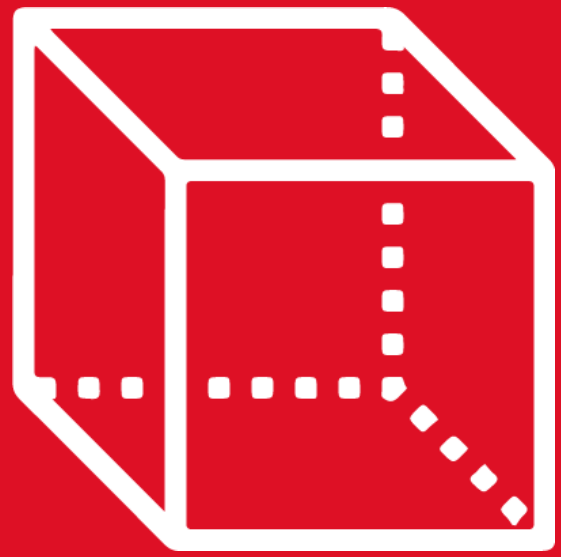
GEOMETRÍA

Capítulo 14



4th
SECONDARY

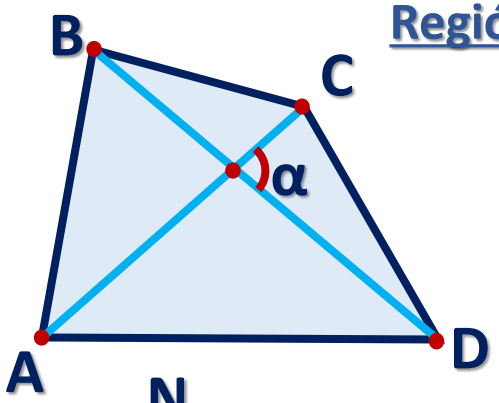
SACO OLIVEROS

ÁREA DE REGIONES CUADRANGULARES

MOTIVATING | STRATEGY

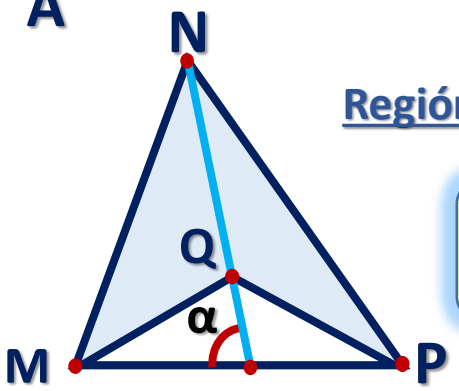
ÁREAS DE REGIONES CUADRANGULARES

Región cuadrangular convexa

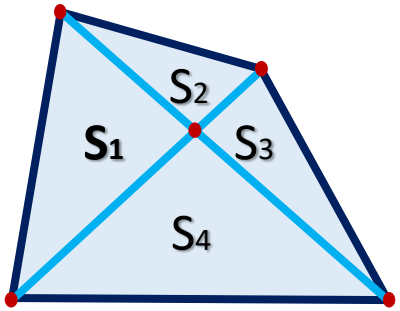


$$S_{ABCD} = \frac{(AC)(BD)}{2}.Sen\alpha$$

Región cuadrangular no convexa

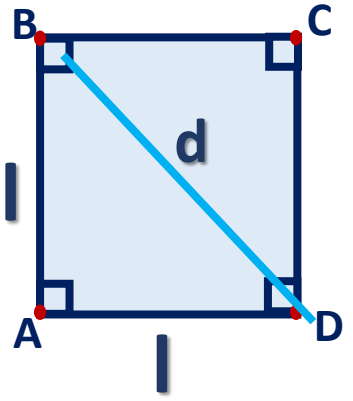


$$S_{MNPQ} = \frac{(NQ)(MP)}{2}.Sen\alpha$$



$$S_1.S_3 = S_2.S_4$$

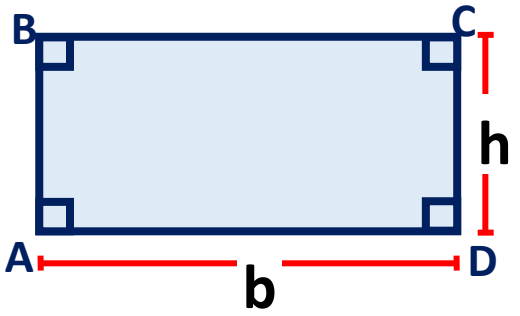
Región Cuadrada



$$S_{ABCD} = l^2$$

$$S_{ABCD} = \frac{d^2}{2}$$

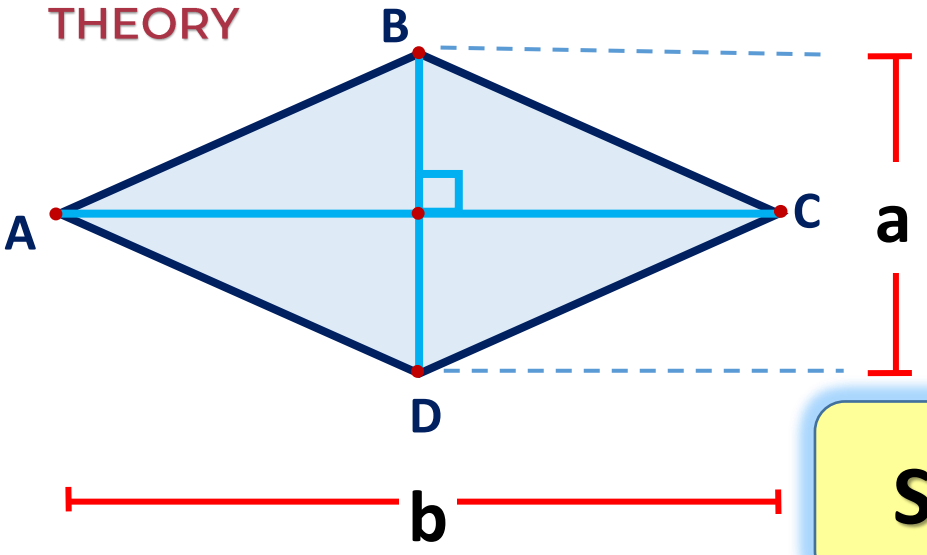
Región Rectangular



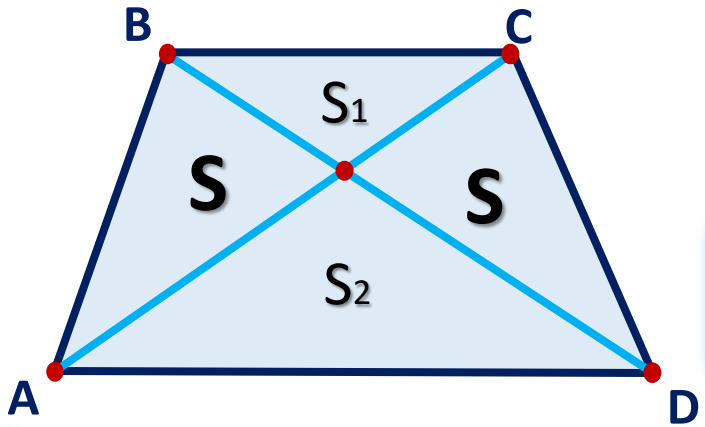
$$S_{ABCD} = b.h$$

HELICO | THEORY

Región Rombal



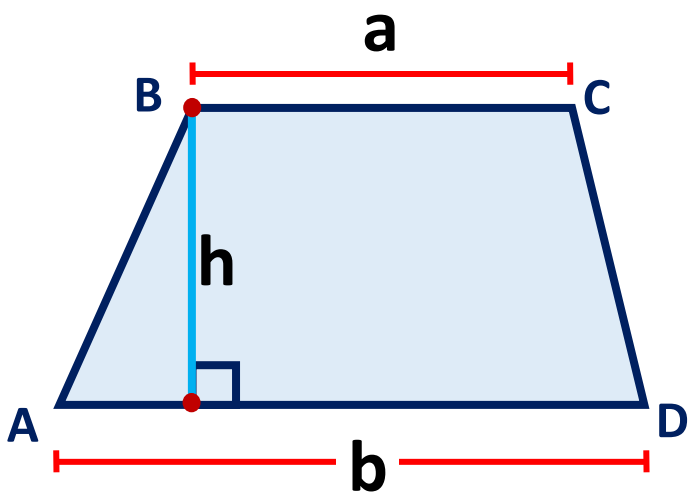
$$S_{ABCD} = \frac{a.b}{2}$$



$\overline{BC} \,//\, \overline{AD}$

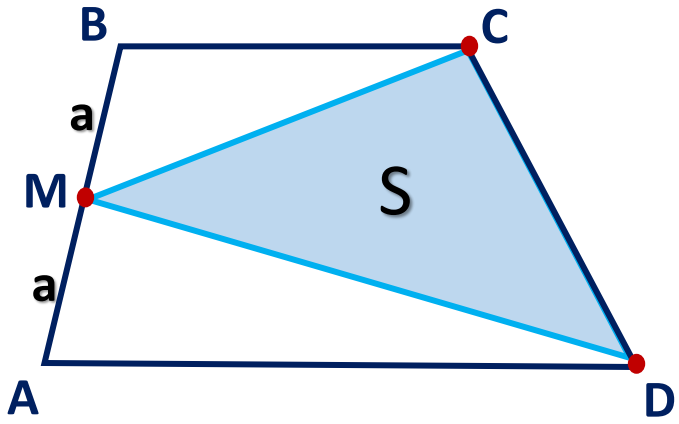
$$S = \sqrt{S_1.S_2}$$

Región Trapecial



$\overline{BC} \,//\, \overline{AD}$

$$S_{ABCD} = \frac{(a+b)h}{2}$$

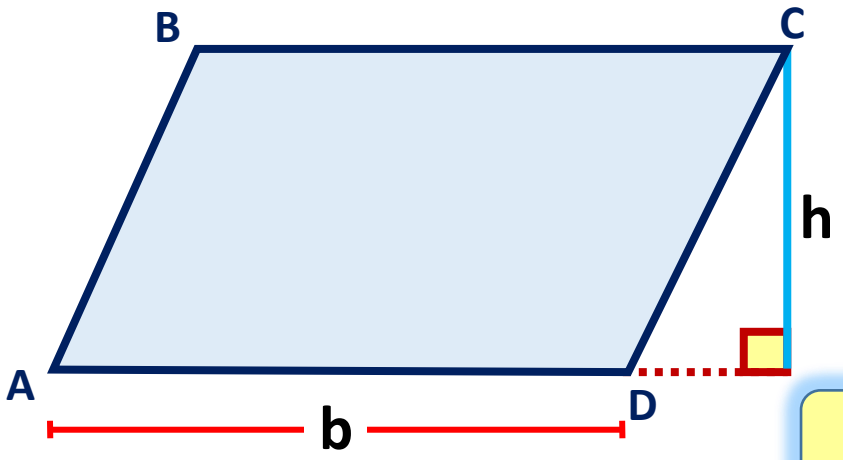


$\overline{BC} \,//\, \overline{AD}$

$AM = BM$

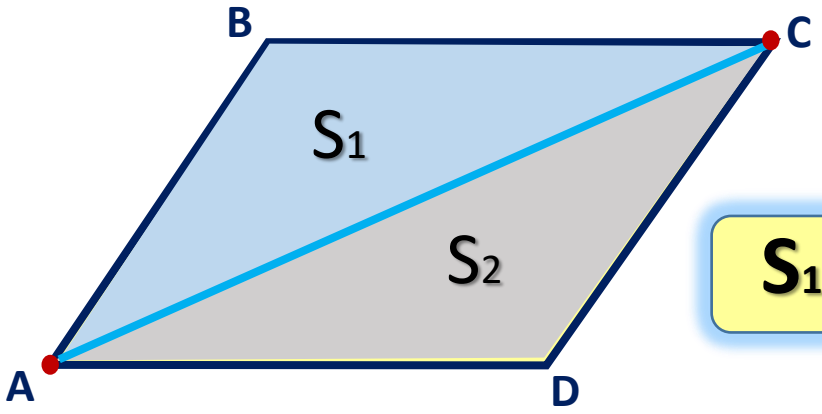
$$S = \frac{S_{ABCD}}{2}$$

Región Paralelográmica

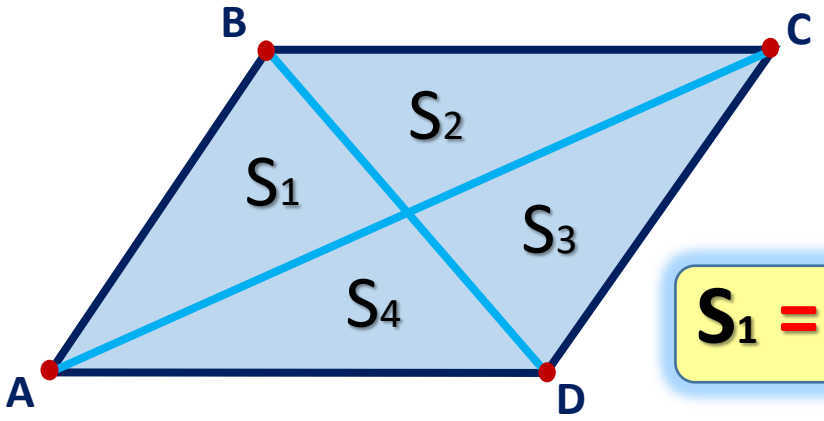


$$S_{ABCD} = b.h$$

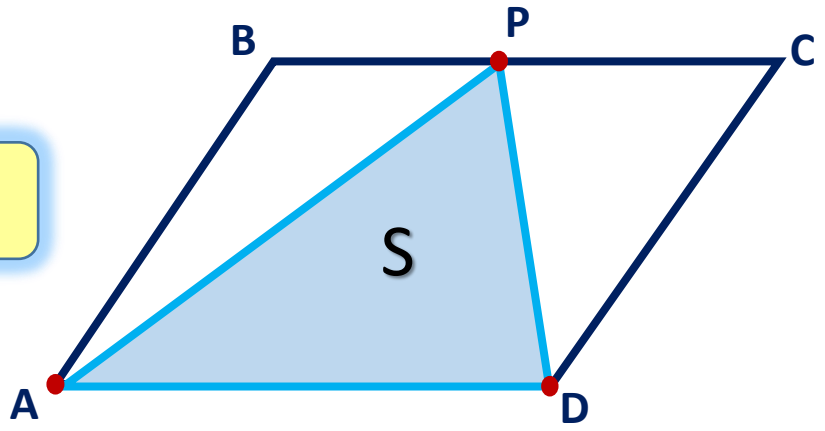
ABCD : Región paralelogràmica



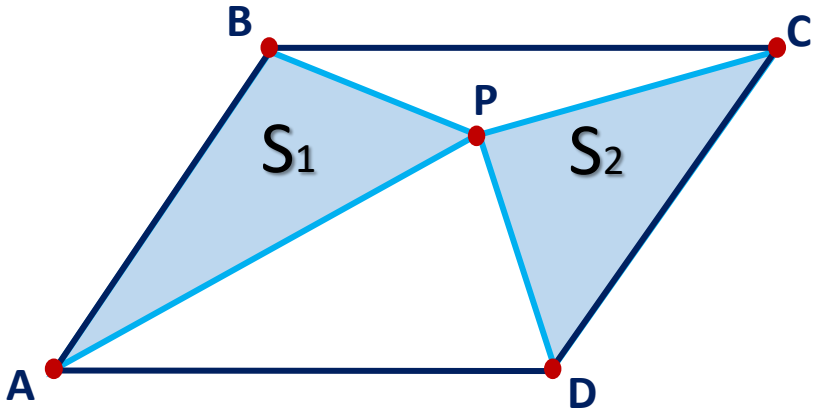
$$S_1 = S_2$$



$$S_1 = S_2 = S_3 = S_4$$

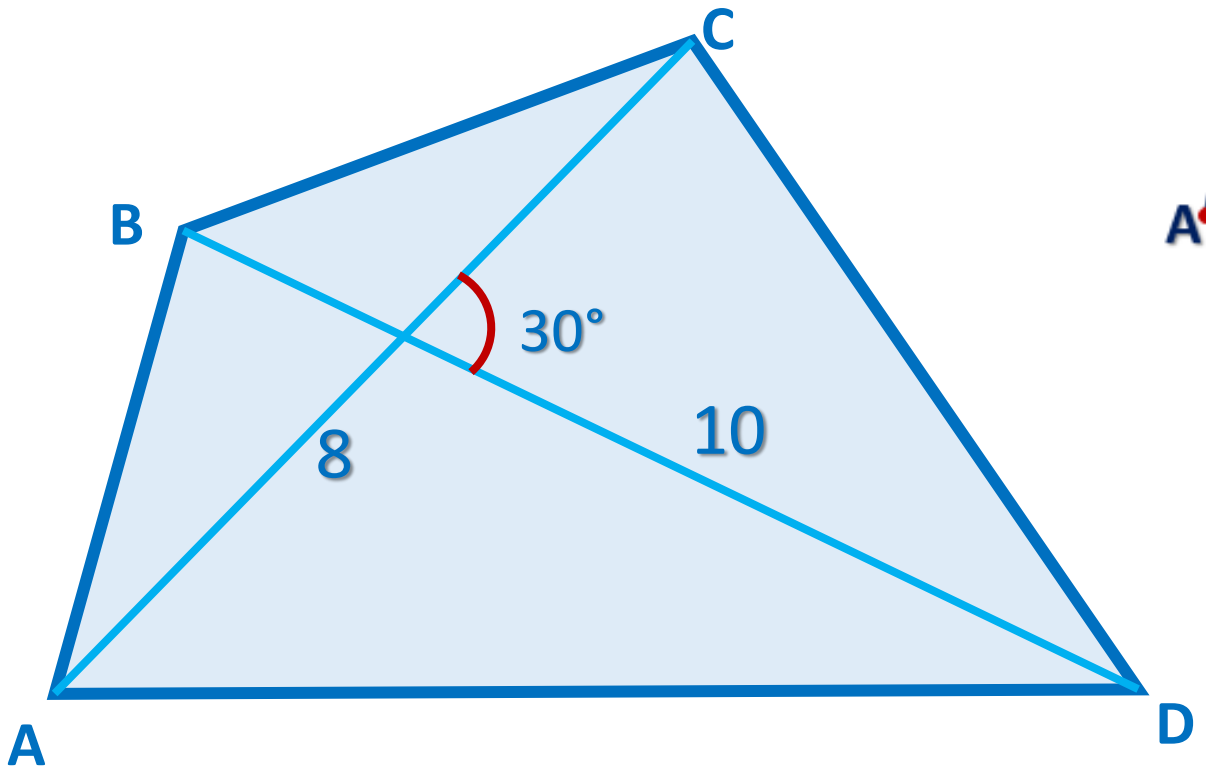


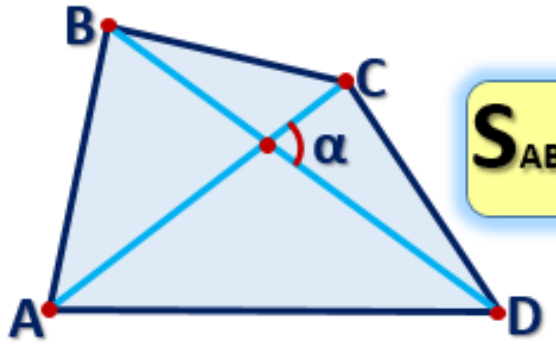
$$S = \frac{S_{ABCD}}{2}$$



$$S_1 + S_2 = \frac{S_{ABCD}}{2}$$

1.En un trapezoide convexo las diagonales miden 8 y 10, y forman un ángulo que mide 30°. Calcule el área de la región limitada por dicho trapezoide.





$$S_{ABCD} = \frac{(AC)(BD)}{2}.\text{Sen}\alpha$$

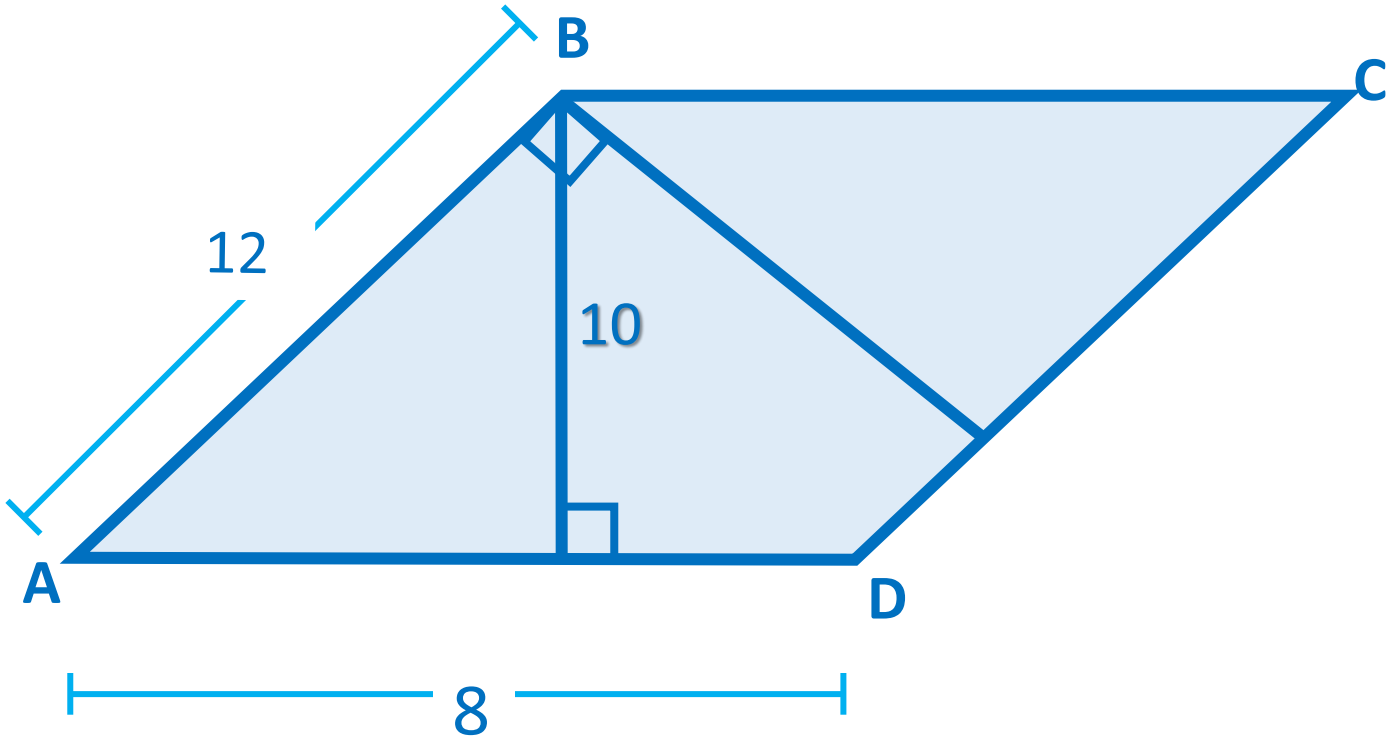
Nos piden.

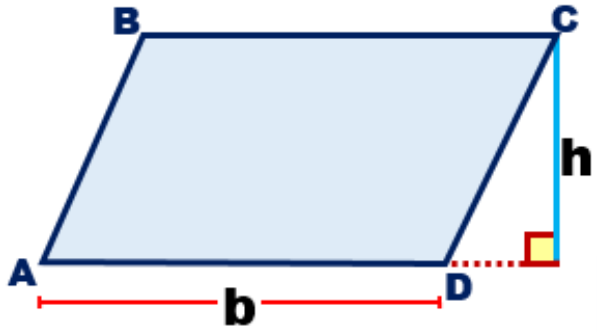
$$S_{ABCD} = \frac{\overset{4}{\cancel{(8)}}(10)}{\underset{1}{\cancel{2}}}\operatorname{sen} 30^0$$

$$S_{ABCD} = (40).\frac{1}{2}$$

$$S_{ABCD} = 20u^2$$

2.Los lados de un romboide miden 8 y 12, y una altura mide 10. Calcule el área de la región limitada por dicho romboide.





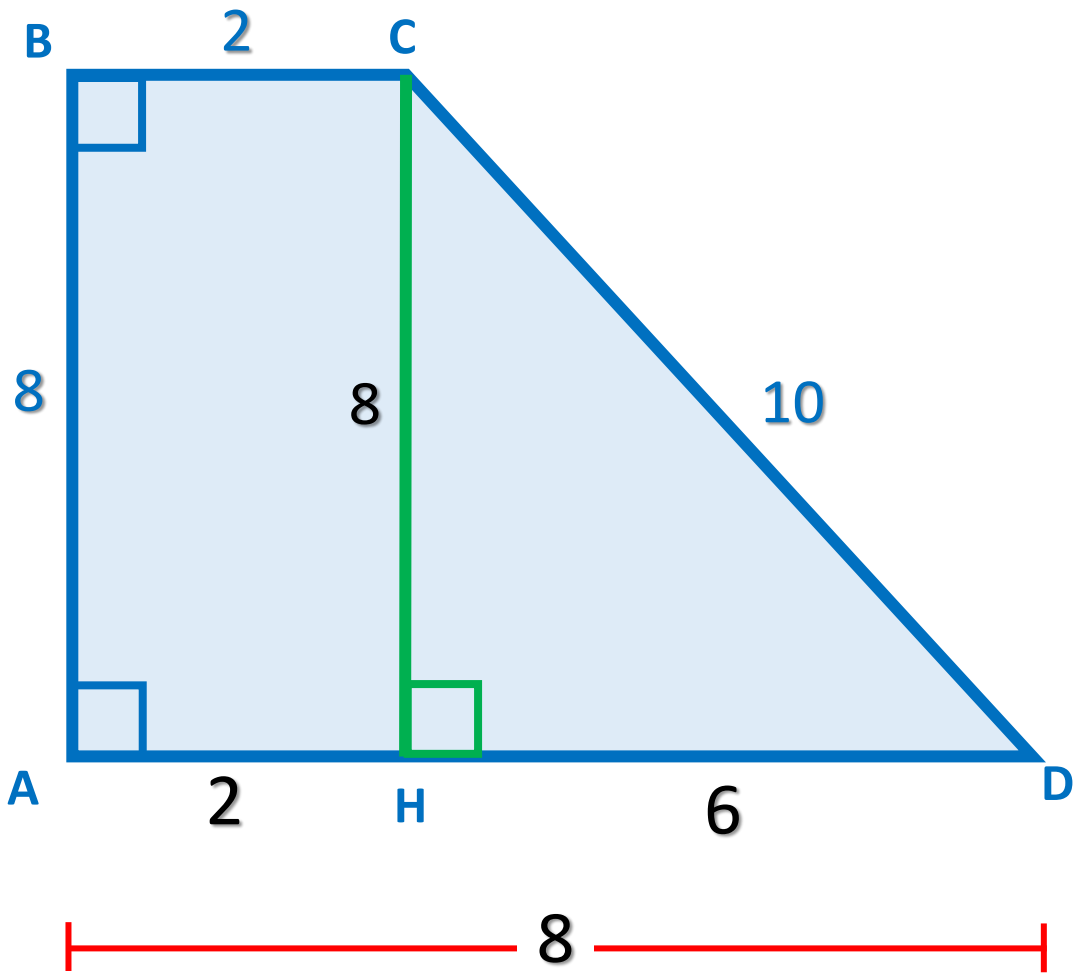
$S_{ABCD} = b.h$

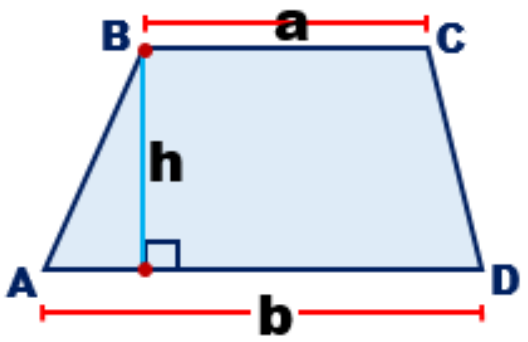
Nos piden:

$$S_{ABCD} = (8)(10)$$

$$S_{ABCD} = 80u^2$$

3. Calcule el área de la región trapecial ABCD mostrada.





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

$$S_{ABCD} = \frac{(a+b)h}{2}$$

- Se traza la altura $\overline{CH}$.
- $\triangle CDH$: Notable de 37° y 53°

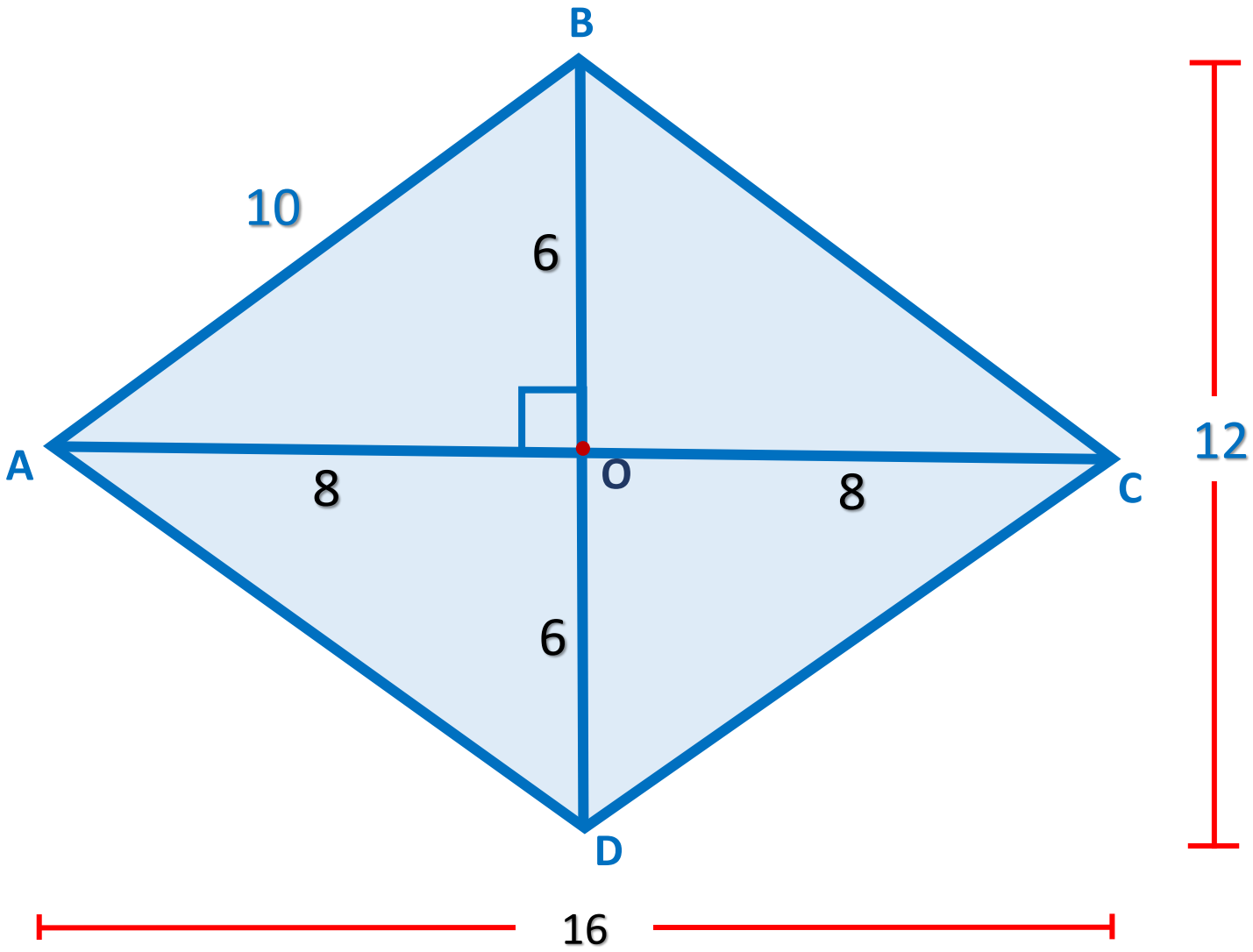
$$HD = 6$$

- Nos piden:

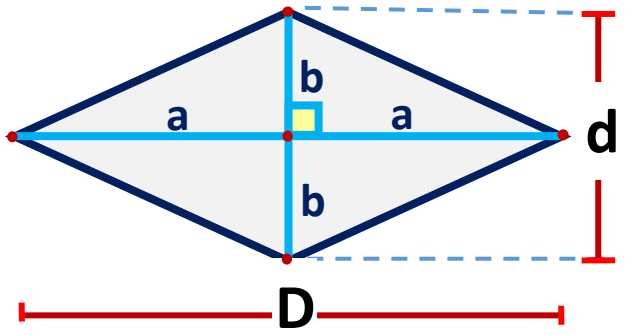
$$S_{ABCD} = \frac{(8+2).8}{2}$$

$$S_{ABCD} = 40u^2$$

4. Calcule el área de una región rombal ABCD, si AB=10 y BD=12.



Región Rombal



$$S_{\diamond} = \frac{D.d}{2}$$

- Se traza la diagonal $\overline{AC}$.
- $\triangle ABO$: Notable de 37° y 53°

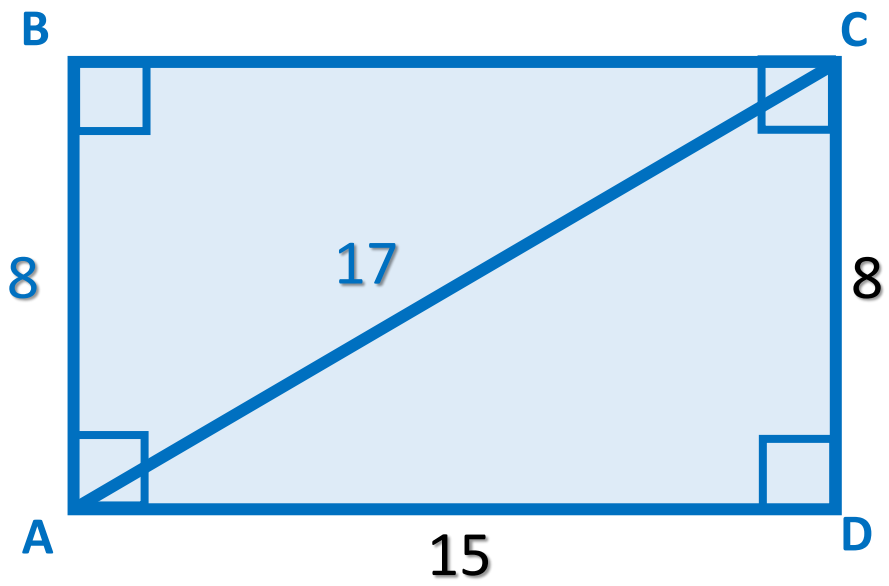
$$AO = CO = 8$$

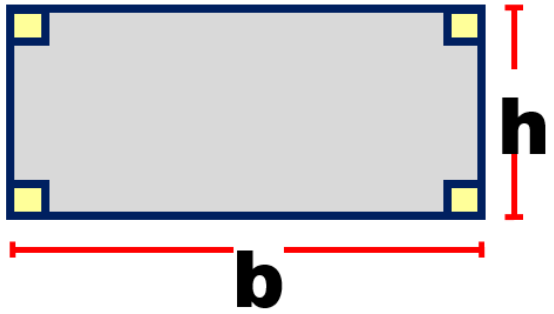
- **Nos piden:**

$$S_{ABCD} = \frac{(16)(12)}{2}$$

$$S_{ABCD} = 96u^2$$

5. Calcule el área de la región rectangular ABCD mostrada si AB=8 y AC=17.

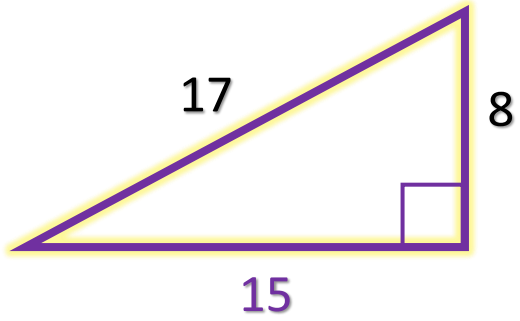




Región Rectangular

$$S_{\square} = b.h$$

- $\triangle$ CDH : Triangulo pitagórico.



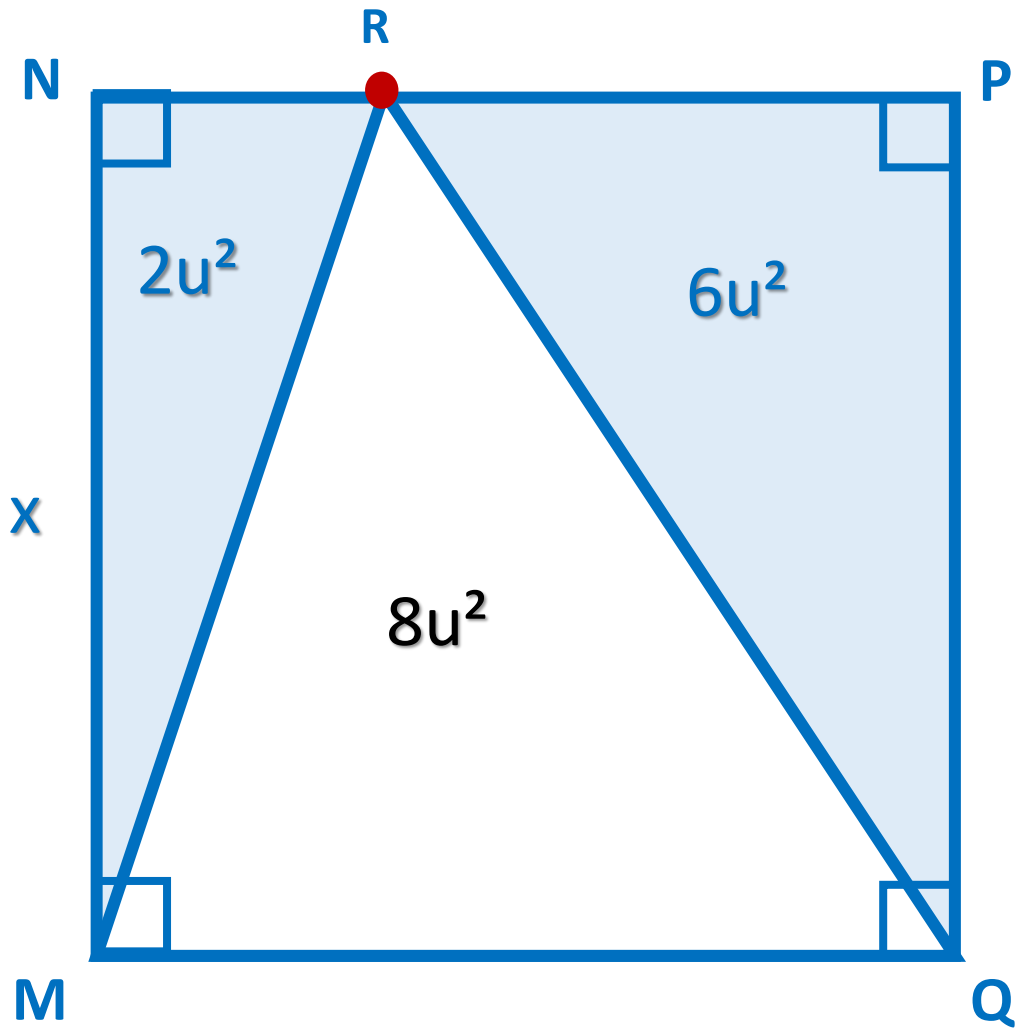
$\rightarrow$ AD = 15

- Nos piden.

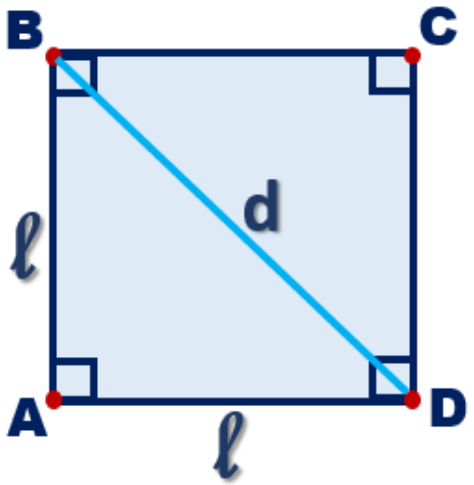
$\Rightarrow$ $S_{ABCD} = (15)(8)$

$$S_{ABCD} = 120u^2$$

6. Halle el valor de *x*.

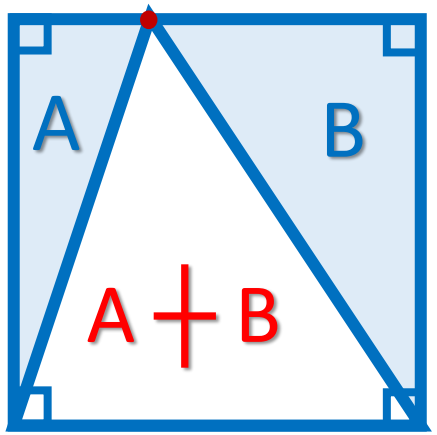


Región Cuadrada



$$S_{ABCD} = \ell^2$$

$$S_{ABCD} = \frac{d^2}{2}$$



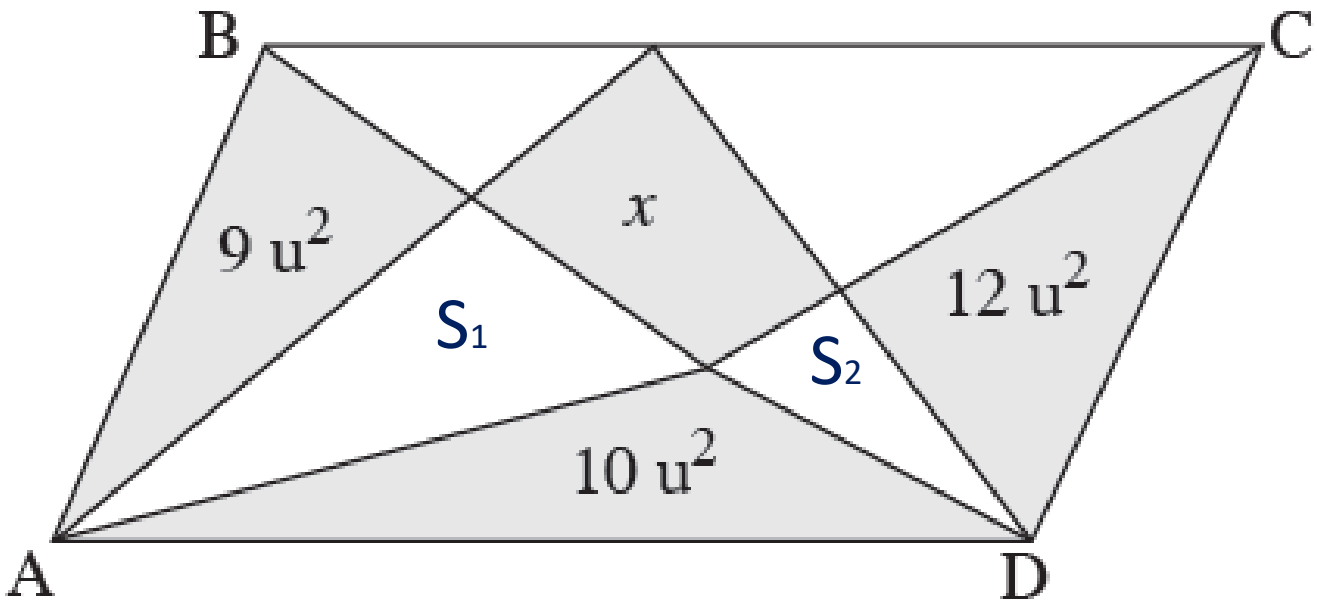
- **Del gráfico**

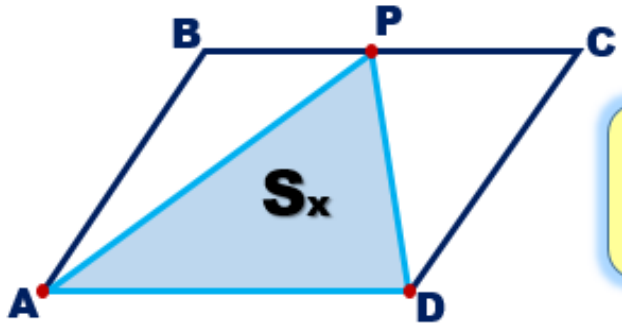
$$S_{ABCD} = 16u^2$$

$$x^2 = 16$$

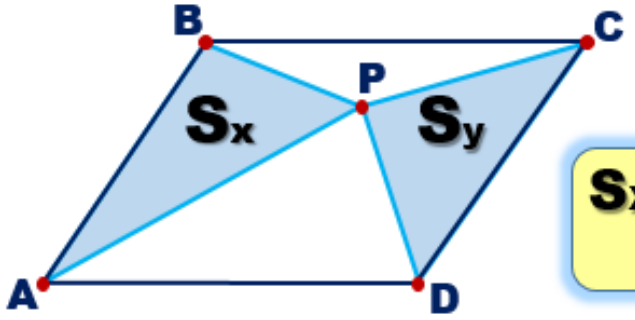
$$x = 4u$$

7. En la figura, calcule el área *x* si ABCD es un romboide.





$$S_x = \frac{S_{ABCD}}{2}$$



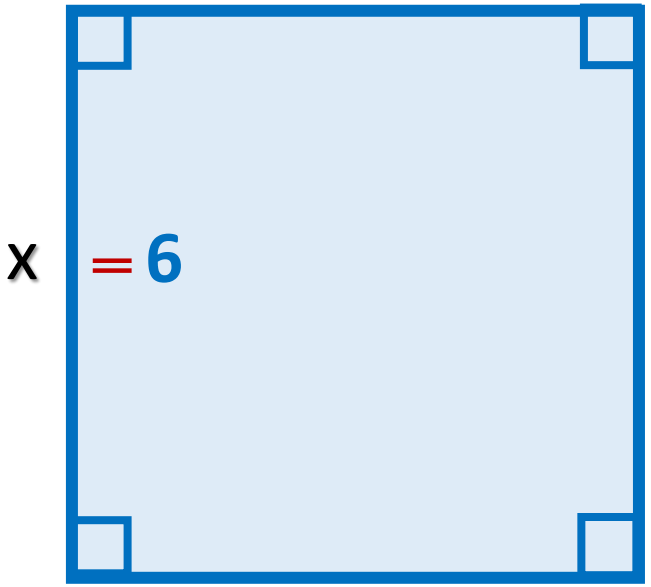
$$S_x + S_y = \frac{S_{ABCD}}{2}$$

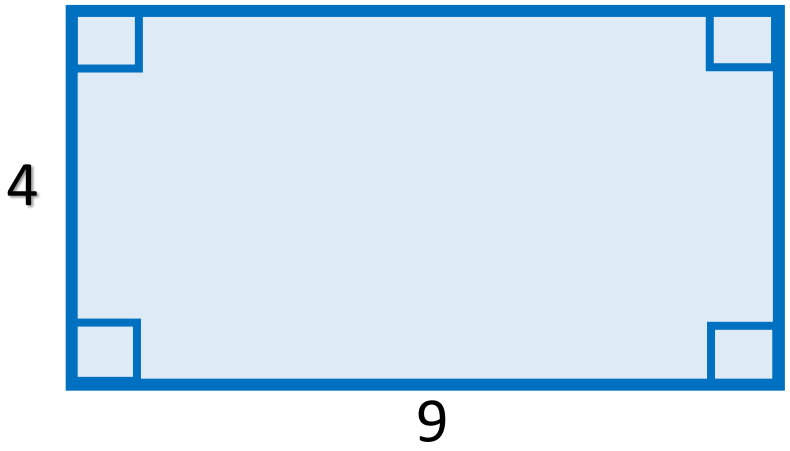
$$x + S_1 + S_2 + 10 = 9 + S_1 + S_2 + 12$$

$$x + 10 = 21$$

$$x = 11u^2$$

8. Dos hermanos tienen cada uno su jardín, el mayor en forma de región cuadrada y el menor en forma de región rectangular de 9m de largo por 4m de ancho. Si las áreas de ambos jardines son iguales, calcule la diferencia entre los perímetros de dichos jardines.





$S_{\square} = S_{\square}$

$x^2 = (9)(4)$

$x^2 = 36$

$x = 6$

Nos piden: $2p_{\square} - 2p_{\square}$

$2(4) + 2(9) - 4(6)$

$26 - 24$

$2p_{\square} - 2p_{\square} = 2u$