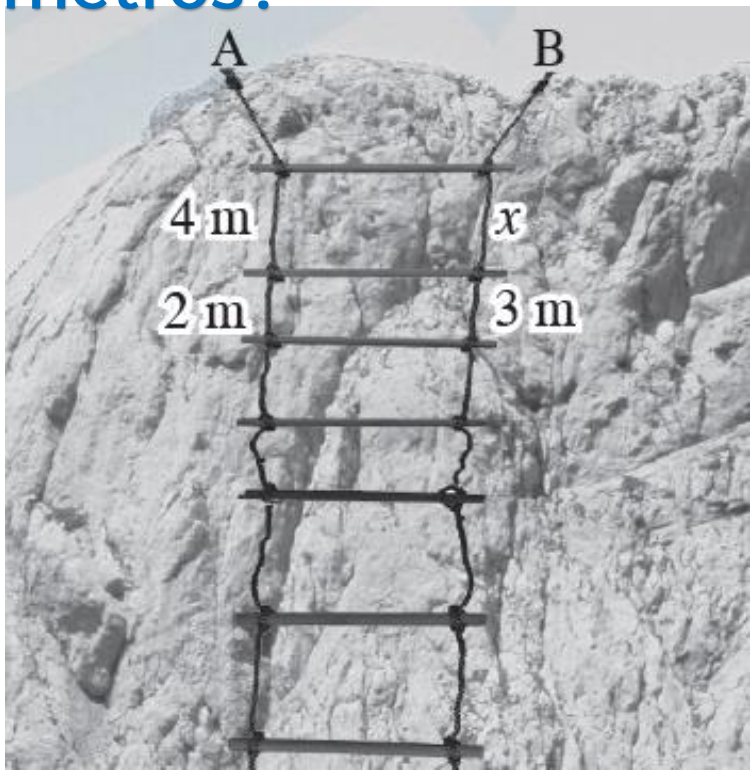
$$\frac{a}{b} = \frac{m}{n}$$

Teorema de la Bisectriz Exterior

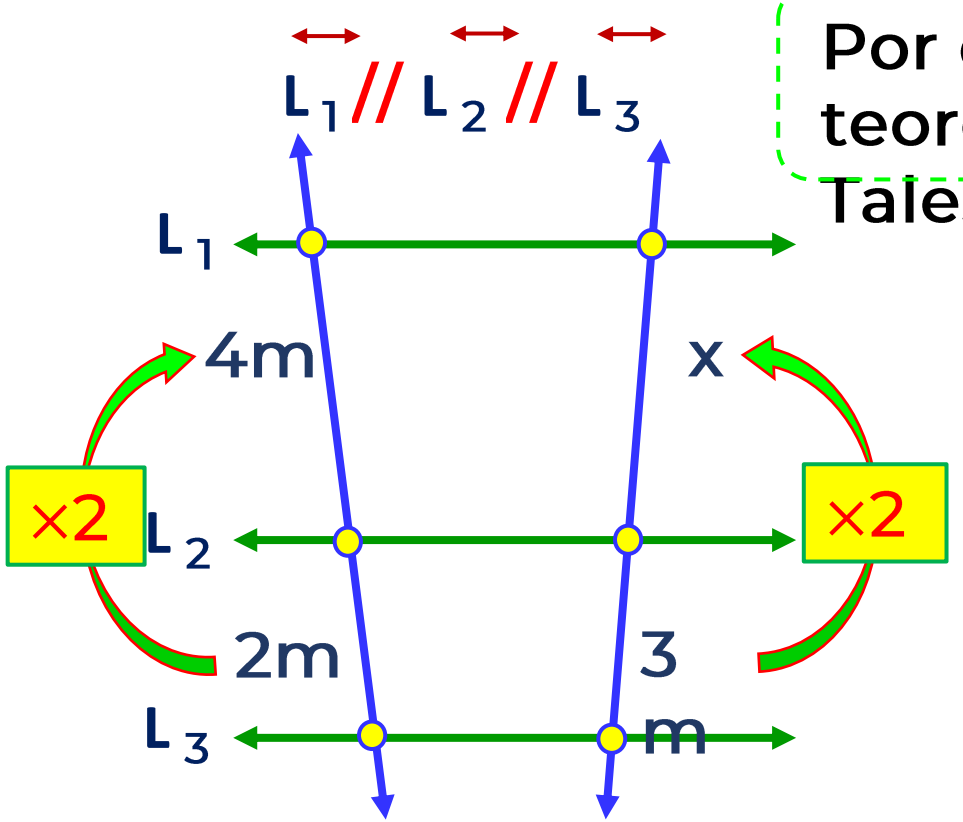


$$\frac{a}{b} = \frac{m}{n}$$

8. Si en los dos últimos escalones, el alpinista que sube por la soga A sube dos y cuatro metros, respectivamente; ¿cuánto le falta al alpinista de la soga B en el último escalón si el anterior subió tres metros?



Resolución



Por el teorema de Tales

$x = 3 \times 2$

$x = 6$ m