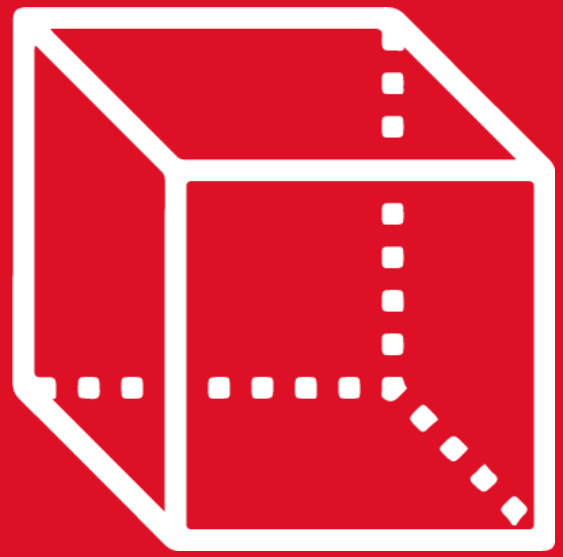
GEOMETRÍA

Capítulo 4

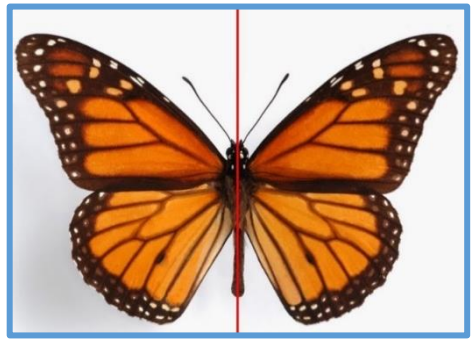


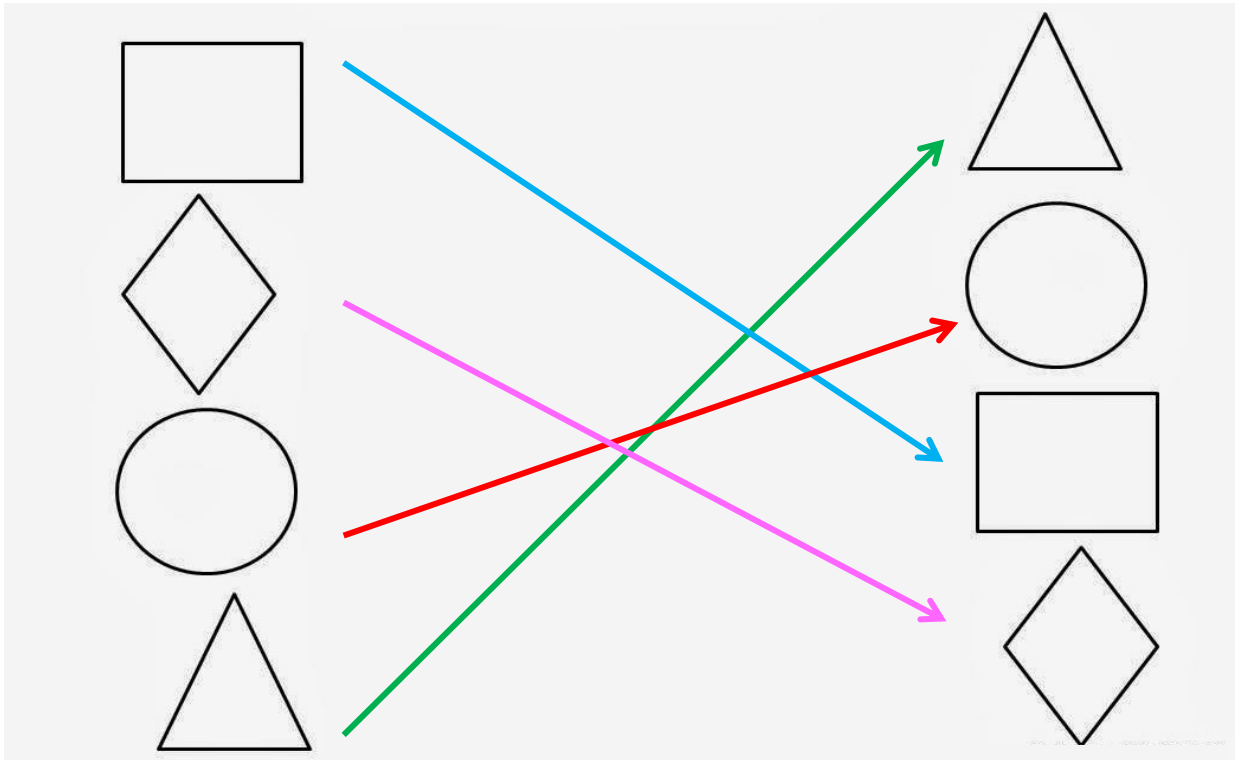
4th
SECONDARY

APLICACIONES DE LA CONGRUENCIA

SACO OLIVEROS

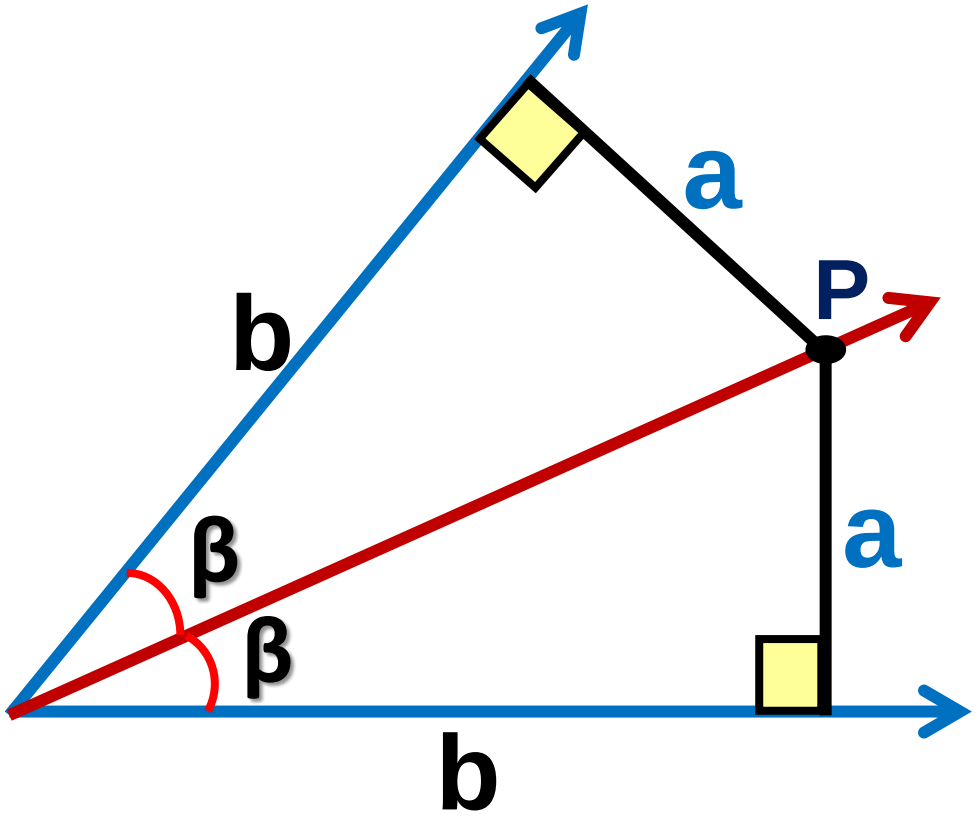
MOTIVATING | STRATEGY



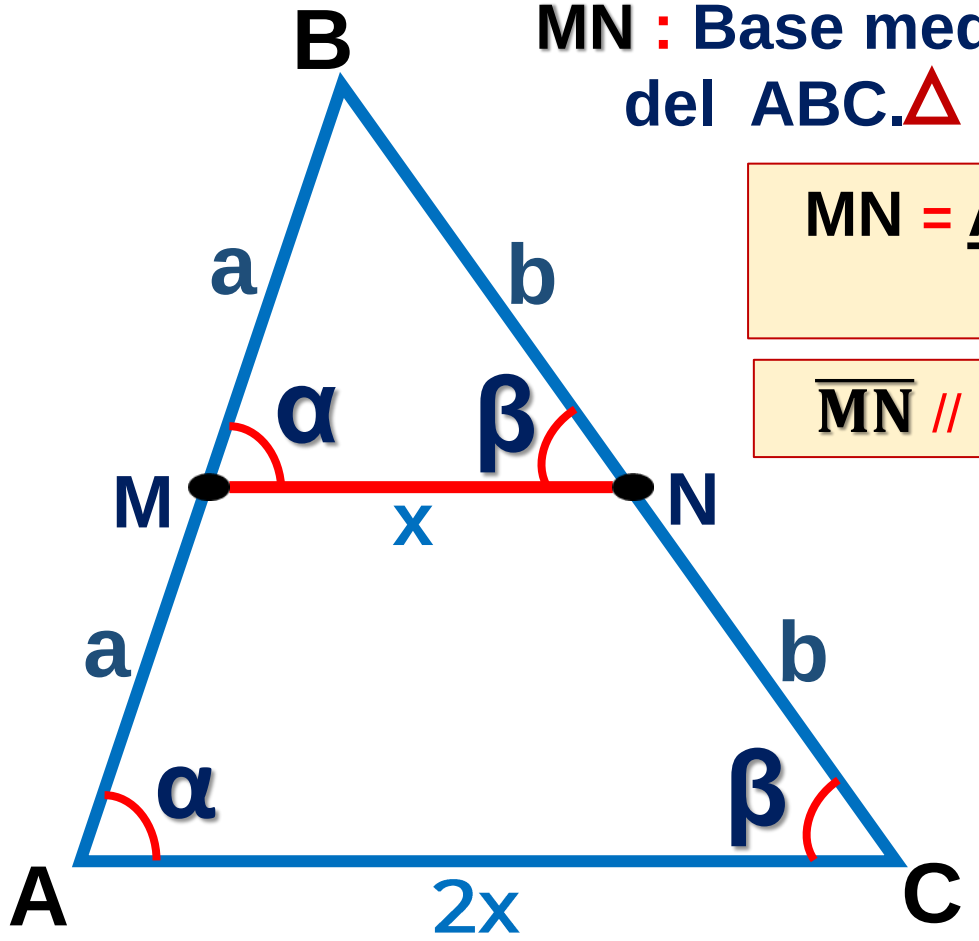


Aplicaciones de la congruencia

1 TEOREMA DE LA BISECTRIZ



2 TEOREMA DE LA BASE MEDIA



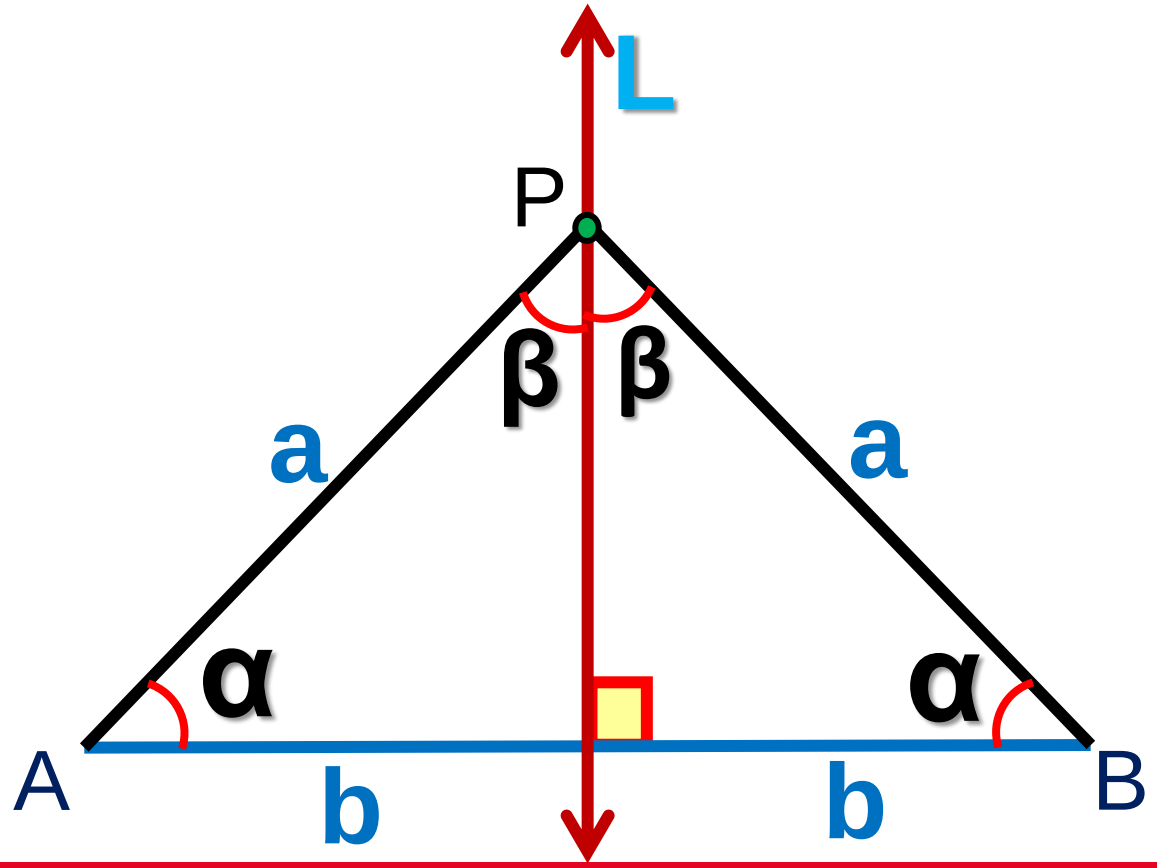
$\overline{MN}$: Base media del ABC.Δ

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

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

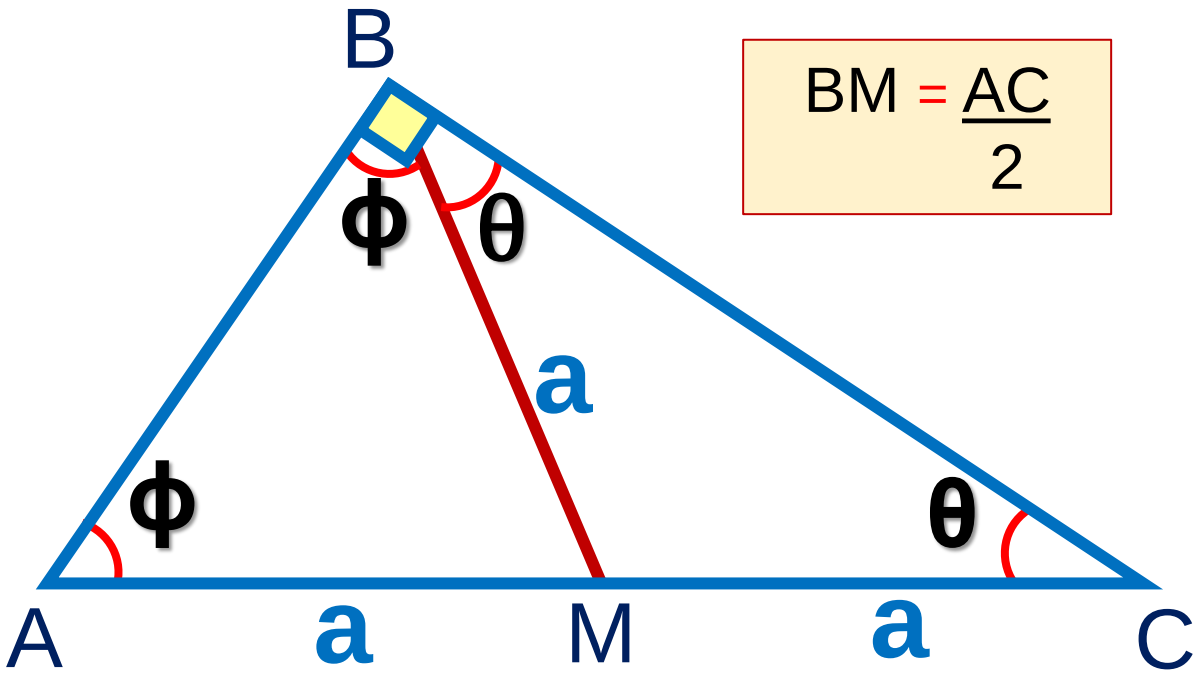
3 TEOREMA DE LA MEDIATRIZ

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



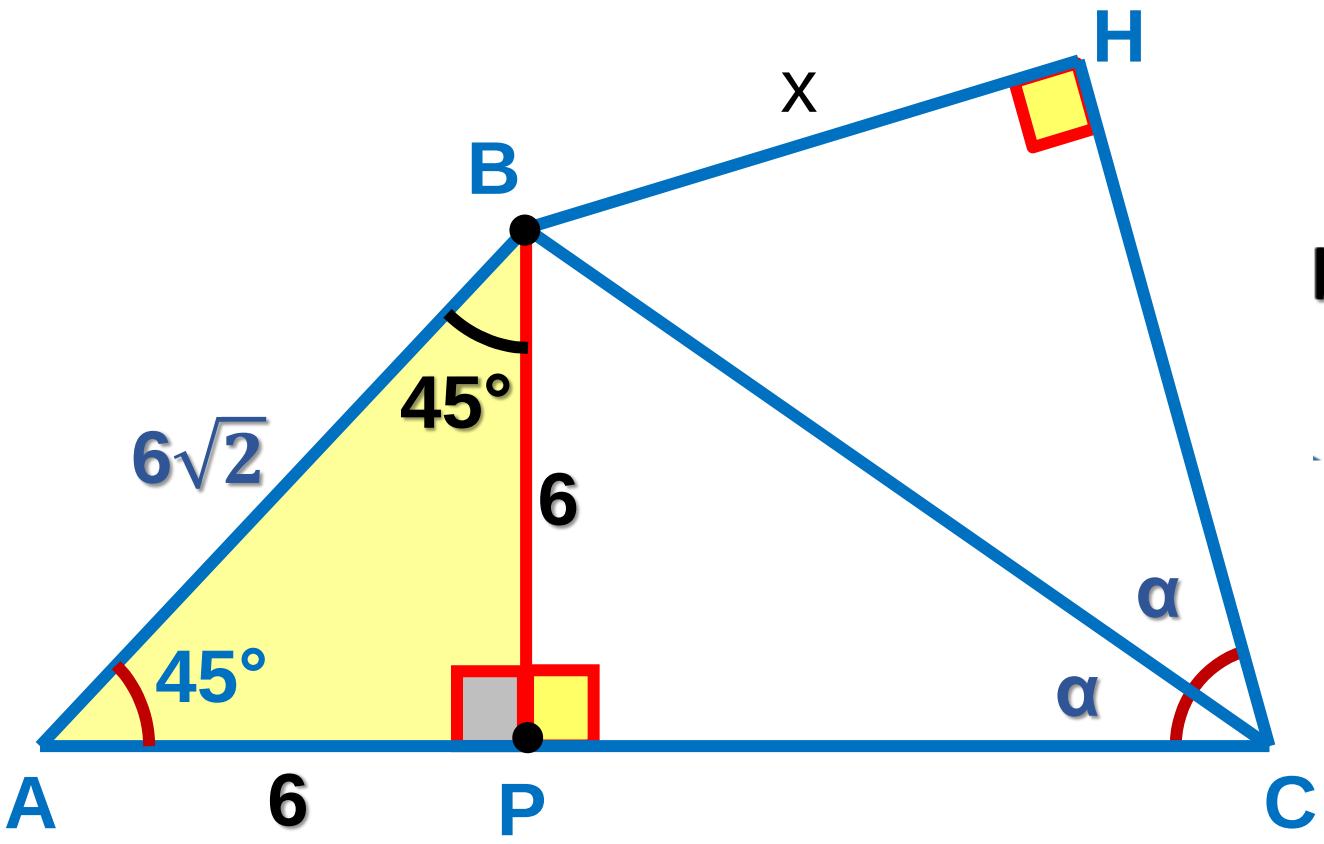
4 TEOREMA DE LA MEDIANA RELATIVA A LA HIPOTENUSA

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

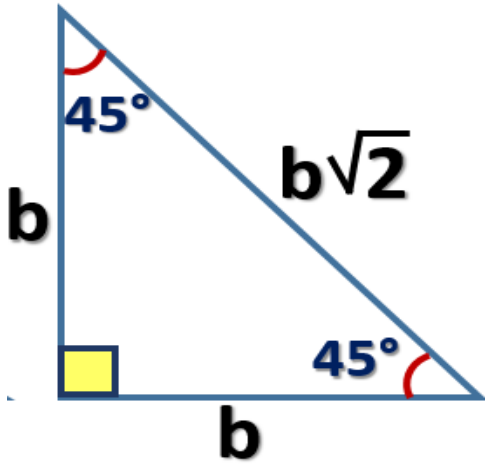


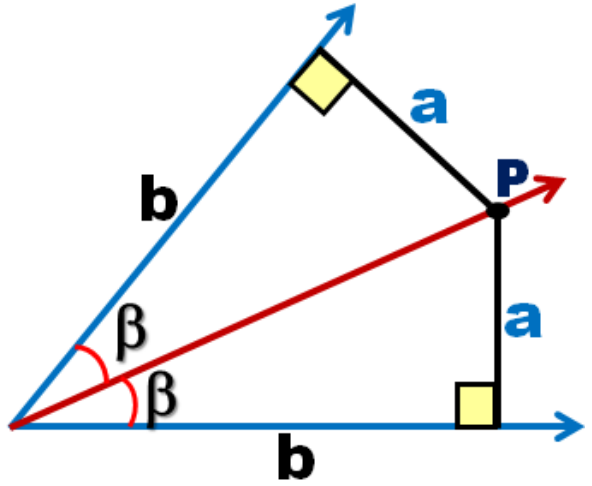
$$BM = \frac{AC}{2}$$

1. En el gráfico, halle BH.



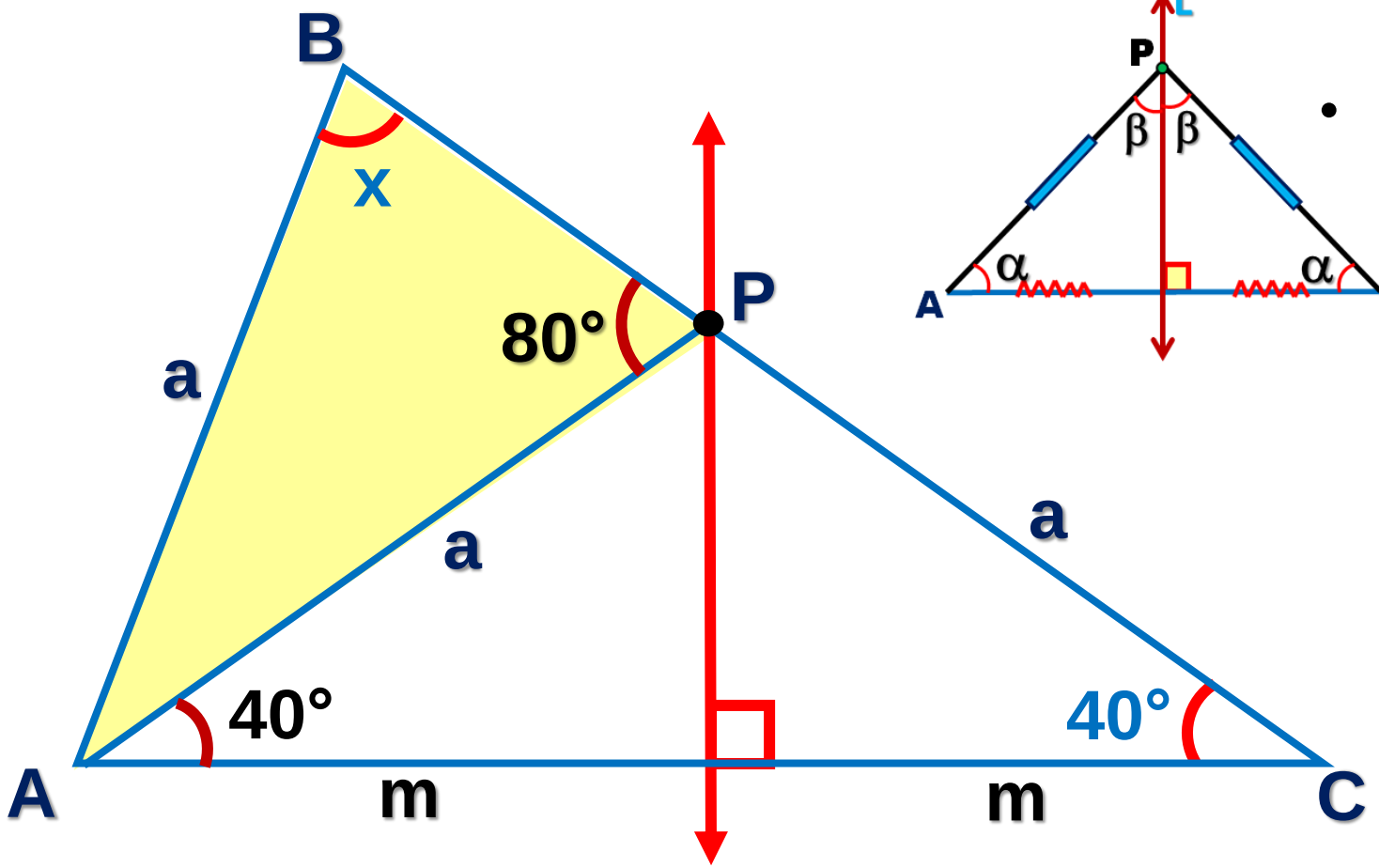
Resolución





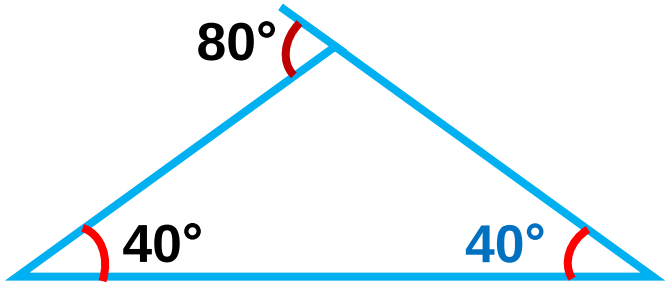
$x = 6$

2. En un triángulo ABC, donde la m∢BCA = 40°, la mediatriz de $\overline{AC}$ intersecta a $\overline{BC}$ en P, tal que AB = PC. Halle la m∢ABP.



Resolución

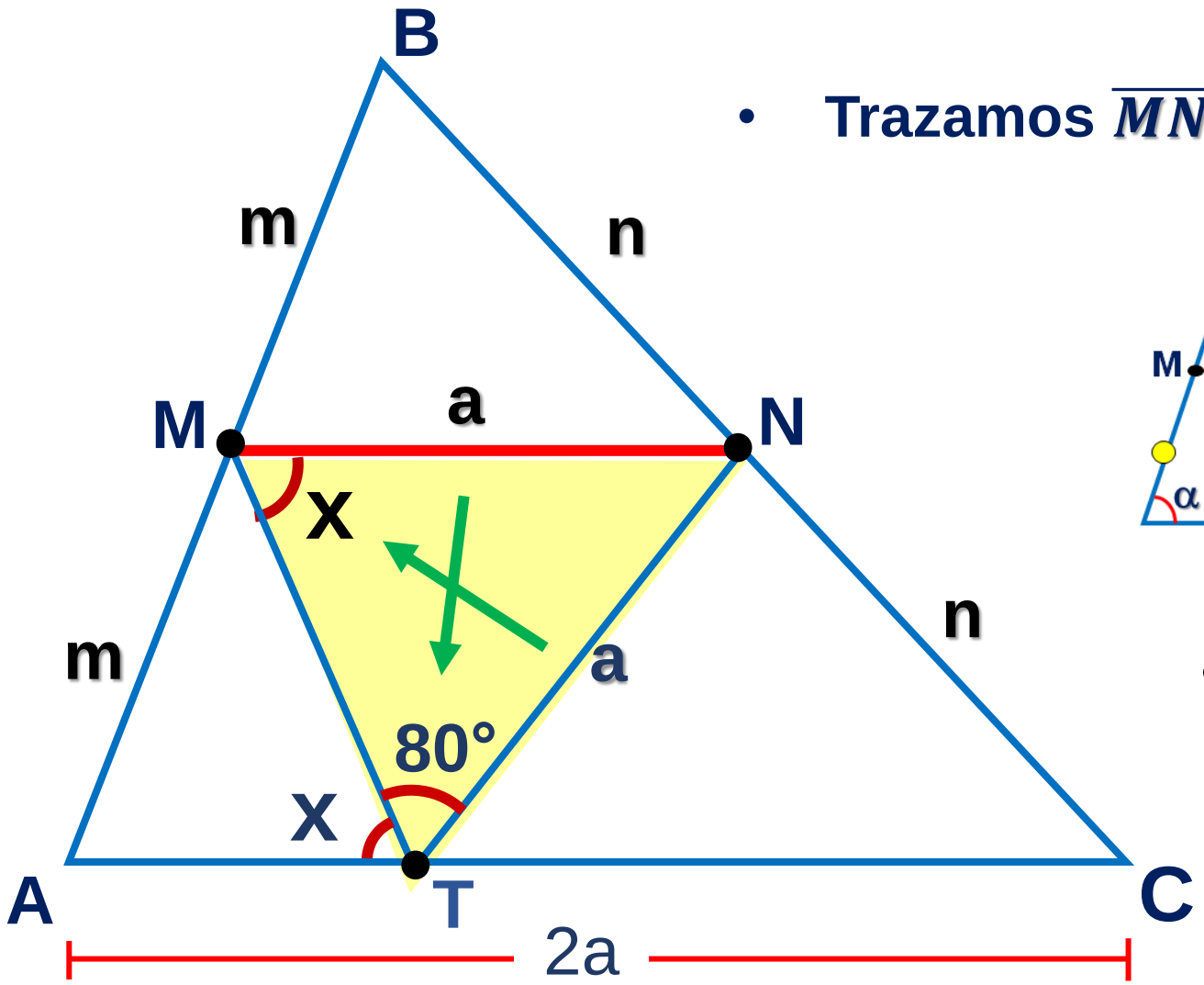
- Teorema de la mediatriz.



- △PAB: Isósceles

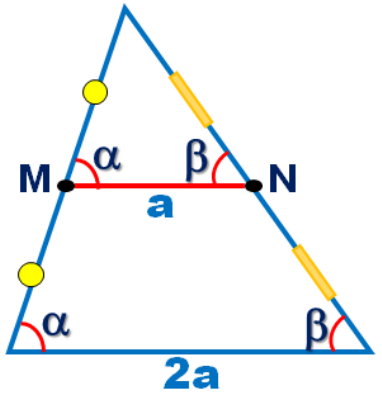
x = 80°

3. En el gráfico, halle el valor de *x*.

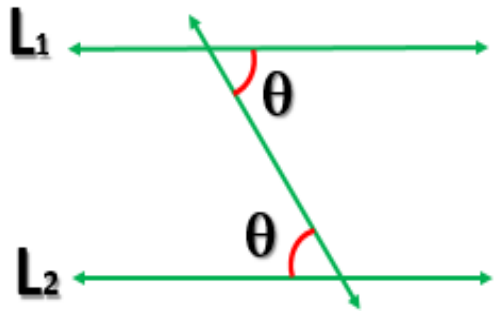


Resolución

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



Ángulos alternos internos

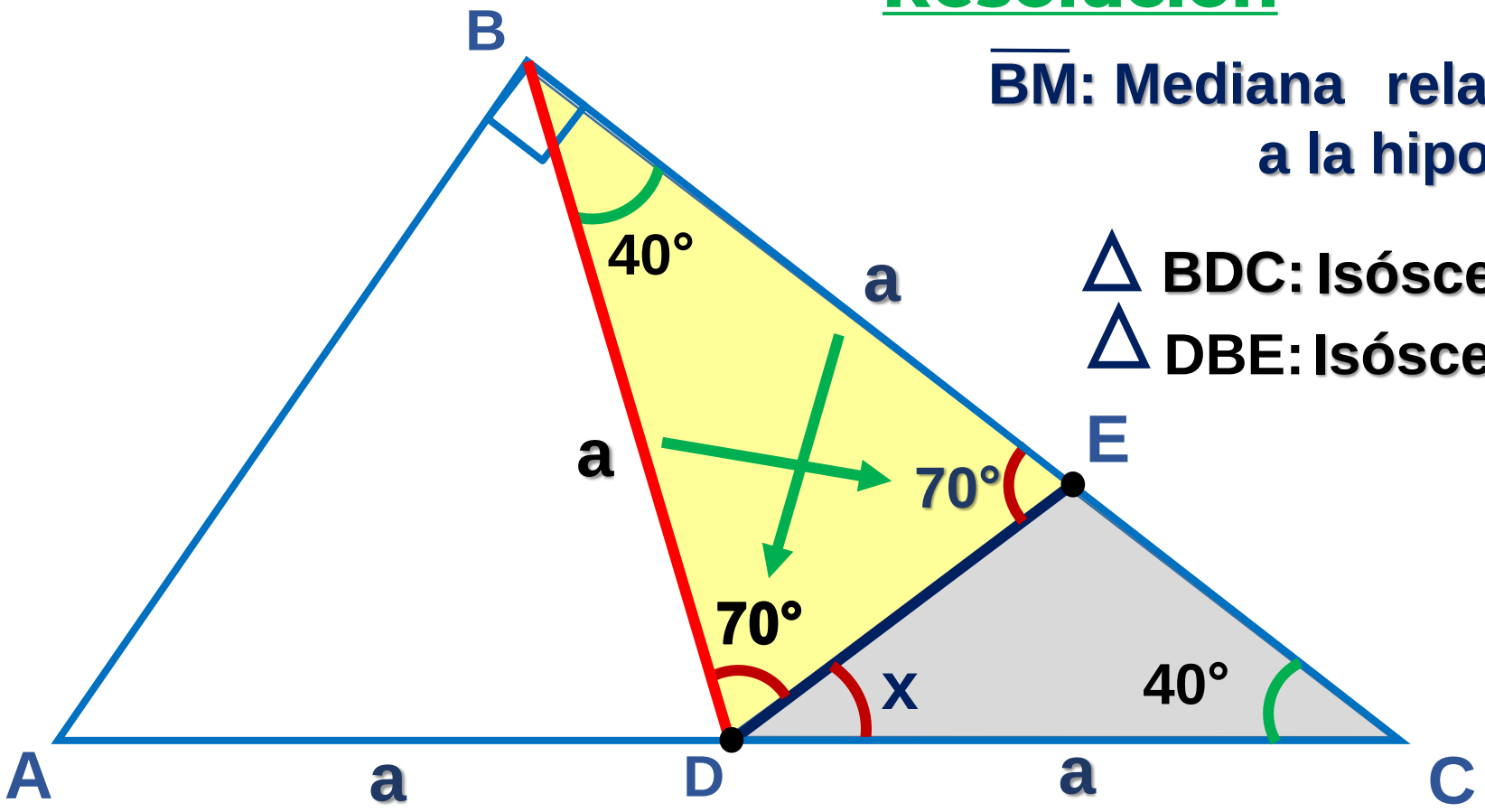


- △MNT: Isósceles

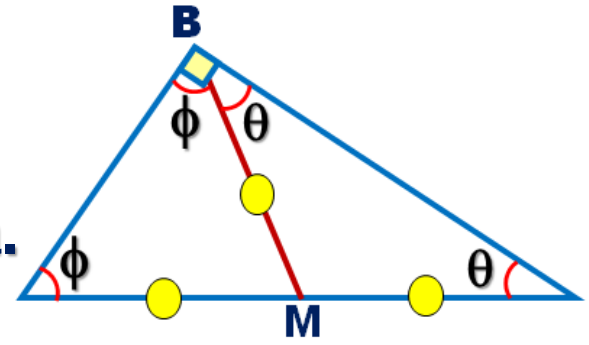
x = 80°

4. En un triángulo rectángulo ABC recto en B, se ubican los puntos D en $\overline{AC}$ y E en $\overline{BC}$, tal que: AD = DC = BE y m∢BED = 70°. Halle la m∢EDC.

Resolución

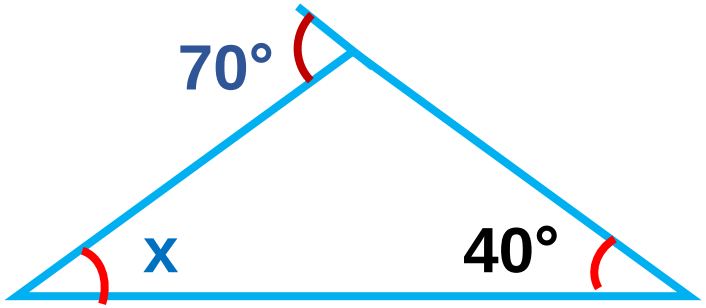


$\overline{BM}$: Mediana relativa a la hipotenusa.



△ BDC: Isósceles

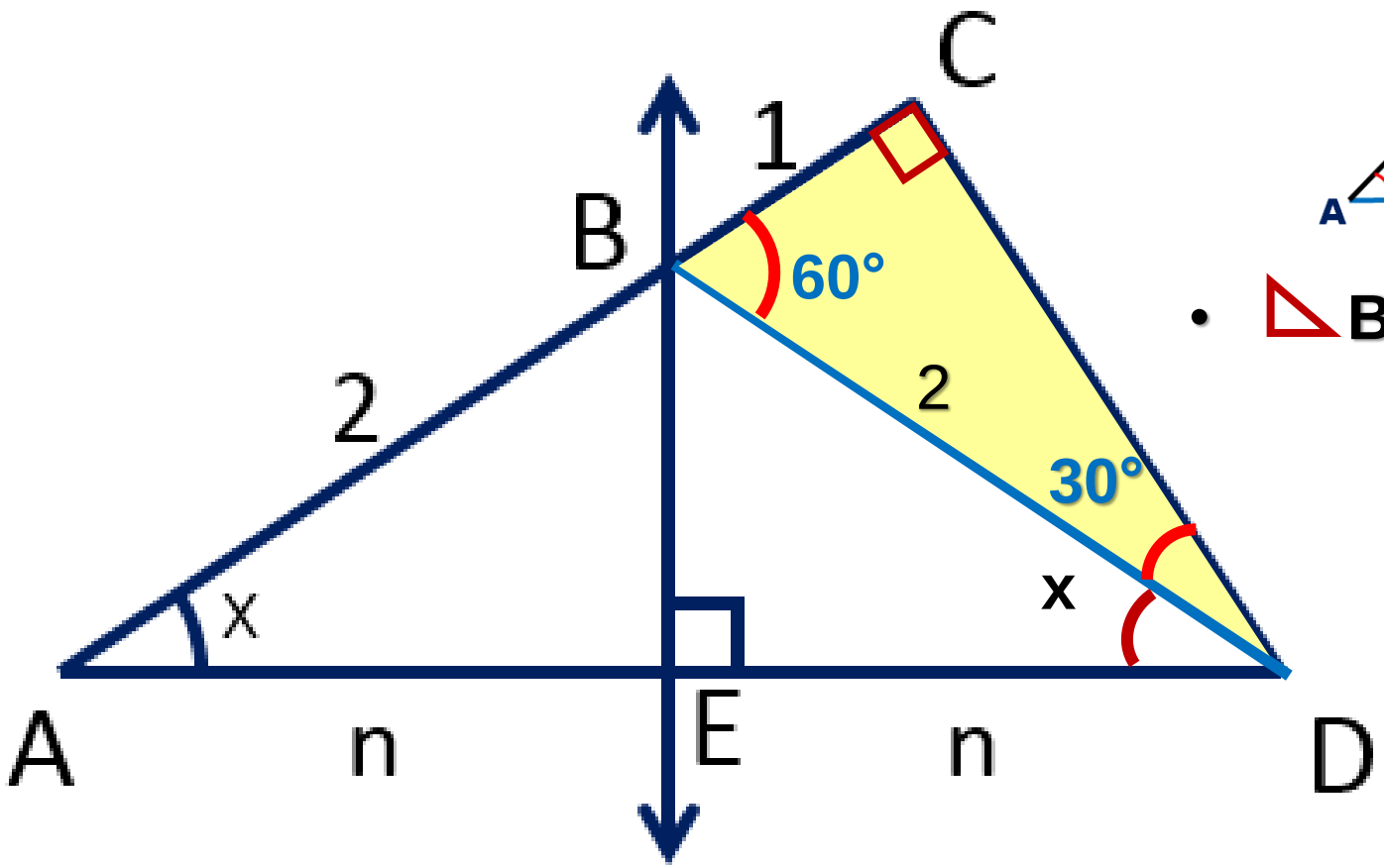
△ DBE: Isósceles



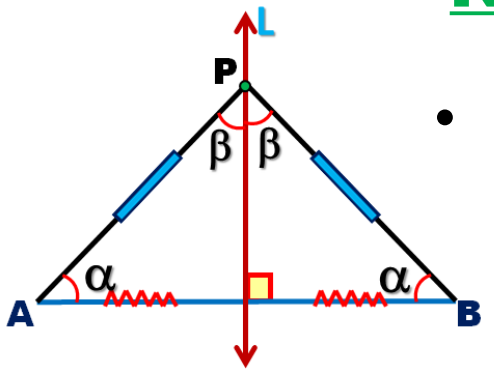
x + 40° = 70°

x = 30°

5. En el gráfico, AB = 2 y BC = 1. Halle el valor de x.

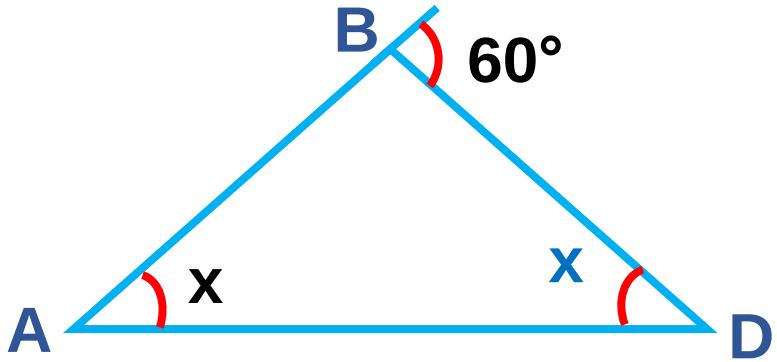


Resolución



- Teorema de la mediatriz.

- △BCD: Notable 30°y 60°

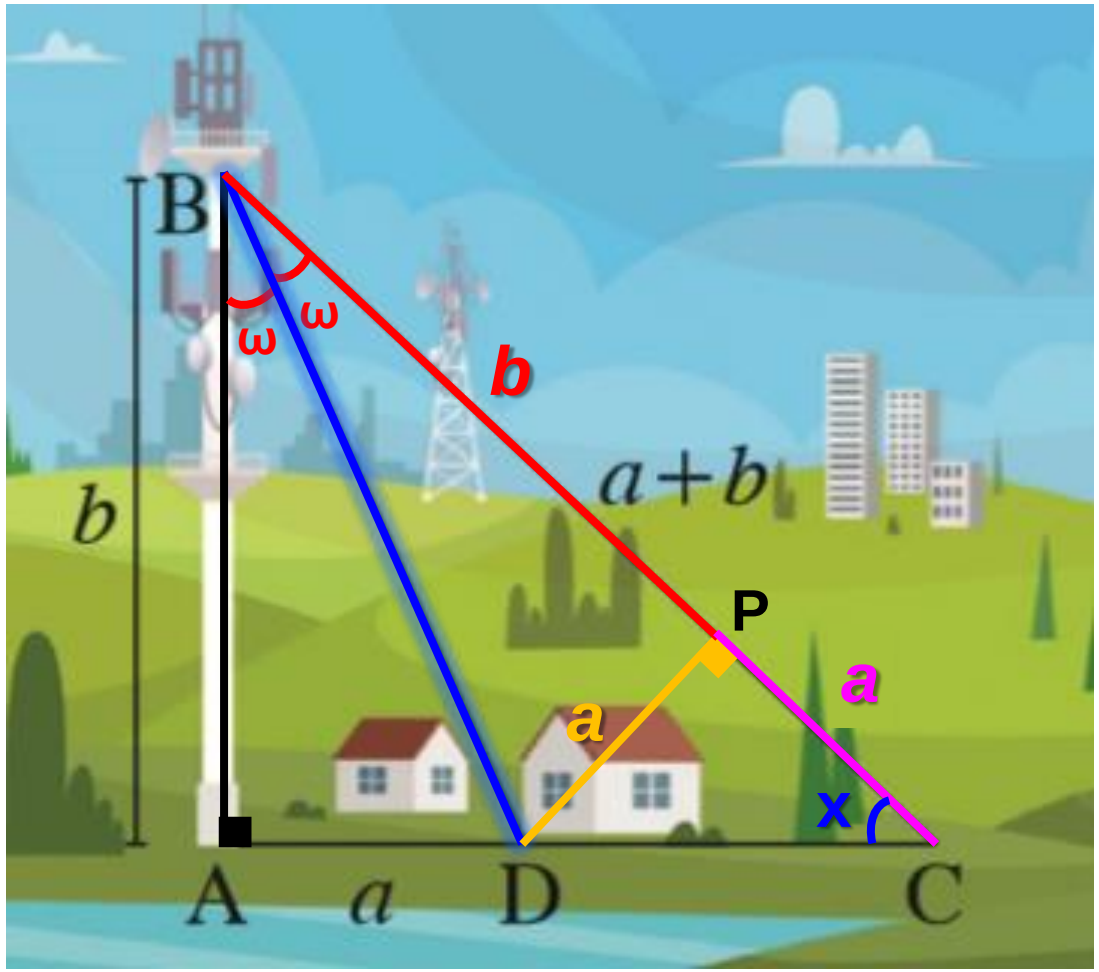


$x + x = 60°$

$2x = 60°$

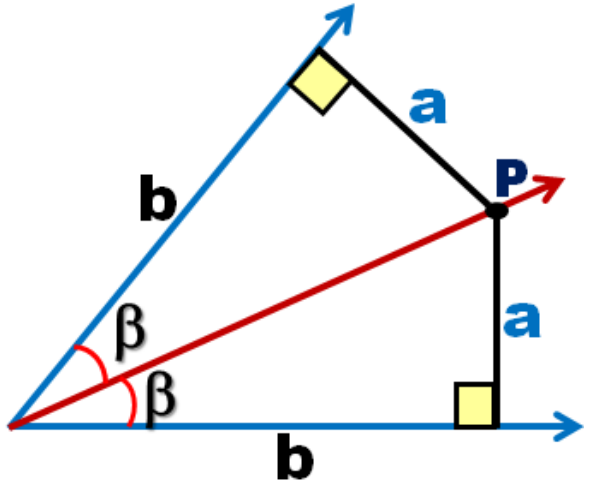
$x = 30°$

6. En la figura se observa una antena 5G que está sujeta a dos cables, si $\overline{BD}$ es bisectriz del ángulo ABC. Calcule la medida del ángulo BCD.



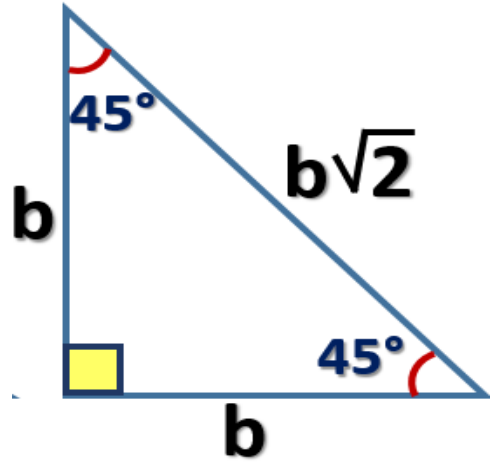
Resolución

Teorema de la bisectriz



Trazamos $\overline{DP}$:
Por lo tanto: DA=DP= **a**
BA=BP= **b**
PC = **a**

Triángulo rectángulo notable 45°-45°

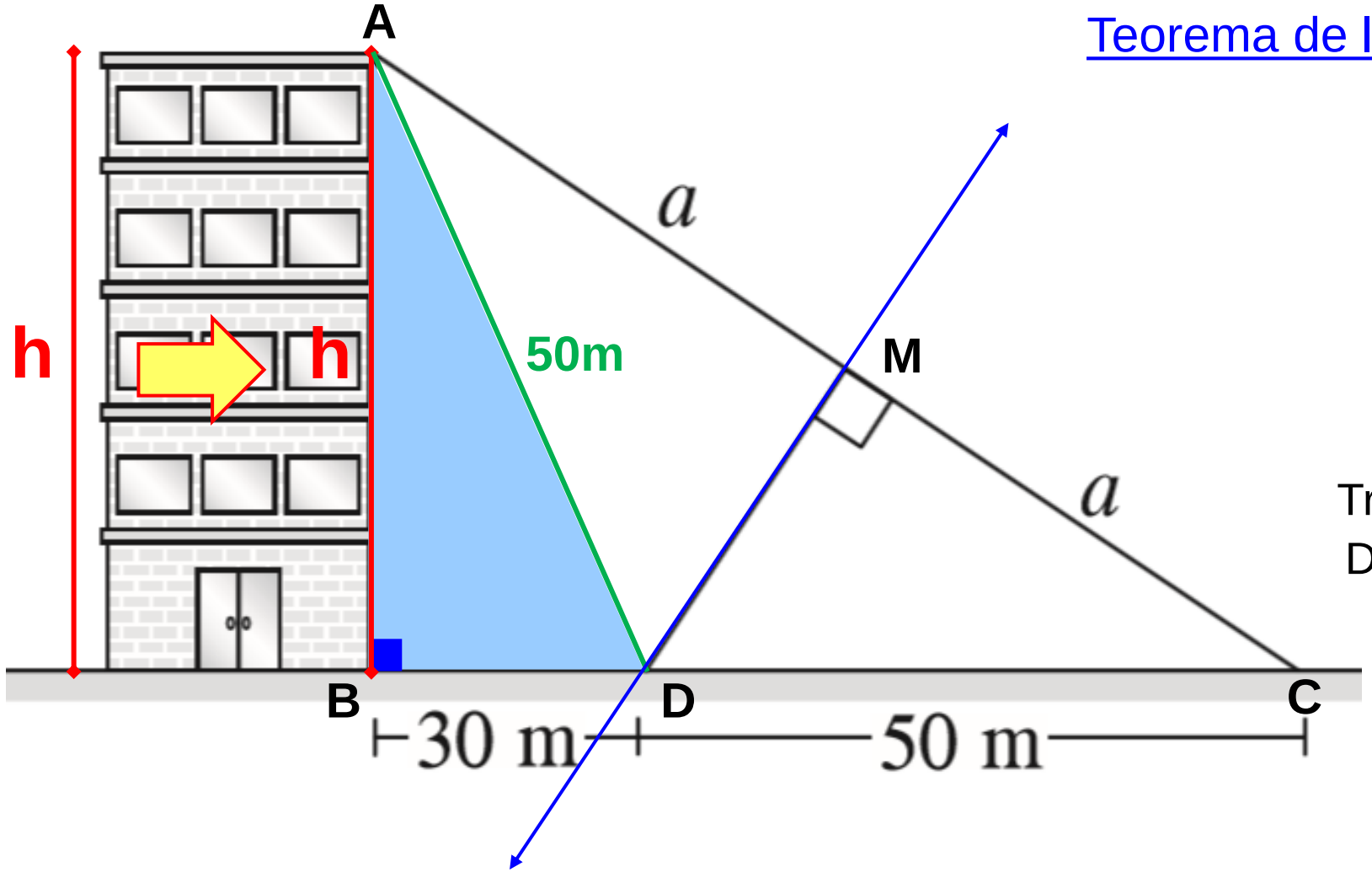


En el gráfico: DP=PC

DPC: Notable 45°-45°

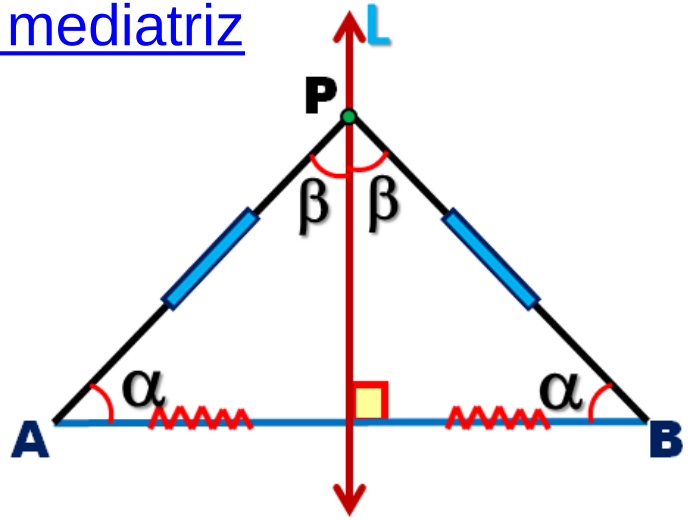
x = 45°

8. En la figura halle la altura del edificio.



Resolución

Teorema de la mediatriz



Trazamos $\overline{DA}$

DC=DA=50m

ABD: Teorema de Pitágoras

$50^2=30^2+h^2$

h = 40m