GEOMETRÍA

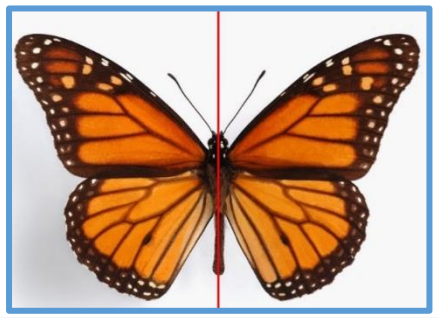
Capítulo 9

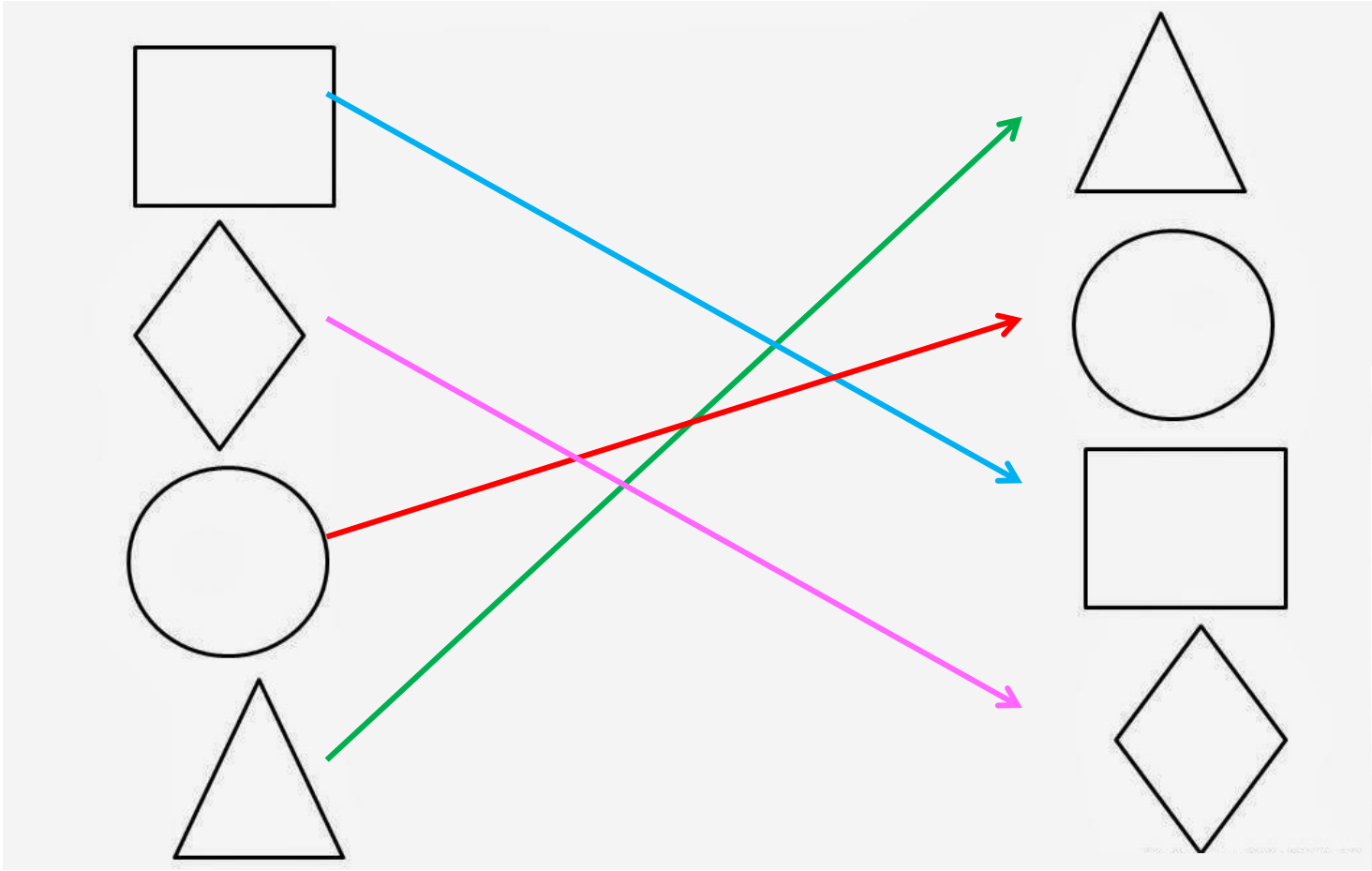
3rd
SECONDARY

APLICACIONES DE LA CONGRUENCIA

SACO OLIVEROS

MOTIVATING | STRATEGY

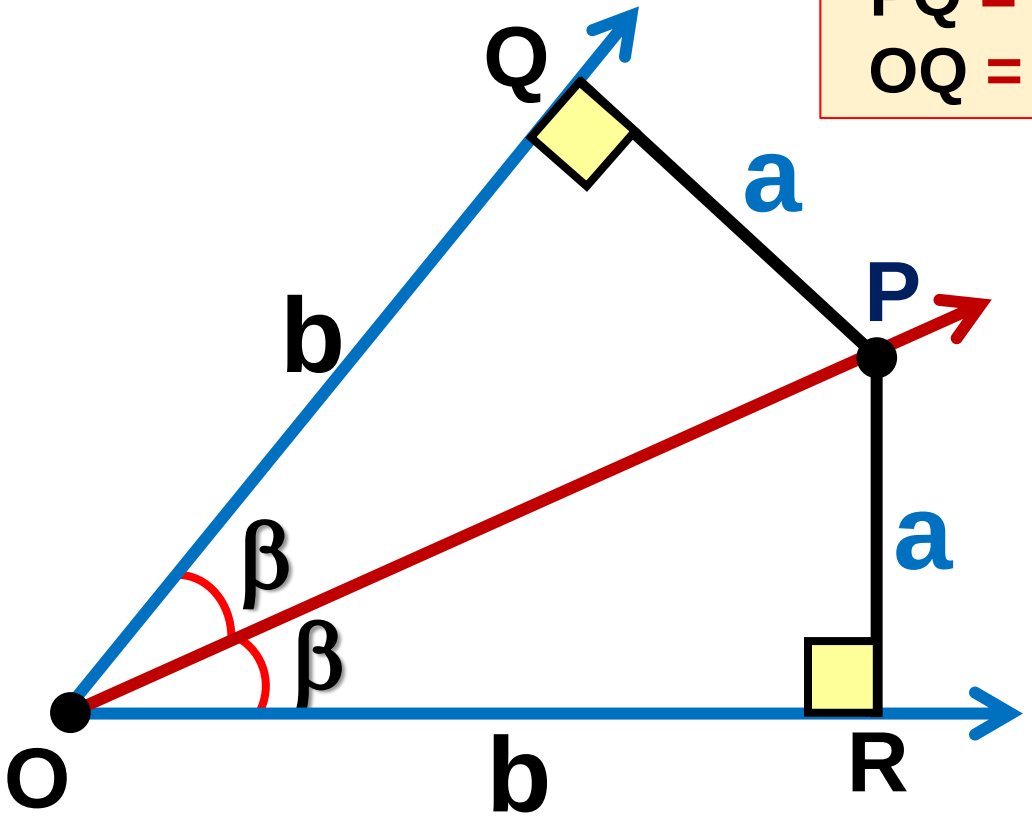




Aplicaciones de la congruencia

1 TEOREMA DE LA BISECTRIZ

$PQ = OQ$
$OQ = OR$

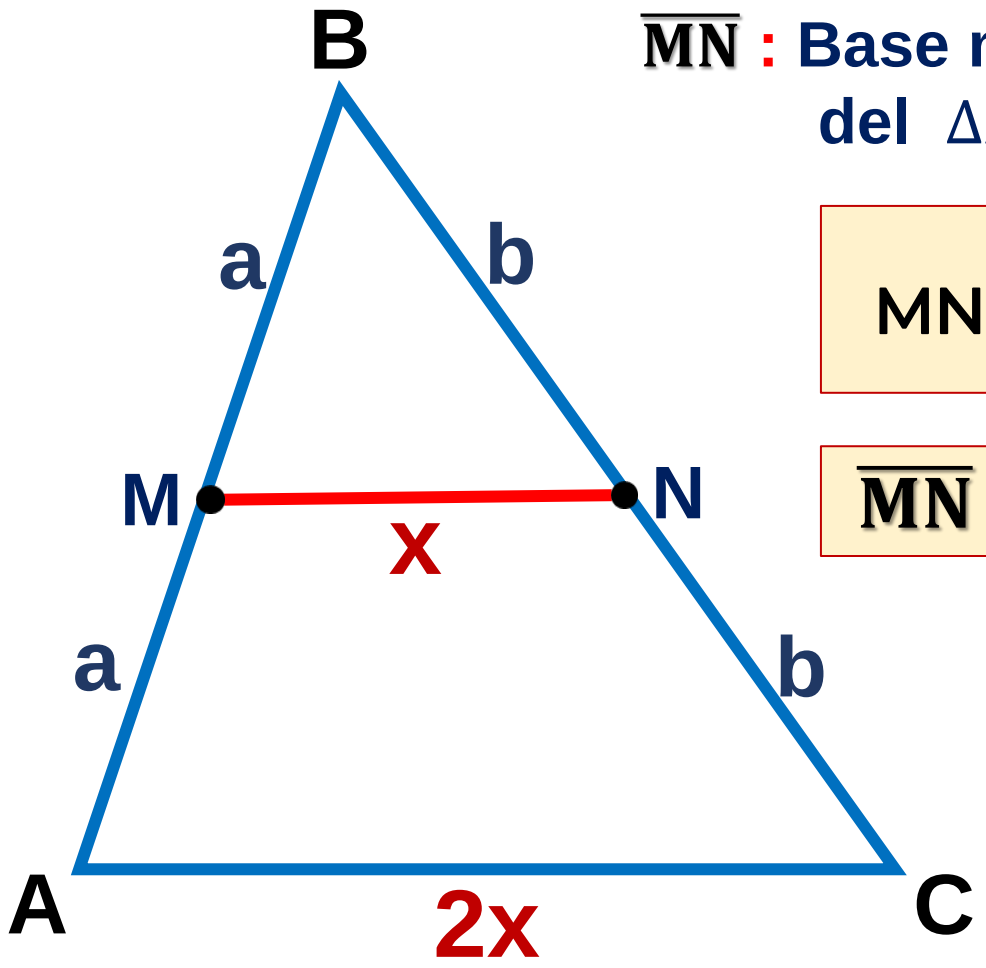


2 TEOREMA DE LA BASE MEDIA

$\overline{MN}$: Base media del ΔABC.

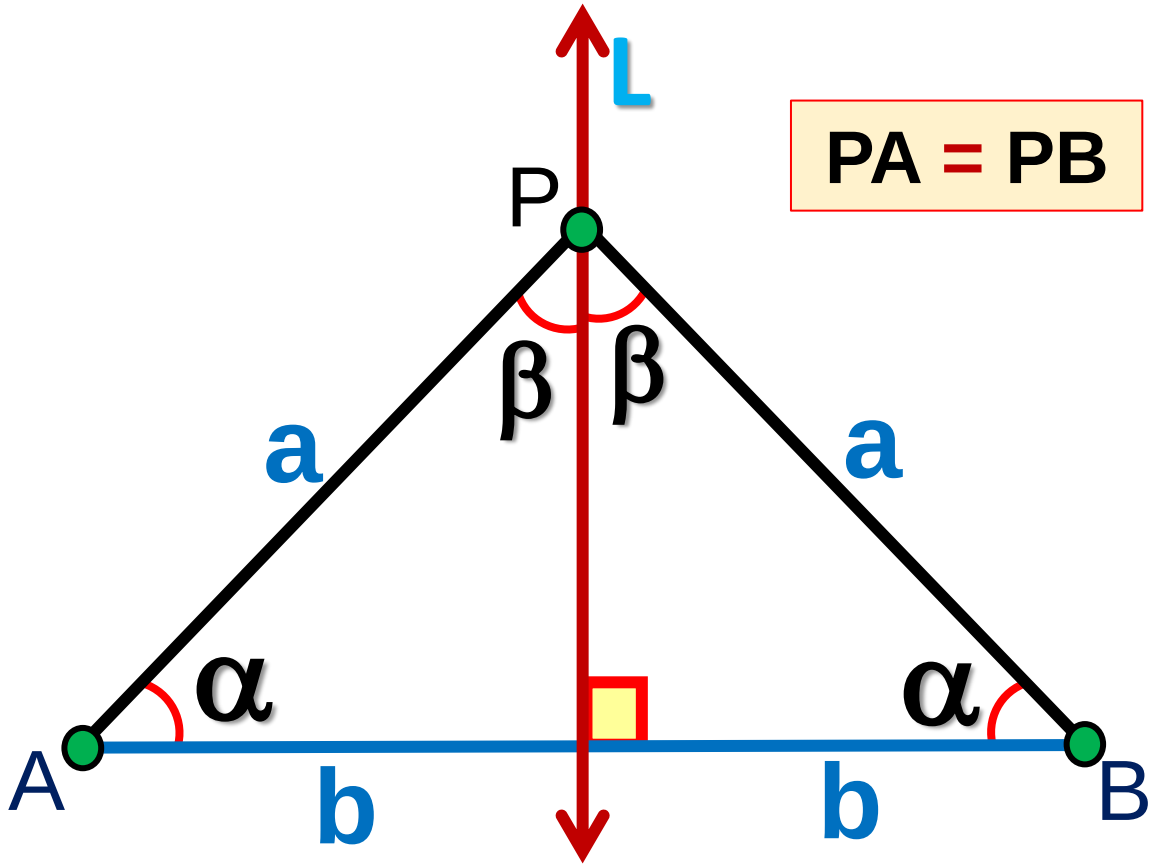
$$MN = \frac{AC}{2}$$

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



3 TEOREMA DE LA MEDIATRIZ

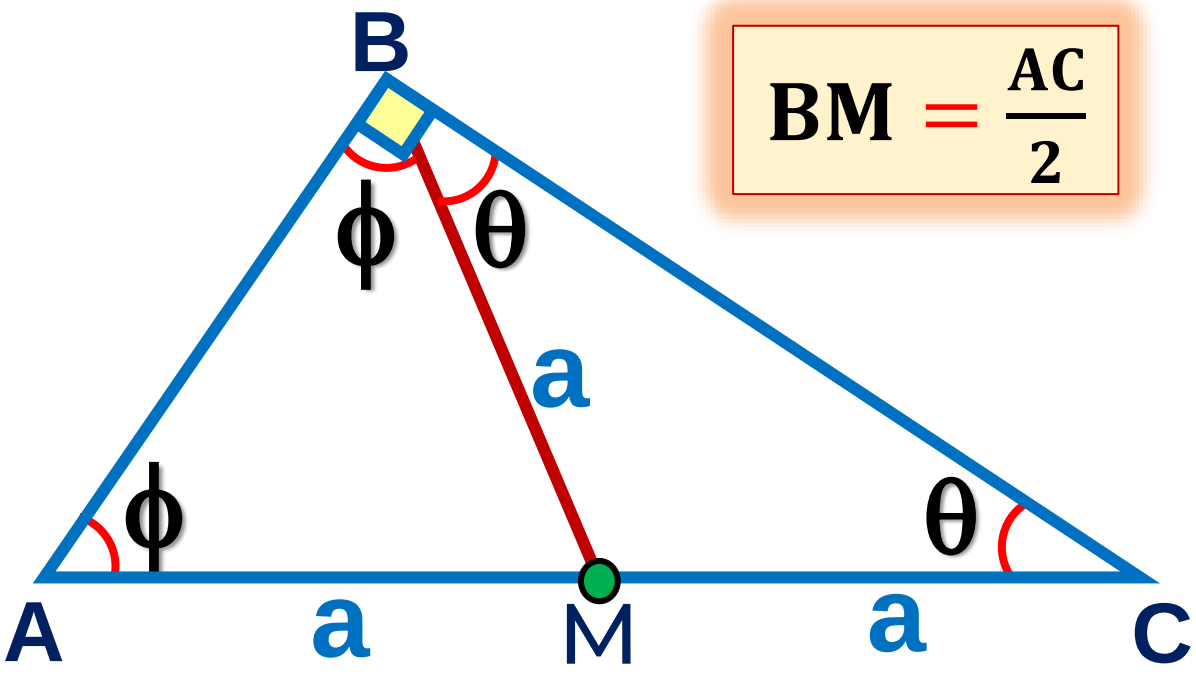
$\overleftrightarrow{L}$: Mediatriz del $\overline{AB}$



PA = PB

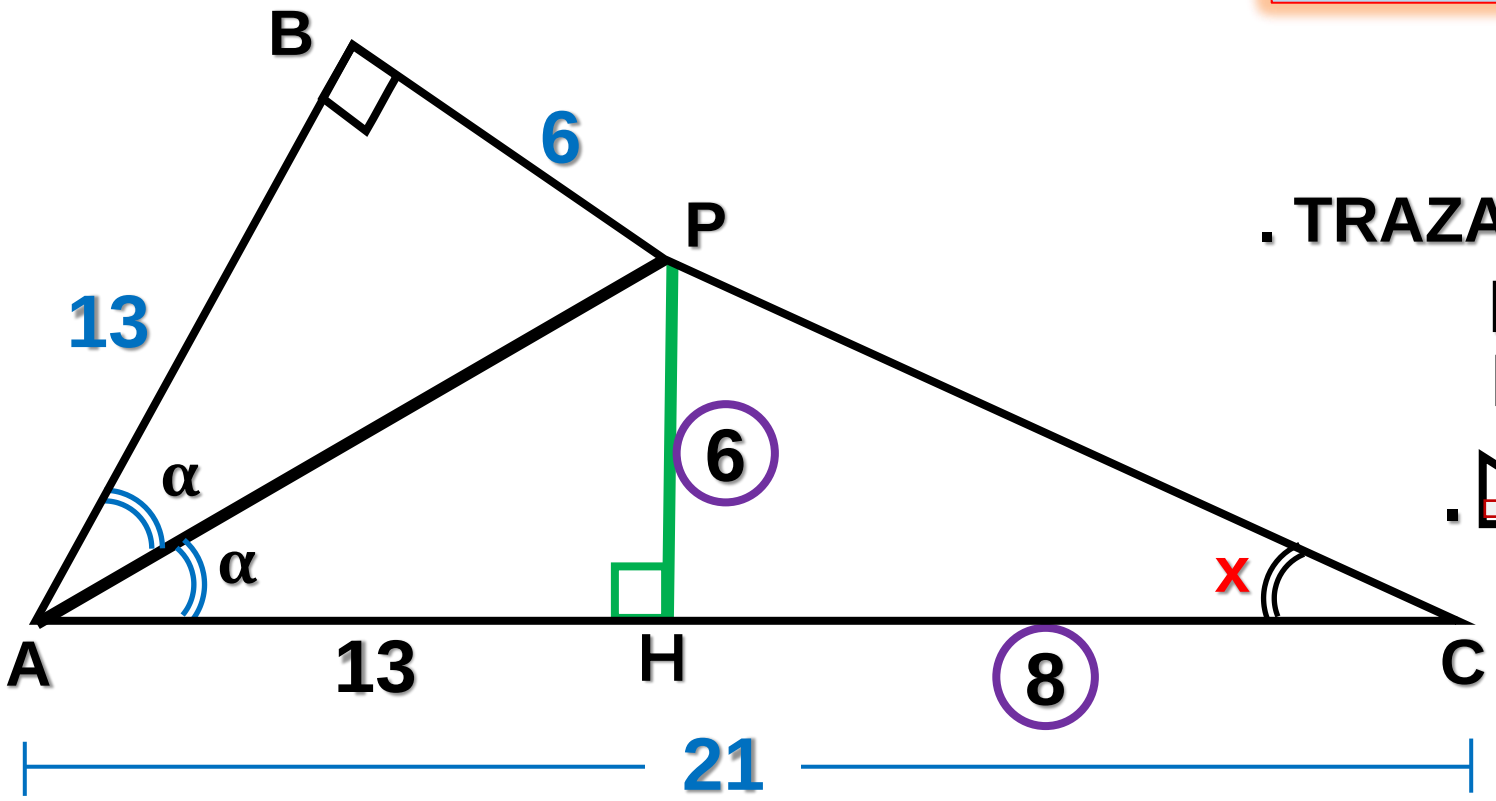
4 TEOREMA DE LA MEDIANA RELATIVA A LA HIPOTENUSA

$\overline{BM}$: Mediana relativa a la hipotenusa.

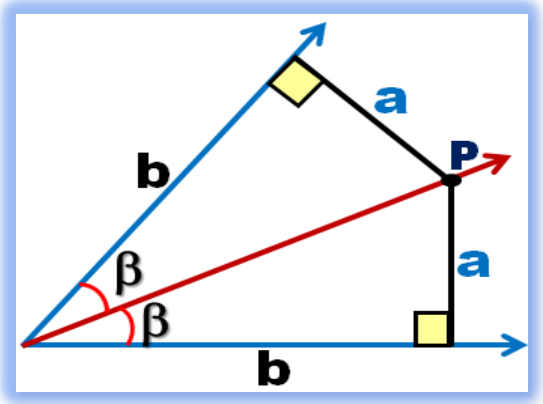


$$BM = \frac{AC}{2}$$

1.En la figura, halle el valor de x.



TEOREMA DE LA BISECTRIZ

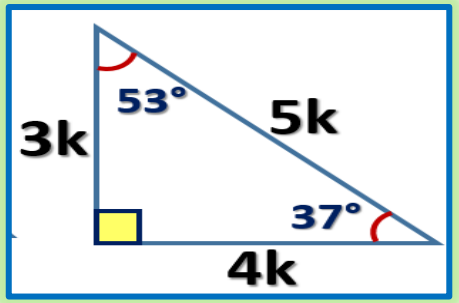


. TRAZAMOS LA ALTURA $\overline{PH}$

BP = PH = 6

BA = AH = 13

. PHC: Notable (37°; 53°)

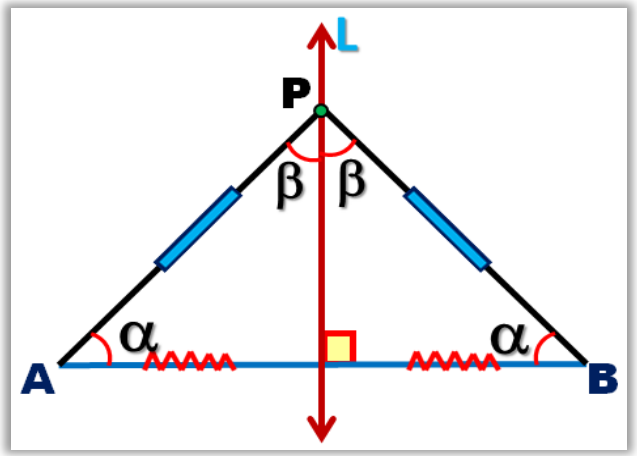


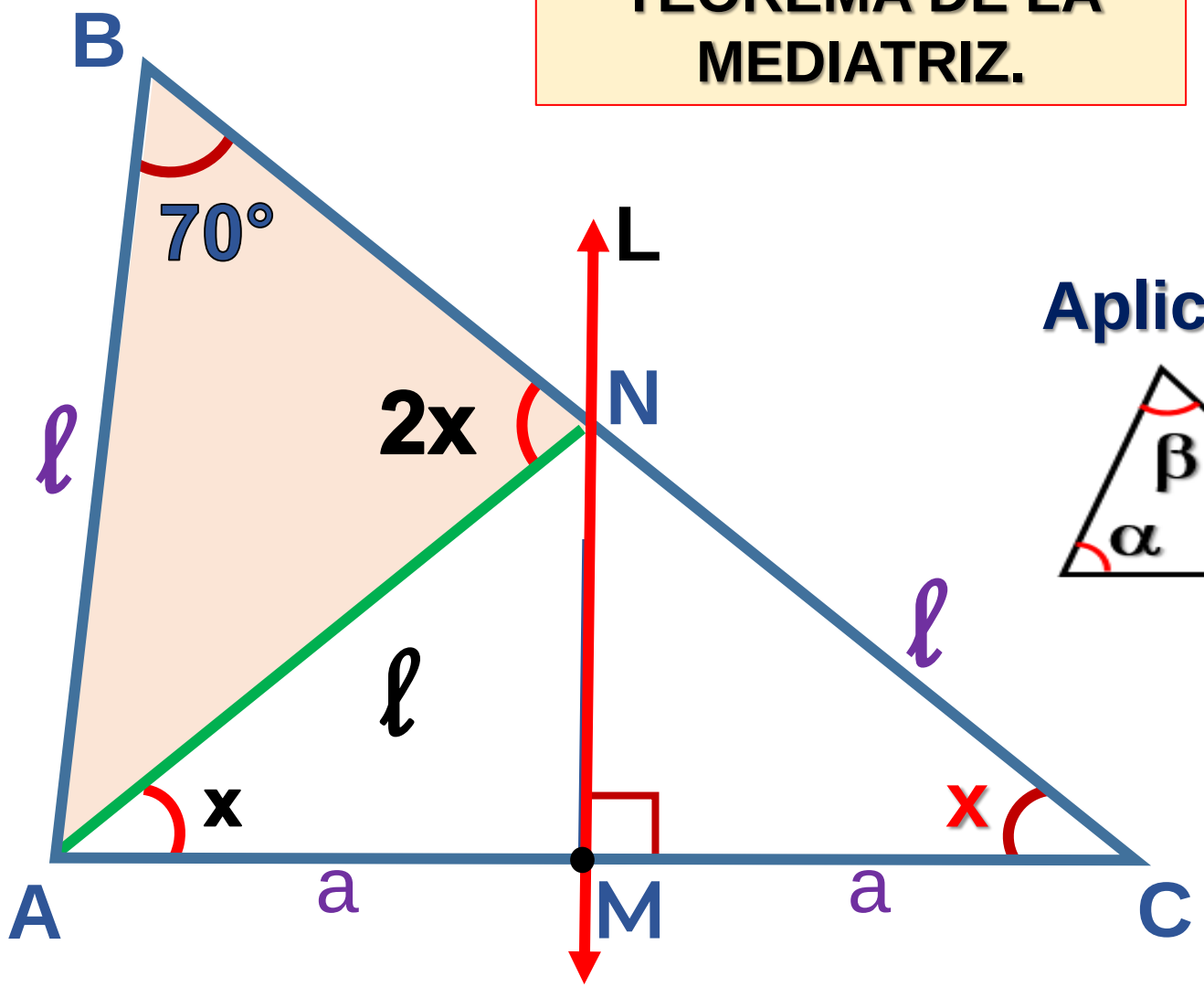
x = 37°

2. Halle el valor de x.

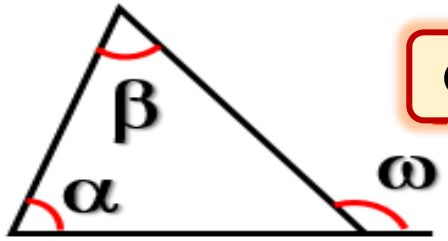
$\overleftrightarrow{L}$: Mediatriz del $\overline{AC}$

TEOREMA DE LA MEDIATRIZ.





Aplicando el teorema:



$\omega = \alpha + \beta$

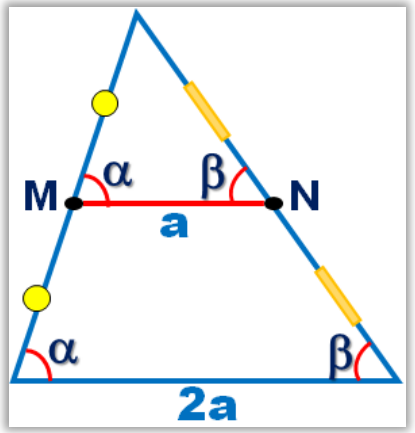
△ABN: **Isósceles**

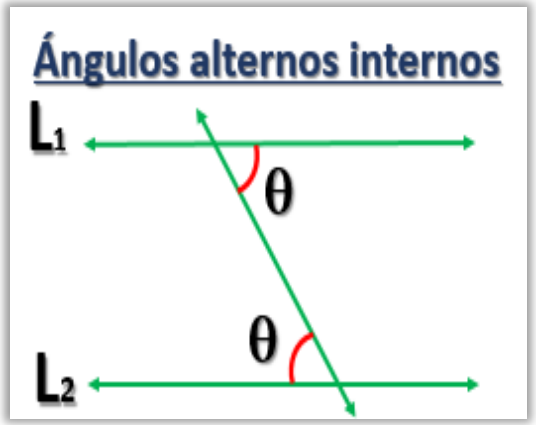
$2x = 70°$

$x = 35°$

3. Halle el valor de x.

- Trazamos $\overline{MN}$ (Base media)





△MNT: Isósceles

Teorema: Suma de las medidas de los ángulos internos

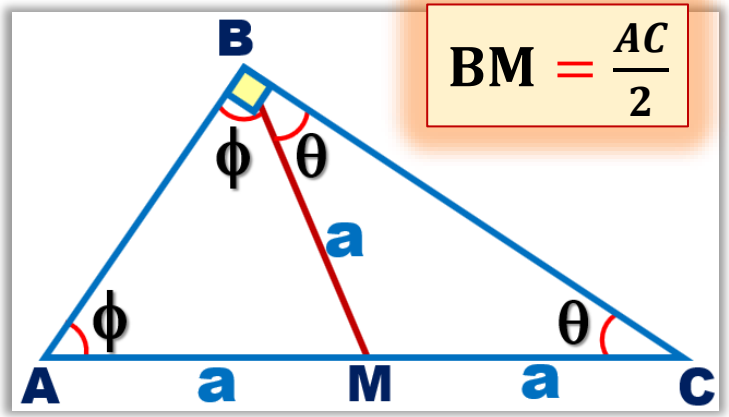
$$x + 67° + 67° = 180°$$

$$x + 134° = 180°$$

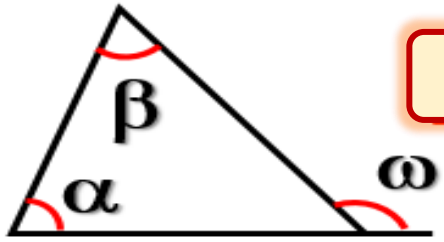
$$x = 46°$$

4. Halle el valor de x.

$\overline{BM}$: Mediana relativa a la hipotenusa.



$$BM = \frac{AC}{2}$$



$$\omega = \alpha + \beta$$

△BCE y △BDE : Isósceles

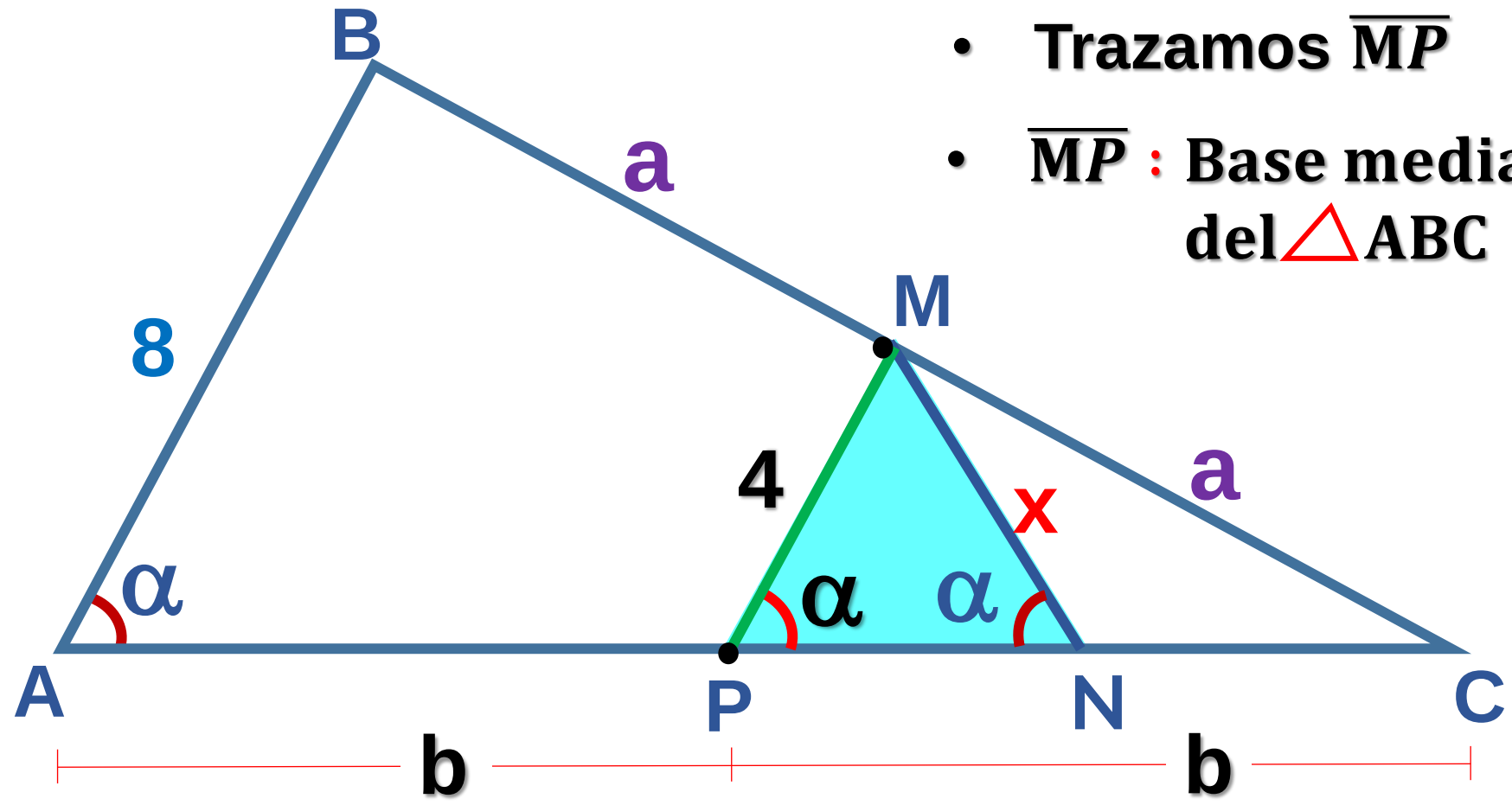
Aplicando el teorema:

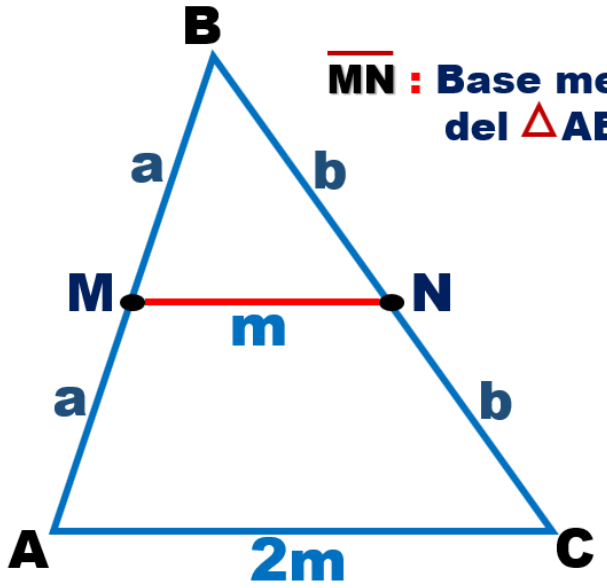
$$x = 15° + 15°$$

$$x = 30°$$

5. Halle el valor de x.

- Ubicamos el punto medio P del $\overline{AC}$.
- Trazamos $\overline{MP}$
- $\overline{MP}$: Base media del $\triangle ABC$

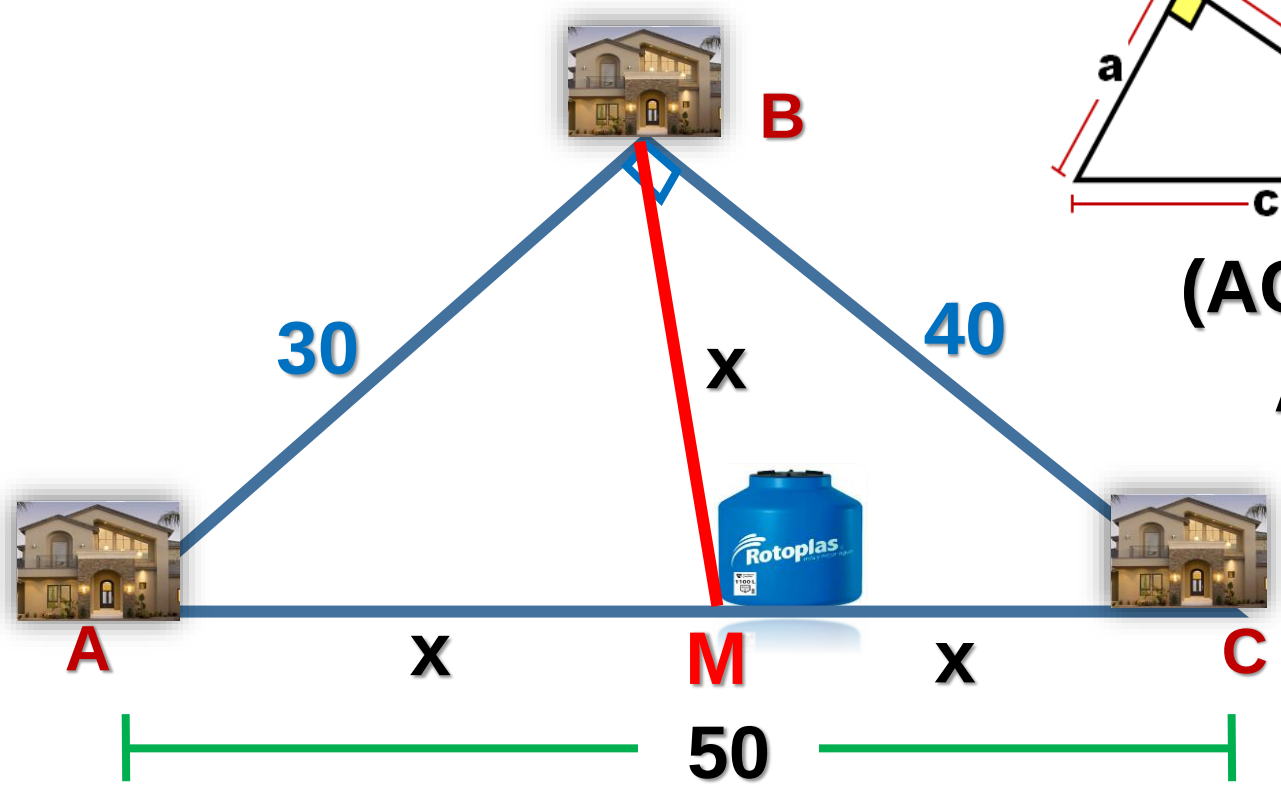


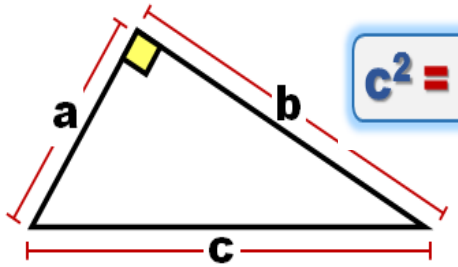


- $(\overline{MP} \parallel \overline{AB})$
- $\triangle$PMN: Isósceles

$$x = 4$$

6. Se instala un tanque con agua para abastecer las casas A, B y C tal que equidiste de dichas casas. Si la casa A está a 30 m de la casa B y B a 40 m de la casa C, halle la distancia entre el tanque y la casa B.



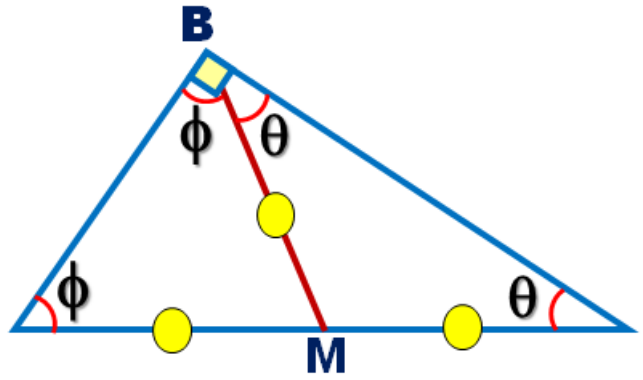


$c^2 = a^2 + b^2$

$(AC)^2 = 30^2 + 40^2$

$AC = 50$

$\overline{BM}$: Mediana relativa a la hipotenusa

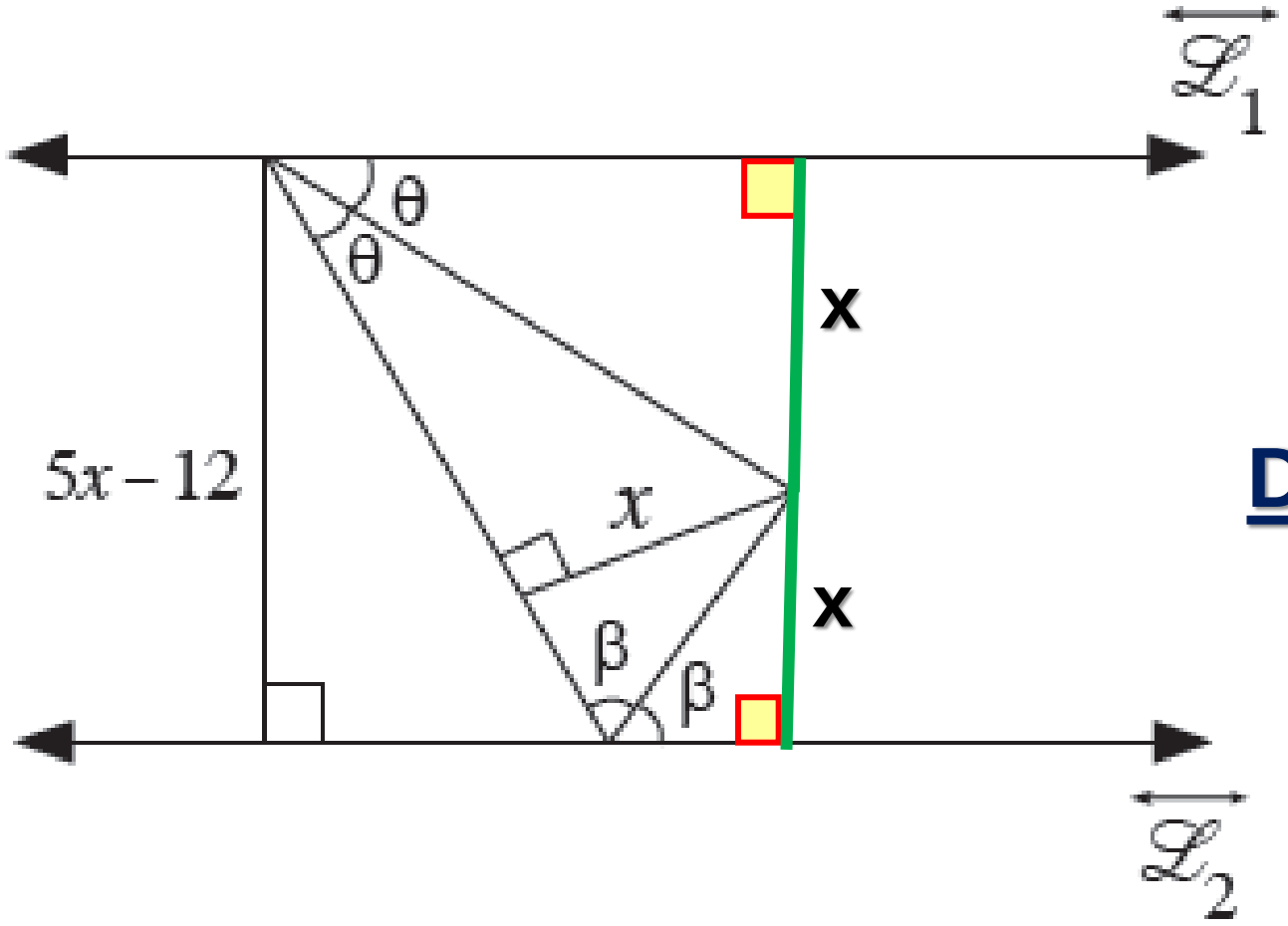


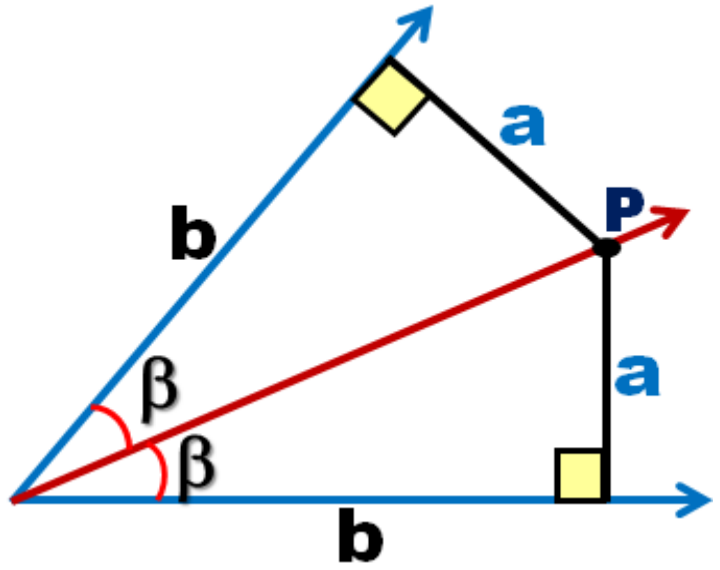
$x + x = 50$

$2x = 50$

$x = 25\ m$

7.Halle el valor de x, $\overleftrightarrow{L_1} \parallel \overleftrightarrow{L_2}$.





Del gráfico

$$5x - 12 = 2x$$

$$3x = 12$$

$$\boxed{x = 4}$$