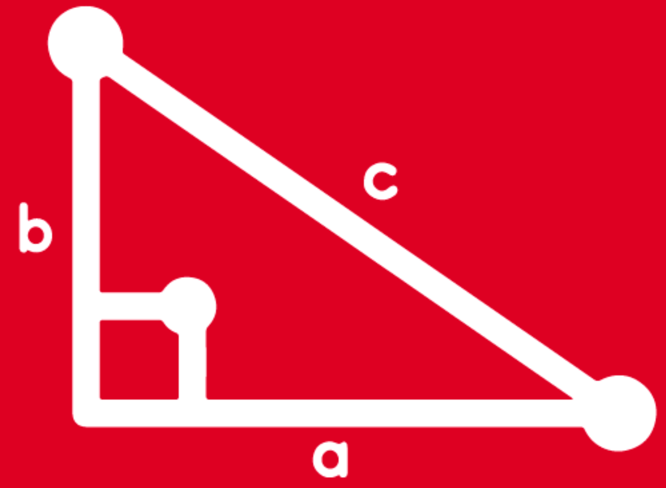
TRIGONOMETRY

Chapter 7,8 and 9

3rd
SECONDARY

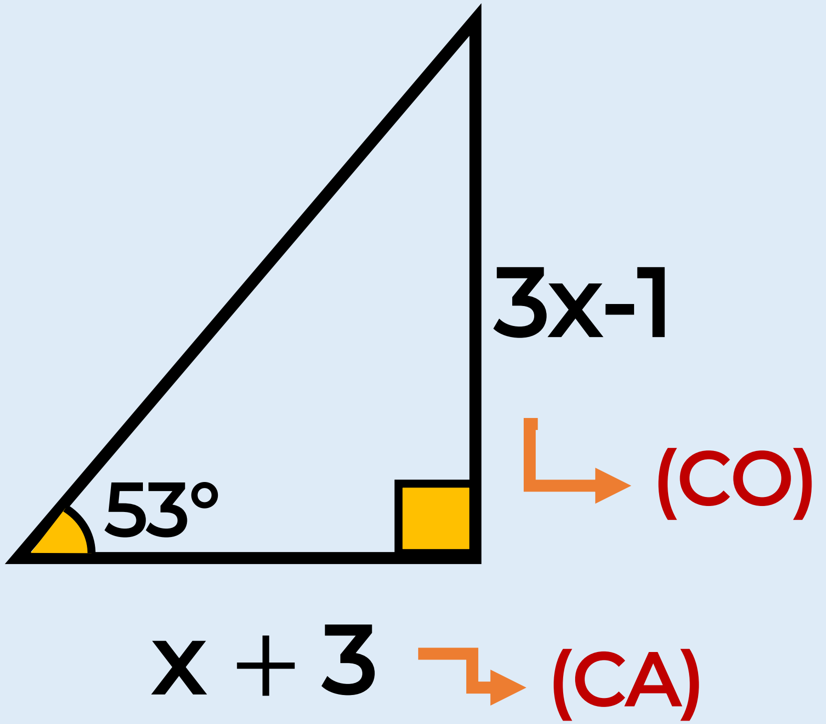


REVIEW

SACO OLIVEROS


TRABAJA DURO EN
SILENCIO Y TU ÉXITO HARÁ
TODO EL RUIDO.
“frases

1. Del gráfico, calcule x.

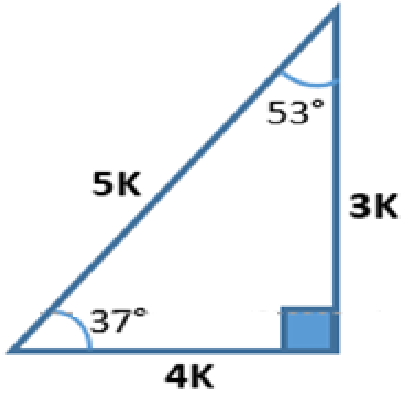


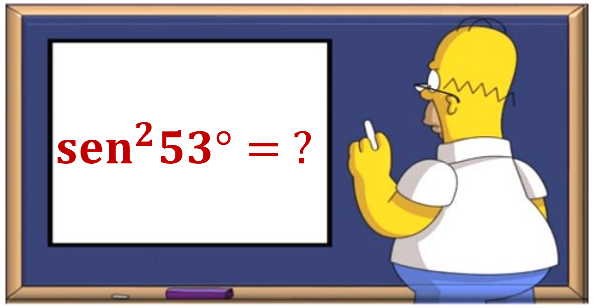
Recordar:

$$\tan(\theta) = \frac{CO}{CA}$$

Resolución

❖ Se observa el ⊿ es conocido.





Del gráfico:

$$\tan 53° = \frac{3x-1}{x+3}$$

$$\frac{4}{3} = \frac{3x-1}{x+3}$$

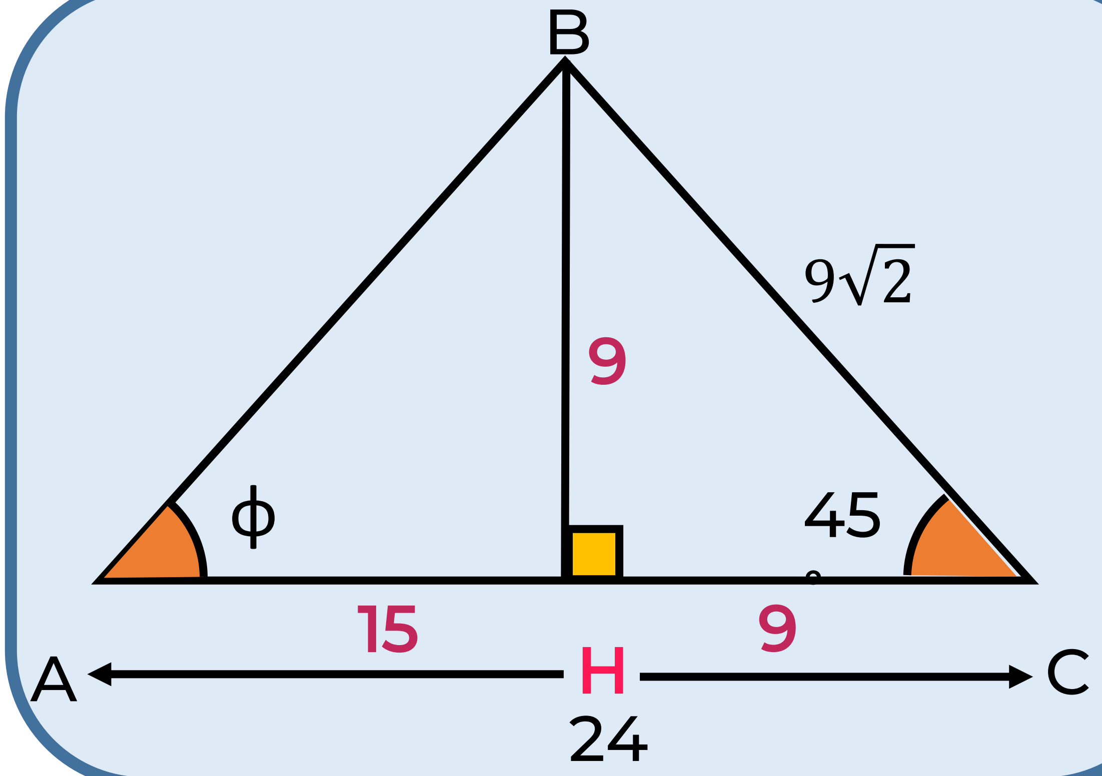
$$4(x+3) = 3(3x-1)$$

$$4x + 12 = 9x - 3$$

$$15 = 5x$$

$$\boxed{\therefore x = 3}$$

2. Del gráfico, calcule tanϕ



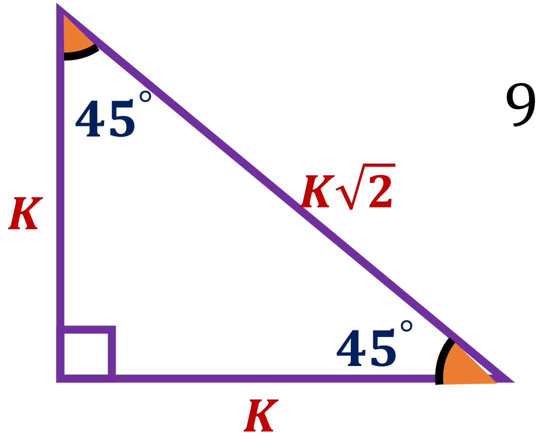
Recordar:

$$\tan(\theta) = \frac{CO}{CA}$$

RESOLUCIÓN:

❖ Trazaremos una altura (BH)

❖ Se observa el $\triangle$ BHC es notable



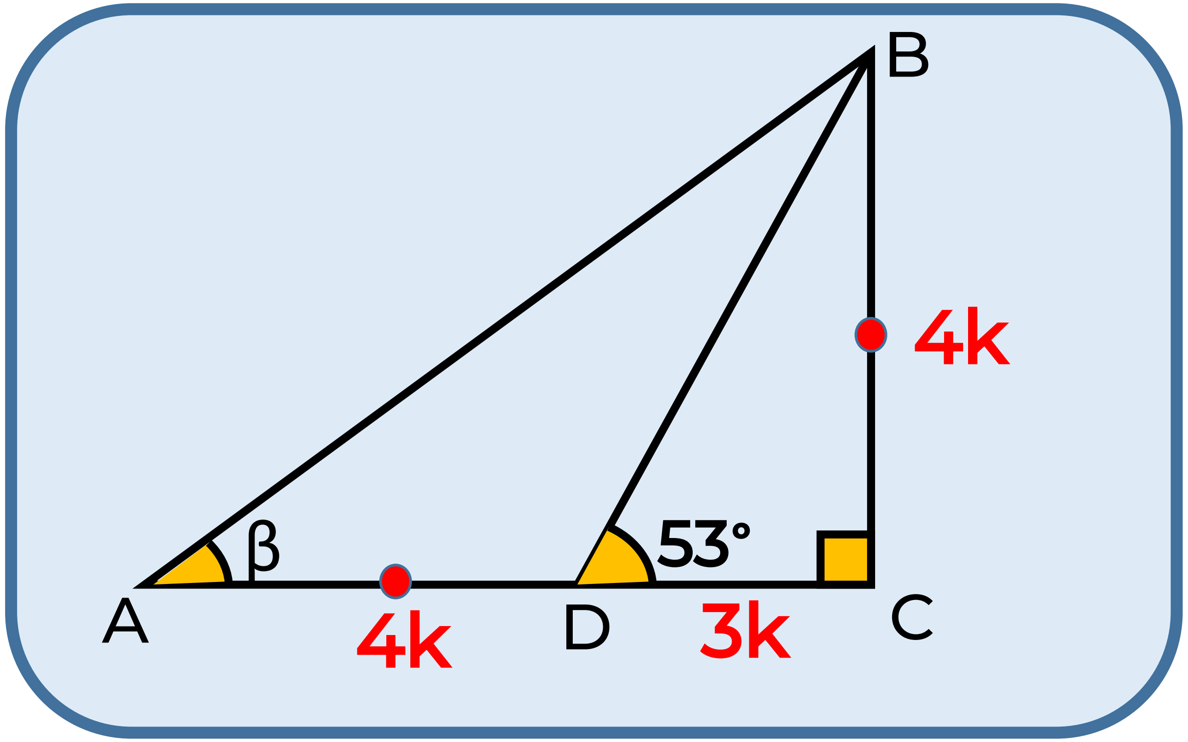
$$9\sqrt{2} = k\sqrt{2}$$

$k = 9$

Calculamos: $\tan\phi = \dfrac{9}{15}$

$$\therefore \tan\phi = \frac{3}{5}$$

3. Del gráfico, calcule tanβ

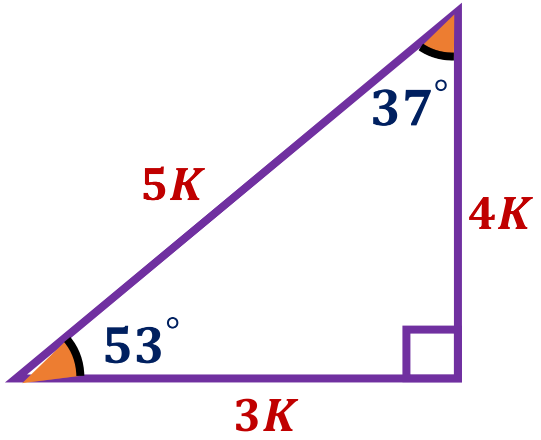


Recordar:

$$\tan(\theta) = \frac{CO}{CA}$$

RESOLUCIÓN:

❖ Se observa el ⊿ BCD es notable



Calculamos:

$$\tan\beta = \frac{\cancel{4}k}{\cancel{7}k}$$

$$\therefore \tan\beta = \frac{4}{7}$$

4. Para un ángulo agudo θ, se tiene que:

$$\tan\theta = \frac{2\text{sen}20°+3\cos70°}{3\cos70° - \text{sen}20°}$$

Efectúe:

$$P = \sec\theta . \csc\theta$$

Recordar:

Si: $\alpha + \beta = 90°$

$\text{sen}\alpha = \cos\beta$

$\sec(\theta) = \frac{H}{CA}$

$\csc(\theta) = \frac{H}{CO}$

RESOLUCIÓN:

$$\tan\theta = \frac{2\cos70° + 3\cos70°}{3\cos70° - \cos70°}$$

$$\tan\theta = \frac{5\cancel{\cos}70°}{2\cancel{\cos}70°} = \frac{5}{2}\begin{matrix}\rightarrow CO\\ \rightarrow CA\end{matrix}$$

❖ Utilizando el teorema de pitagoras : $H = \sqrt{29}$

Calculamos: $P = \frac{\sqrt{29}}{2} . \frac{\sqrt{29}}{5} = \frac{29}{10}$

$$\boxed{\therefore P = \frac{29}{10}}$$

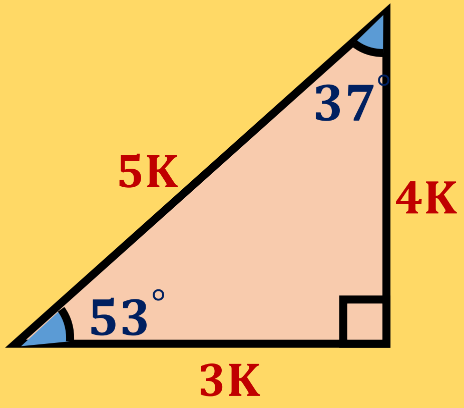
5. Calcule el valor de tan(73° - x)

Si: cos(2x + 20°) = sen(4x – 50°)

Recordar:

Si: $\alpha + \beta = 90°$

$\text{sen}\alpha = \cos\beta$



RESOLUCIÓN:

cos(2x + 20°) = sen(4x – 50°)

2x+20° + 4x – 50° = 90°

6x – 30° = 90°

6x = 120° ⟶ x = 20°

Calculamos:

$\tan(73° - 20°) = \tan(53°) = \dfrac{4}{3}$

$\boxed{\therefore \tan(73° - x) = \dfrac{4}{3}}$

6. Para un ángulo agudo β se tiene que:

$$\tan\beta = \frac{6\text{sen}40°.\text{sen}30°}{\sqrt{2}\cos50°.\sec45°}$$

Calcule:

$$B = \sqrt{13}.\cos\beta$$

RESOLUCIÓN:

❖ Utilizando la propiedad : cos50° = sen40°

$$\tan\beta = \frac{6\cancel{\text{sen}}40°}{\sqrt{2}\cancel{\text{sen}}40°}\cdot\frac{\left(\frac{1}{2}\right)}{\sqrt{2}} = \frac{3}{2}\begin{matrix}\rightarrow \text{CO}\\ \rightarrow \text{CA}\end{matrix}$$

❖ Utilizando el teorema de pitagoras : $H = \sqrt{13}$

Calculamos: $B = \cancel{\sqrt{13}}.\dfrac{2}{\cancel{\sqrt{13}}} = 2$

$$\boxed{\therefore B = 2}$$

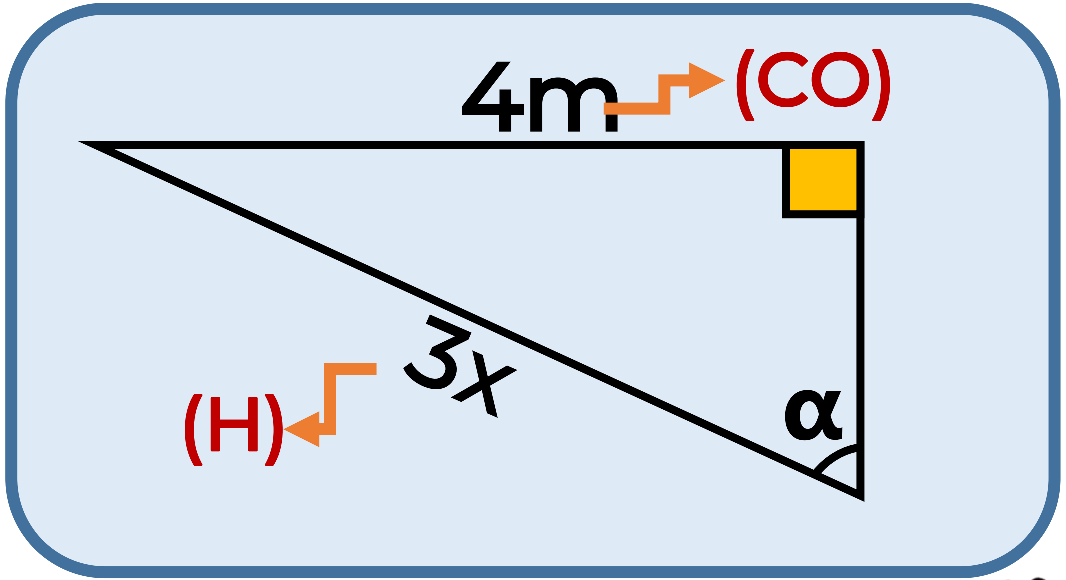
Recordar:

Si: $\alpha + \beta = 90°$

$\text{sen}\alpha = \cos\beta$

$\cos(\theta) = \dfrac{\text{CA}}{\text{H}}$

7. Del gráfico, calcule el valor de x en términos de α y m.



Recordar:

$RT(\theta) = \dfrac{\text{LO QUE QUIERO}}{\text{LO QUE TENGO}}$ $\csc(\theta) = \dfrac{H}{CO}$

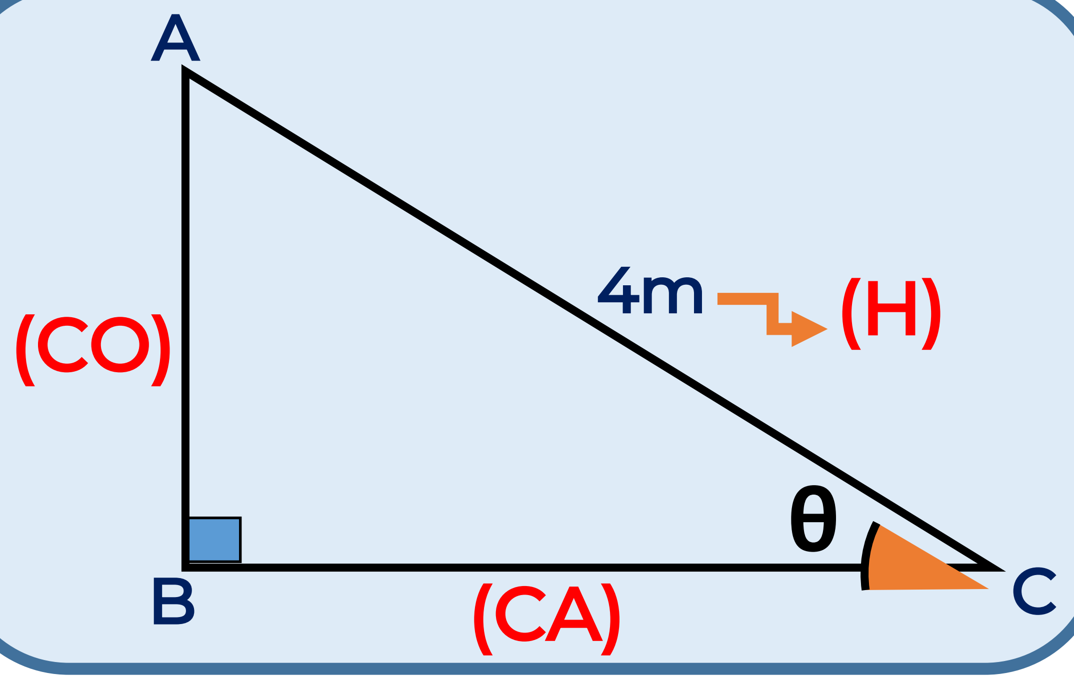
RESOLUCIÓN:

$$\frac{3x}{4m} = \csc(\alpha)$$

$$3x = 4m.\csc(\alpha)$$

$$\therefore x = \frac{4m.\csc(\alpha)}{3}$$

8. Del gráfico, calcule el perímetro del triángulo ABC , en términos de θ.



Recordar:

$$RT(\theta) = \frac{\text{LO QUE QUIERO}}{\text{LO QUE TENGO}}$$

$$\text{sen}(\theta) = \frac{CO}{H}$$

$$\cos(\theta) = \frac{CA}{H}$$

RESOLUCIÓN:

$$\frac{AB}{4} = \text{sen}\theta \Rightarrow AB = 4.\text{sen}\theta$$

$$\frac{BC}{4} = \cos\theta \Rightarrow BC = 4.\cos\theta$$

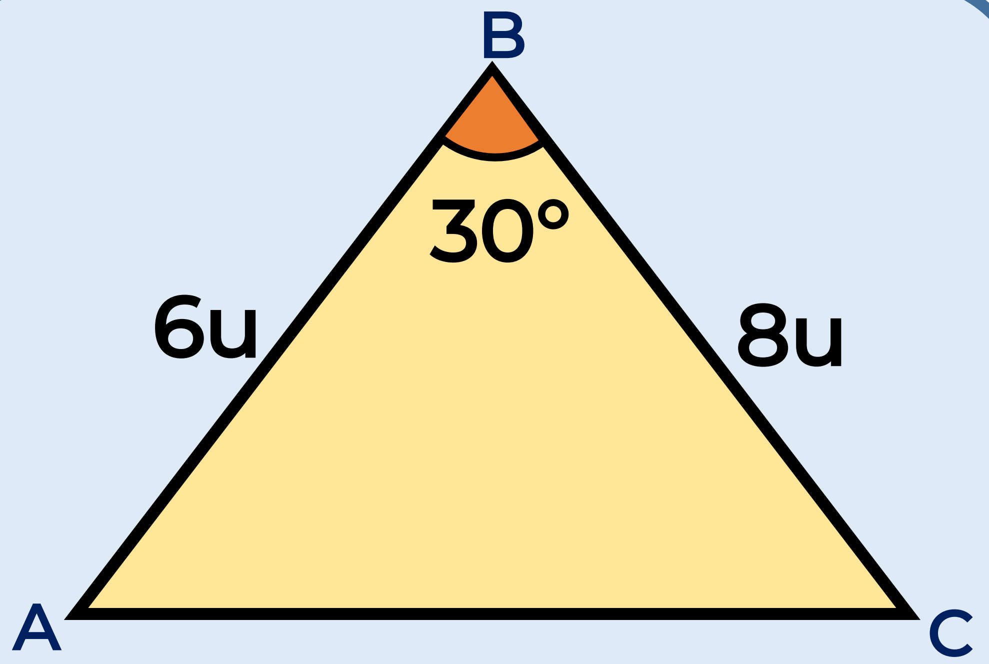
Calculamos:

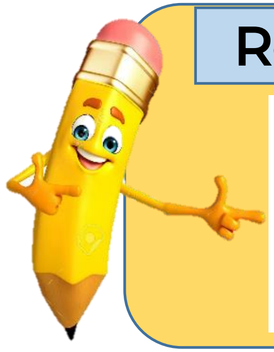
$2p = AB + BC + AC$

$2p = 4.\text{sen}\theta + 4.\cos\theta + 4$

$\therefore\ 2p = 4(\text{sen}\theta + \cos\theta + 1)$

9. Del gráfico, calcule el área de la región triangular ABC





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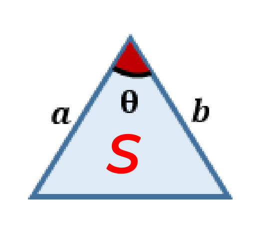


$$S = \frac{a.b}{2}.\ \text{Sen}\ \theta$$

RESOLUCIÓN:

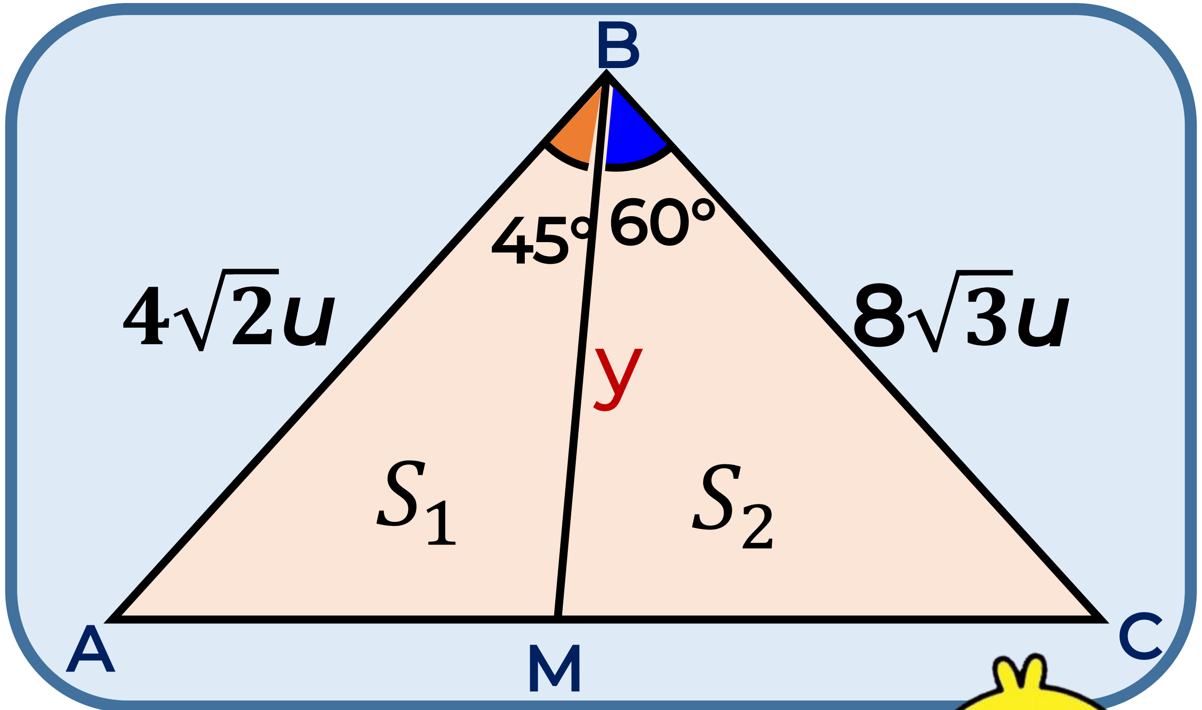
- Utilizando la fórmula del área de la región triangular.

$$S = \frac{(6u)(8u)}{2}.\ \text{sen}30°$$

$$S = \frac{(6u)(\cancel{8u})}{\cancel{2}}.\ \frac{1}{\cancel{2}}$$

$$\therefore S = 12u^2$$

10. Del gráfico, calcule $\frac{S_1}{S_2}$, (S_1 ; S_2 son áreas)



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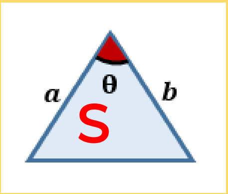

$$S = \frac{a.b}{2}.\ \text{sen}\theta$$

RESOLUCIÓN:

❖ BM = y

$$S_1 = \frac{\cancel{4}\sqrt{2}.y}{\cancel{2}}.\ Sen45° \Rightarrow \cancel{2}\sqrt{2}.y.\frac{\sqrt{2}}{\cancel{2}} = 2y$$

$$S_2 = \frac{\cancel{8}\sqrt{3}.y}{\cancel{2}}.\ Sen60° \Rightarrow \cancel{4}\sqrt{3}.y.\frac{\sqrt{3}}{\cancel{2}} = 6y$$

Calculamos: $\frac{S_1}{S_2} = \frac{2y}{6y} = \frac{1}{3}$

$$\boxed{\therefore \frac{S_1}{S_2} = \frac{1}{3}}$$