



# GEOMETRÍA

Tomo 1

**5th**  
SECONDARY

**ASESORÍA**



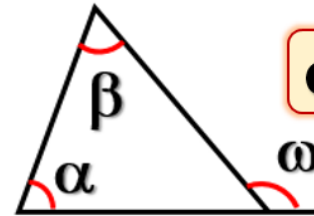
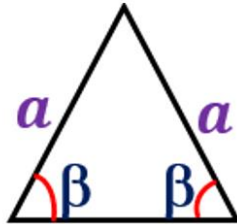
 **SACO OLIVEROS**



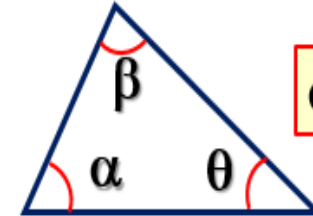
1. En el gráfico, halle el valor de  $x$ , si:  $AB = BD = DE = CE$ .

**Recordemos:**

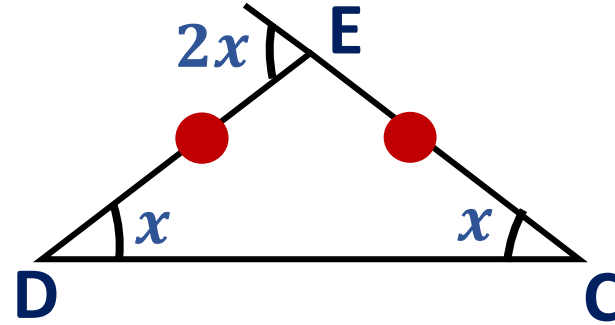
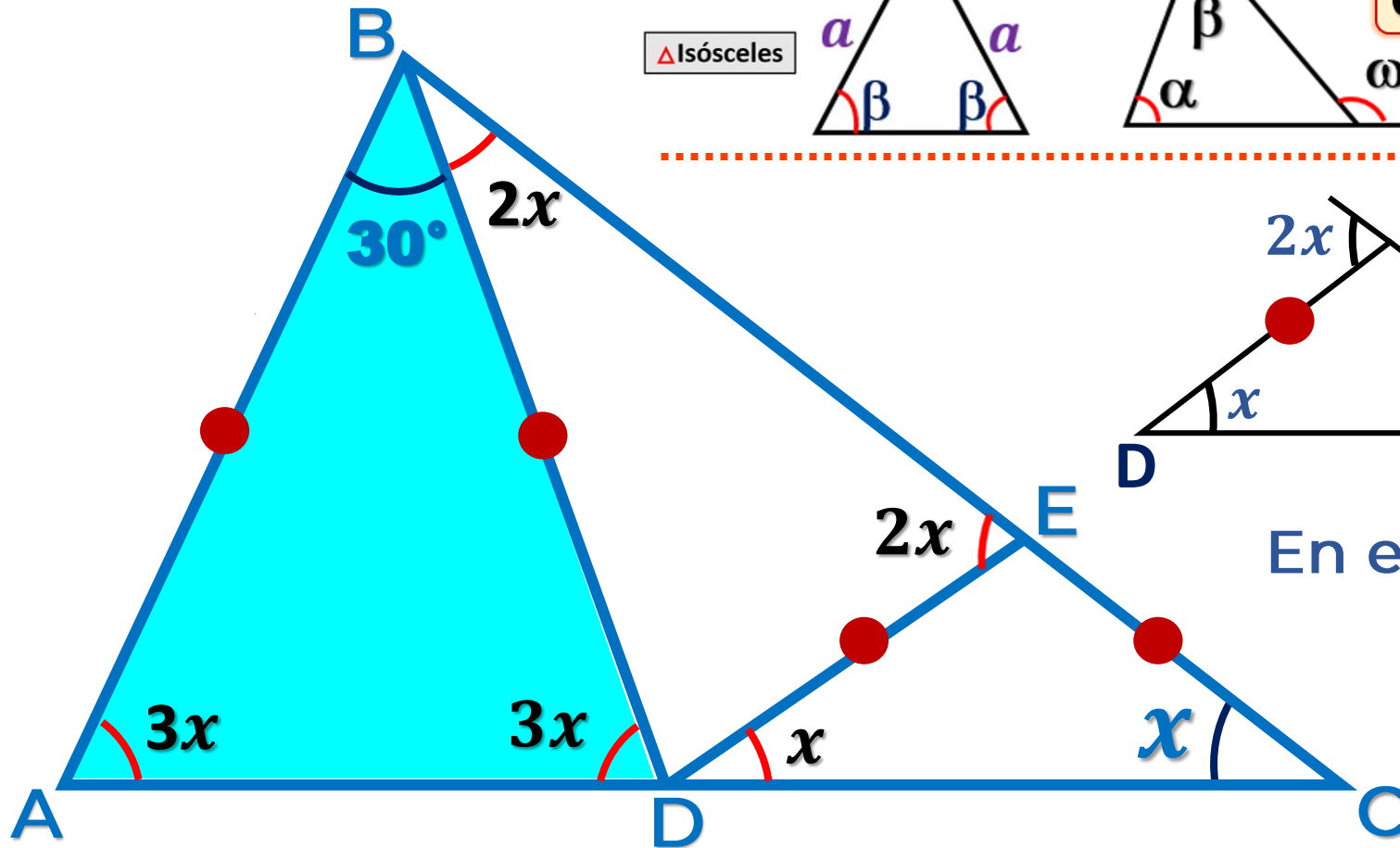
$\triangle$  Isósceles



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



$$\alpha + \beta + \theta = 180^\circ$$



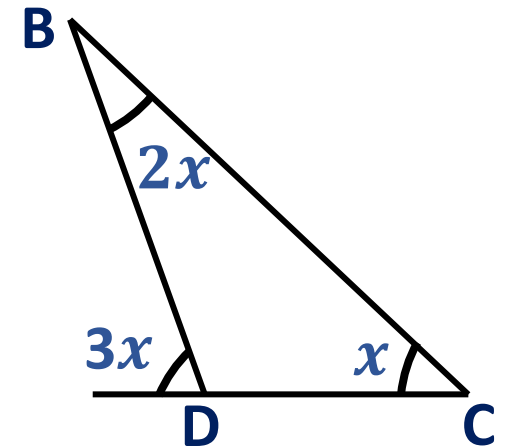
En el  $\triangle ABD$ :



$$3x + 3x + 30^\circ = 180^\circ$$

$$6x = 150^\circ$$

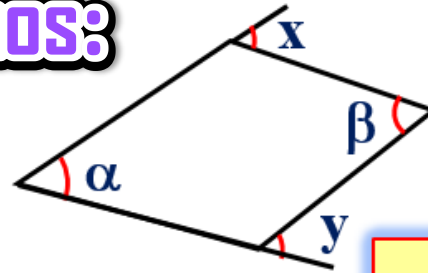
$$x = 25^\circ$$



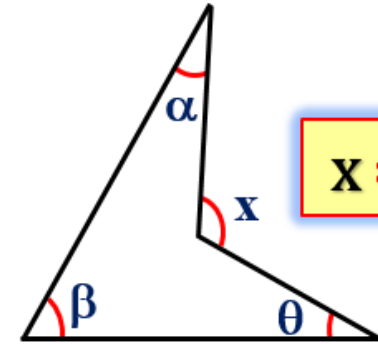


2. En la figura, halle el valor de  $x$ .

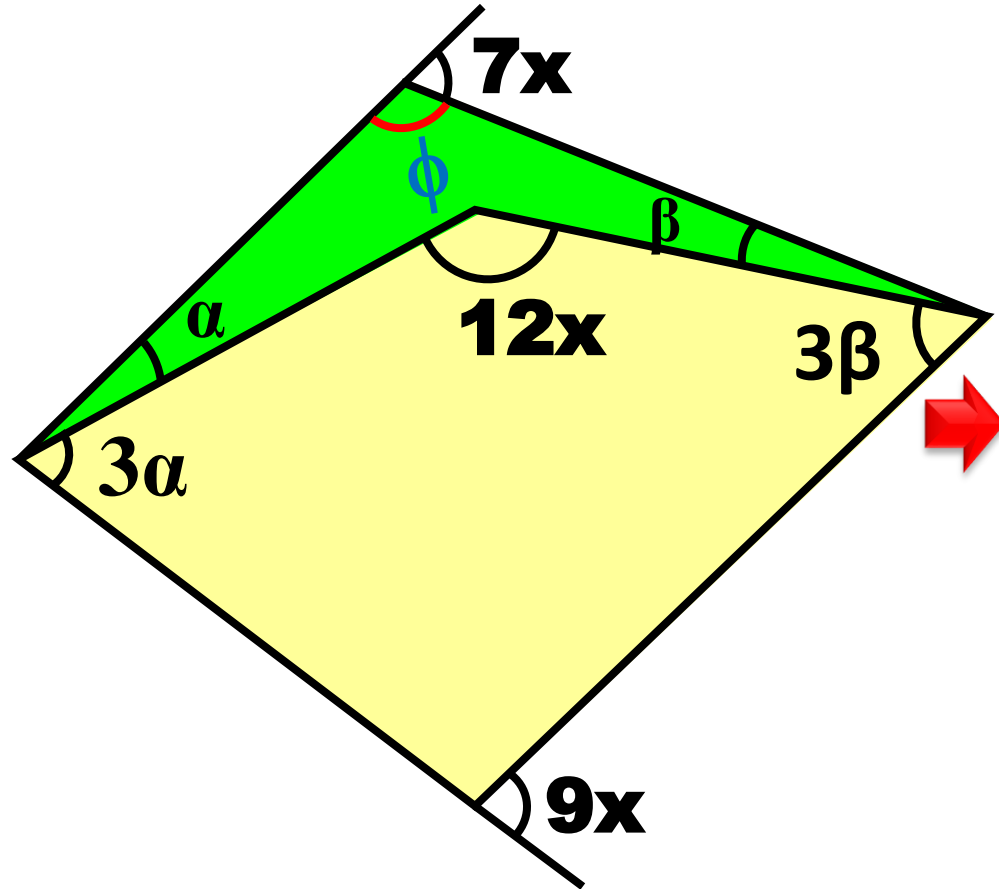
**Recordemos:**



$$x + y = \alpha + \beta$$



$$x = \alpha + \beta + \theta$$



$$\bullet \quad 4\alpha + 4\beta = 7x + 9x$$

$$4\alpha + 4\beta = 16x$$

$$\alpha + \beta = 4x$$

$$\bullet \quad 12x = \alpha + \beta + \phi$$

$$4x$$

$$8x = \phi$$

$$\bullet \quad 7x + \phi = 180^\circ$$

$$8x$$

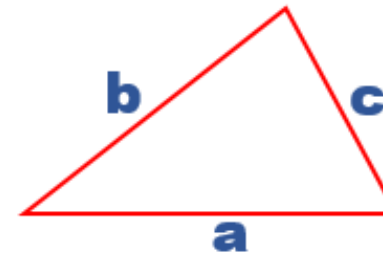
$$15x = 180^\circ$$

$$x = 12^\circ$$



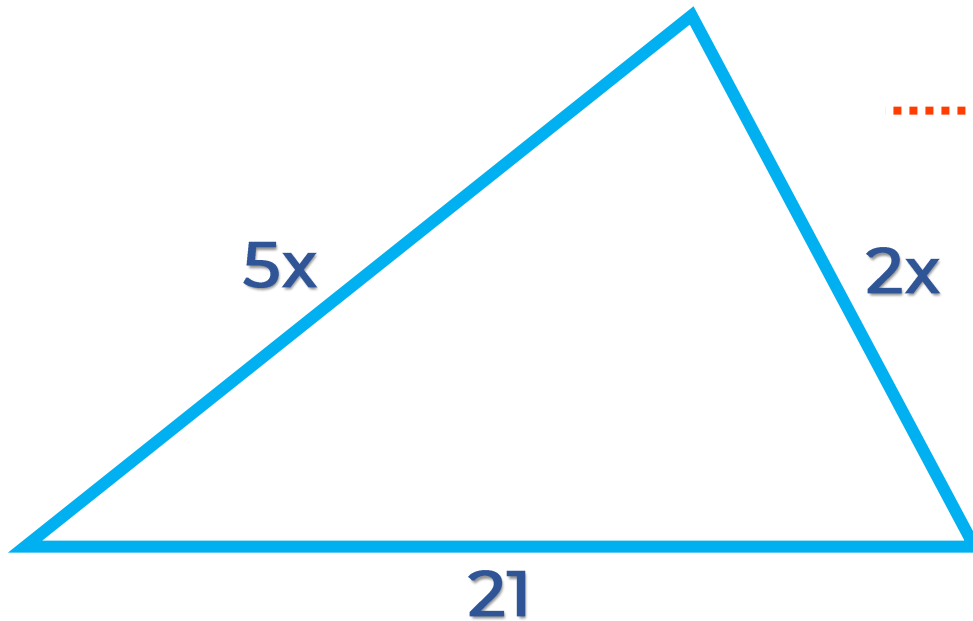
3. Si los lados de un triángulo miden  $5x$ ,  $2x$  y  $21$ , halle la suma de los valores enteros que puede tomar  $x$ .

**Recordemos:**



Teorema de la existencia

$$b - c < a < b + c$$



$$\Rightarrow 5x - 2x < 21 < 5x + 2x$$

$$3x < 21 < 7x$$

$$\bullet \quad \begin{array}{l} 3x < 21 \\ x < 7 \end{array}$$

$$\bullet \quad \begin{array}{l} 21 < 7x \\ 3 < x \end{array}$$

$$3 < x < 7$$

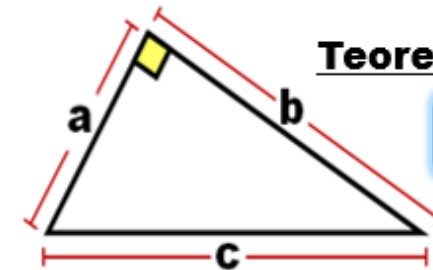
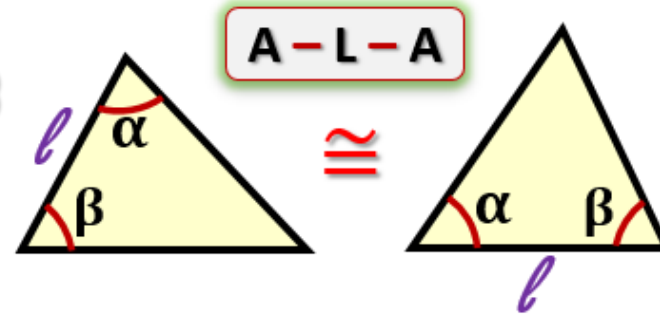
$$x = 4 ; 5 ; 6$$

$$4 + 5 + 6 = 15$$



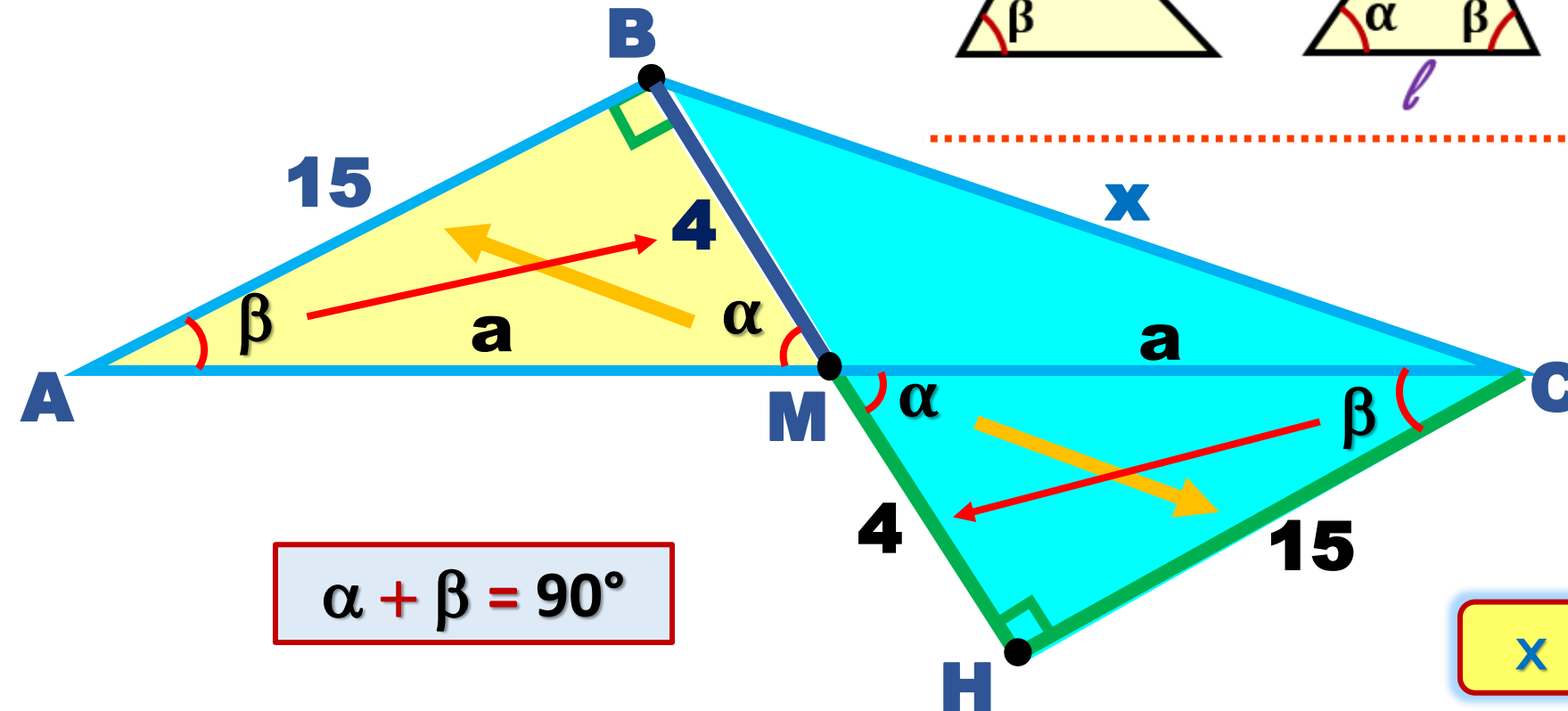
4. En un triángulo ABC, se traza la mediana  $\overline{BM}$ . Si  $BM = 4$ ,  $AB = 15$  y  $m\angle ABM = 90^\circ$ , halle BC.

Recordemos:



Teorema de Pitágoras

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



$$\alpha + \beta = 90^\circ$$

$$\triangle ABM \cong \triangle CMH$$

(A-L-A)

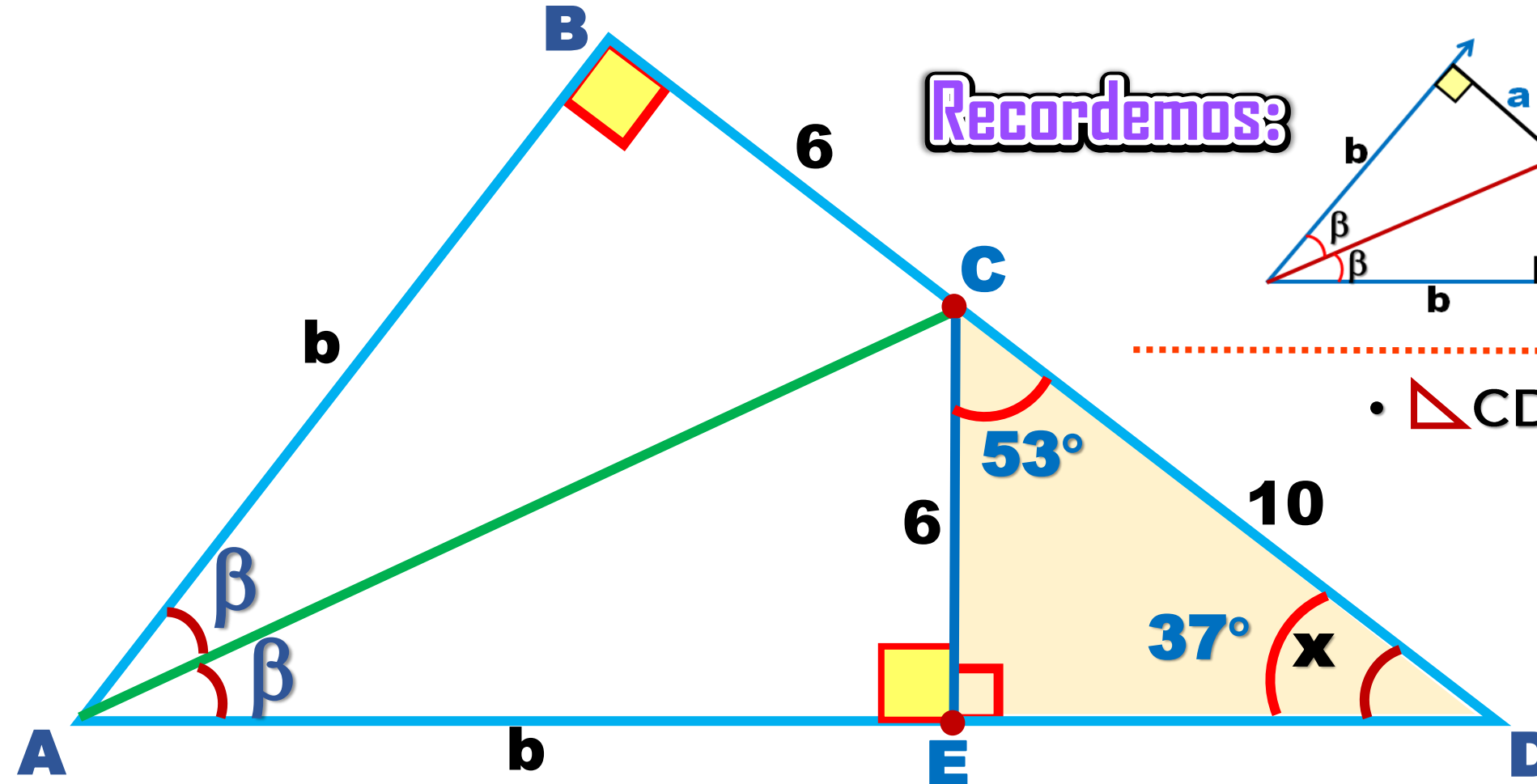
$\triangle BCH$ : Pitágoras

$$\begin{aligned} x^2 &= 8^2 + 15^2 \\ x^2 &= 289 \end{aligned}$$

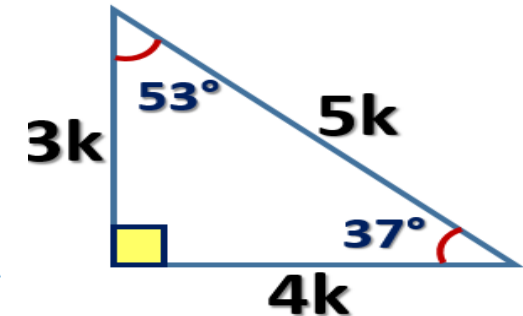
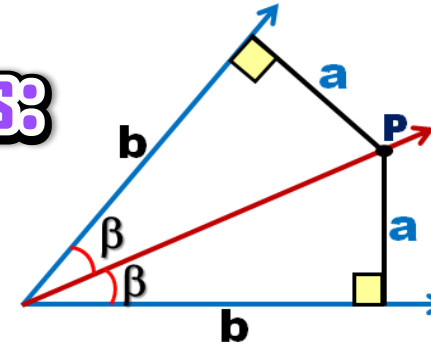
$$x = 17$$



5. En un triángulo rectángulo ABD, recto en B, se traza la bisectriz interior  $\overline{AC}$ . Si  $BC = 6$  y  $CD = 10$ , halle  $m\angle ADC$ .



**Recordemos:**



•  $\triangle CDE$ : Notable de  $37^\circ$  y  $53^\circ$

$$x = 37^\circ$$

**BD : Mediana relativa a la hipotenusa.**

**Si:**  $\beta < \alpha$

$\Rightarrow$   $b < a$

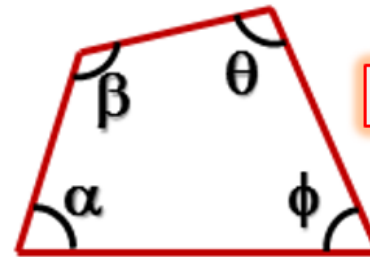
-  BDE:  $7 < x$

$$X_{(\min)} = 8$$

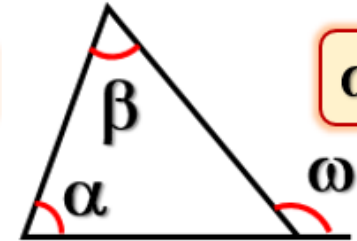


7. En la figura, halle el valor de  $x$ .

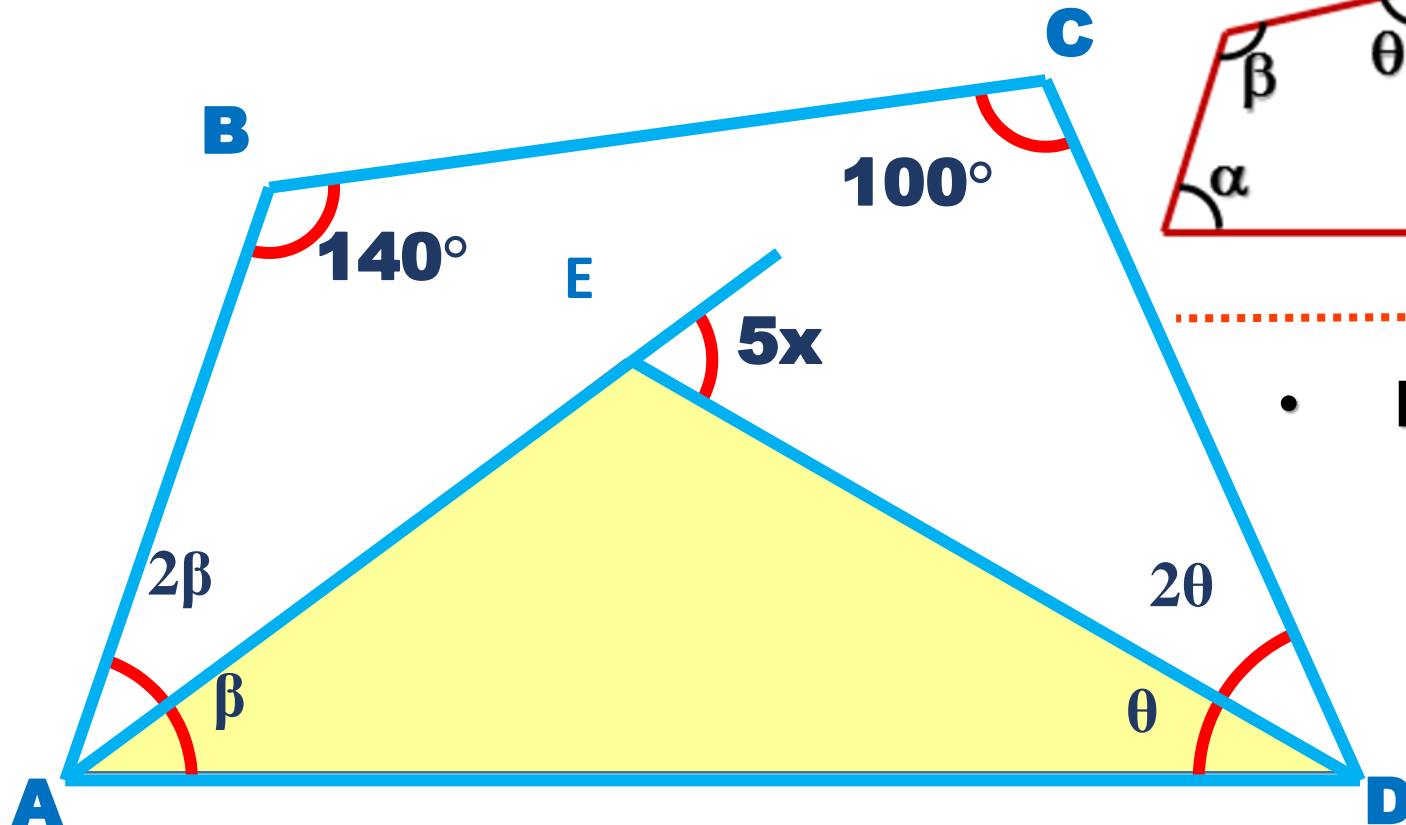
**Recordemos:**



$$\alpha + \beta + \theta + \phi = 360^\circ$$



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



- En el cuadrilátero **ABCD**:

$$3\theta + 3\beta + 100^\circ + 140^\circ = 360^\circ$$

$$3\theta + 3\beta = 120^\circ$$

$$\theta + \beta = 40^\circ$$

$$\Rightarrow 5x = \underbrace{\theta + \beta}_{40^\circ}$$

$$\mathbf{x = 8^\circ}$$

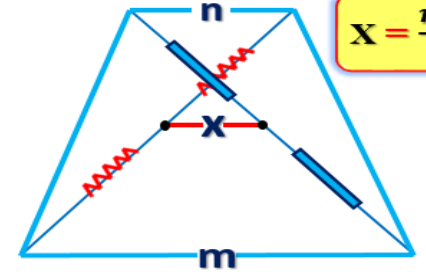
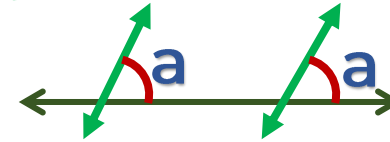
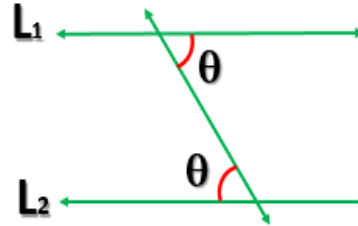




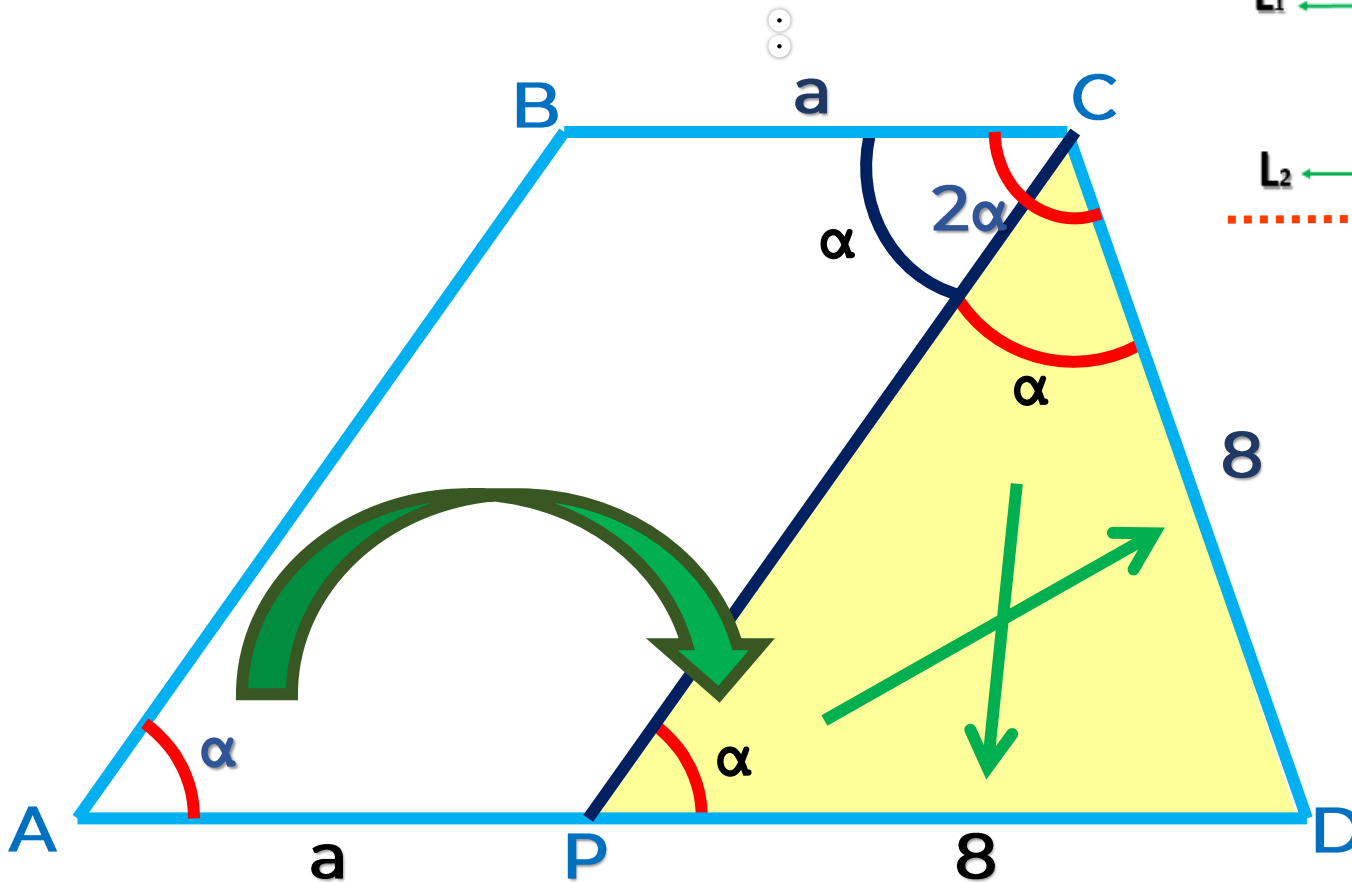
8. En un trapezio ABCD donde  $\overline{BC} \parallel \overline{AD}$ ,  $m\angle BCD = 2(m\angle BAD)$  y  $CD = 8$ . Halle la longitud del segmento que une los puntos medios de sus diagonales.

**Recordemos:**

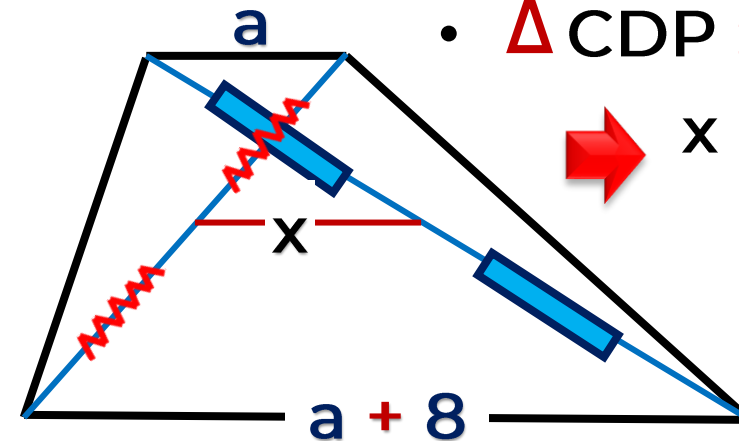
Ángulos alternos internos



$$x = \frac{m-n}{2}$$



- Trazamos  $\overline{CP} \parallel \overline{BA}$
- $\square ABCP$  (PARALELOGRAMO)
- $\triangle CDP$  : ISÓSCELES

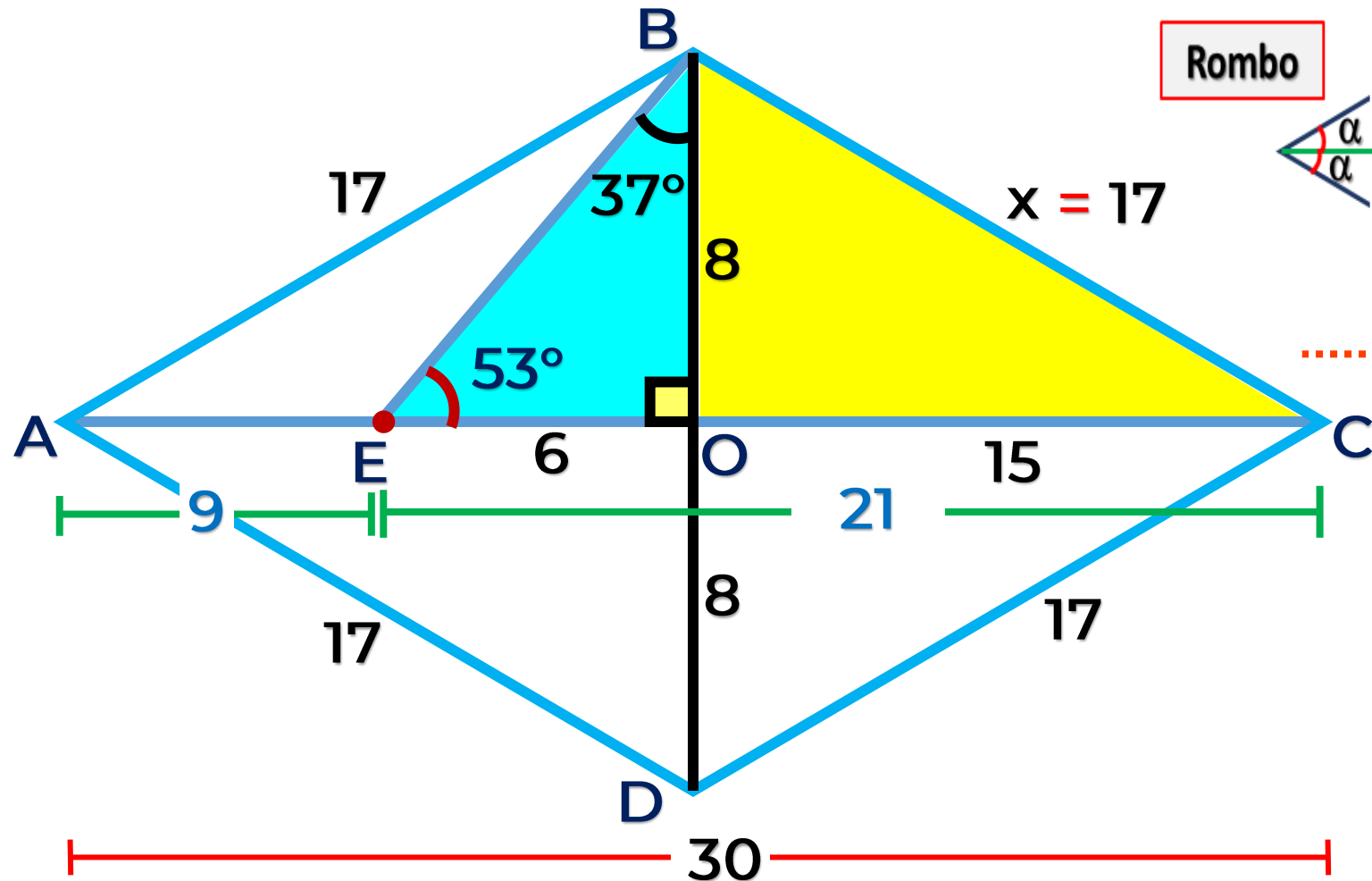


$$x = \frac{(8+a) - a}{2}$$

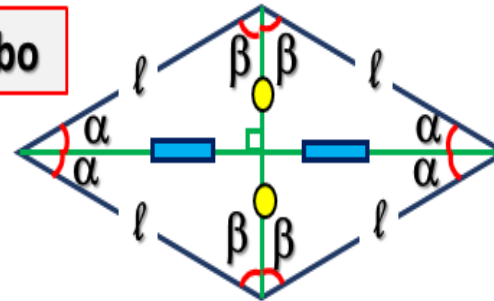
$$x = 4$$



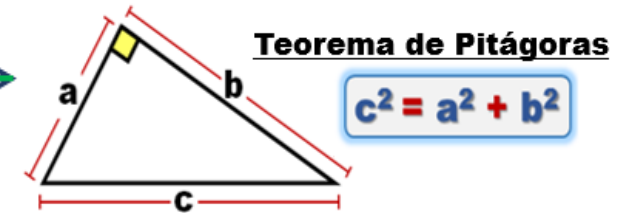
9. En un rombo ABCD, en AC se ubica el punto E, tal que  $m\angle BEC = 53^\circ$ ,  $AE = 9$  y  $EC = 21$ . Calcular el perímetro de dicha figura.



Rombo



Recordemos:



$\triangle BOC$ : Pitágoras

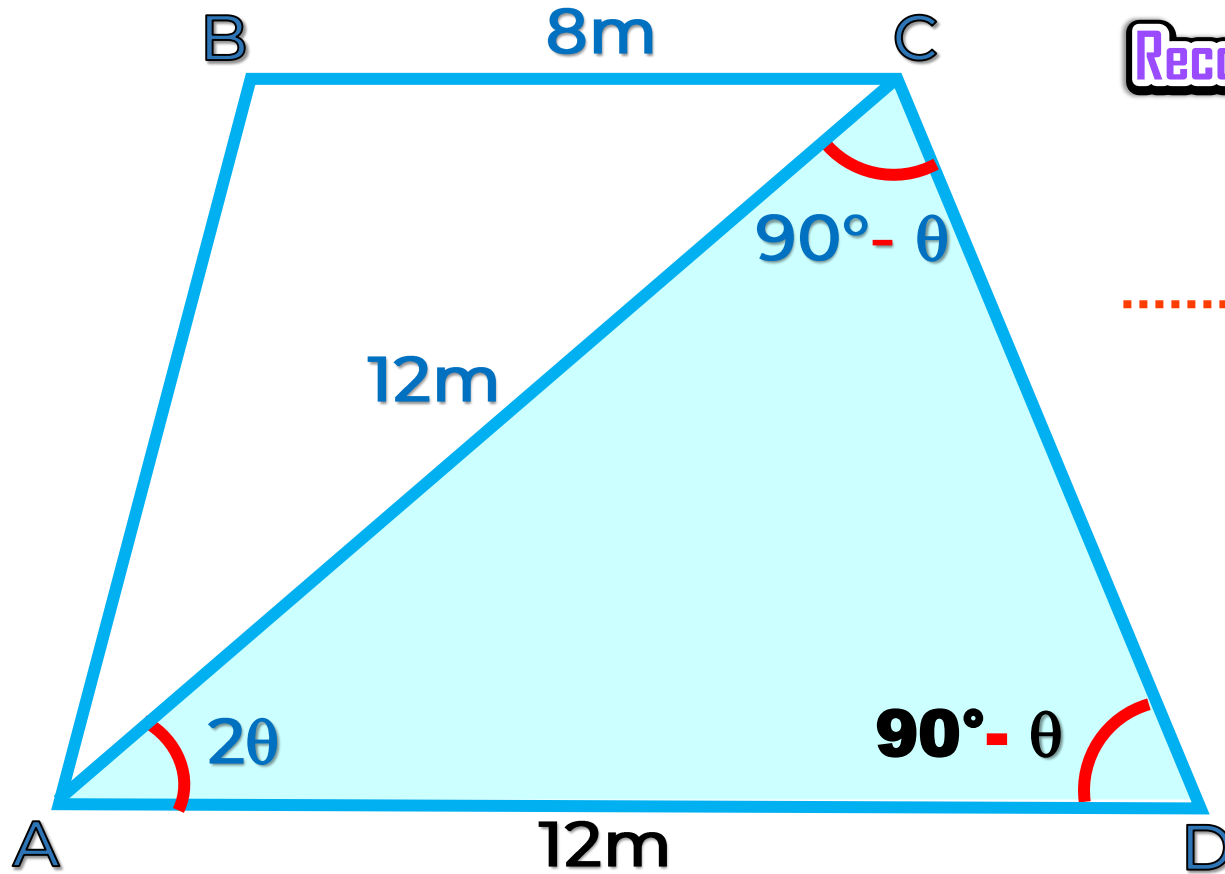
$$\begin{aligned} x^2 &= 8^2 + 15^2 \\ x^2 &= 289 \\ x &= 17 \end{aligned}$$

$$2p_{ABCD} = 17 + 17 + 17 + 17$$

$$2p_{ABCD} = 68$$



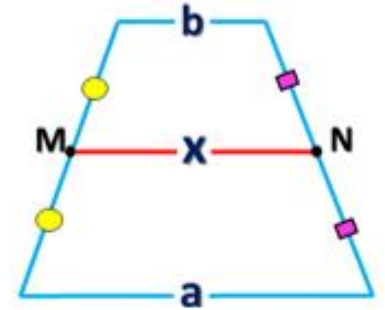
10. Luis desea dividir con una cerca un jardín que tiene forma trapezoidal uniendo los puntos medios de  $\overline{AB}$  y  $\overline{CD}$ . Cuanto debe medir dicha cerca.



**Recordemos:**

$\overline{MN}$  : Base media

$$X = \frac{a+b}{2}$$



•  $\triangle ACD$ : ISÓSCELES

• Por base media

$$x = \frac{12 + 8}{2}$$

$$x = 10m$$

