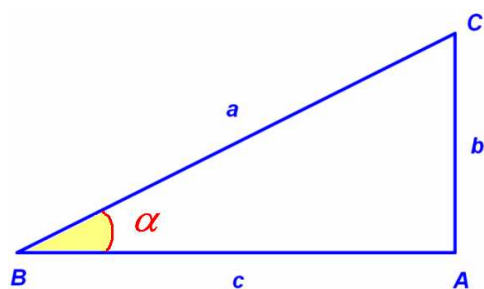


1.- Demuestra el Teorema Fundamental de la Trigonometría: $\text{sen}^2 \alpha + \text{cos}^2 \alpha = 1$
Ayuda: Triángulo rectángulo de la hoja *Trigonometría*:

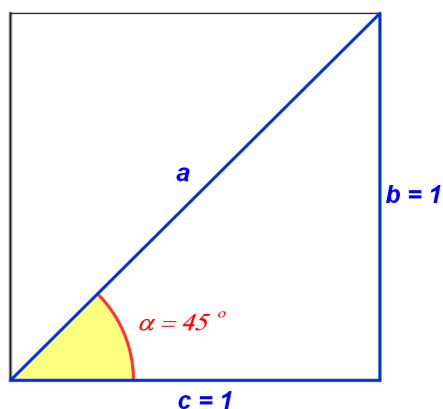


(Pitágoras dixit: $b^2 + c^2 = a^2$)

$$\text{sen } \alpha = \frac{b}{a} \quad \text{cos } \alpha = \frac{c}{a}$$

$$\text{sen}^2 \alpha + \text{cos}^2 \alpha = \frac{b^2}{a^2} + \frac{c^2}{a^2} = \frac{b^2 + c^2}{a^2} = \frac{a^2}{a^2} = 1$$

2.- A partir de un cuadrado de *lado* = 1, obtener las razones trigonométricas del ángulo de 45°.



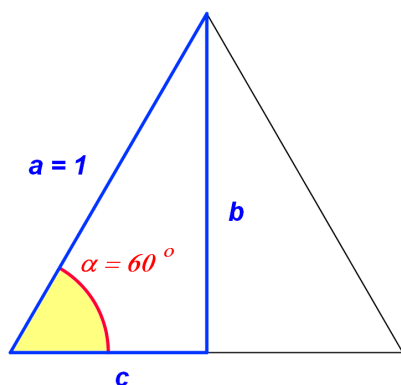
$$a = \sqrt{b^2 + c^2} = \sqrt{1+1} = \sqrt{2}$$

$$\text{sen } 45^\circ = \frac{b}{a} = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

$$\text{cos } 45^\circ = \frac{c}{a} = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

$$\text{tg } 45^\circ = \frac{b}{c} = \frac{1}{1} = 1$$

3.- A partir de un triángulo equilátero de *lado* = 1, obtener las razones trigonométricas del ángulo de 60°.

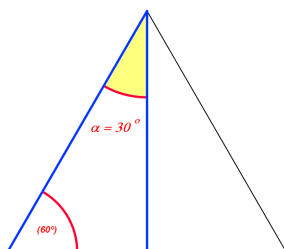


$$a = 1 \rightarrow c = \frac{1}{2} \Rightarrow b = \sqrt{a^2 - c^2} = \sqrt{1 - \frac{1}{4}} = \frac{\sqrt{3}}{2}$$

$$\text{sen } 60^\circ = \frac{b}{a} = \frac{\sqrt{3}/2}{1} = \frac{\sqrt{3}}{2} \quad \text{cos } 60^\circ = \frac{c}{a} = \frac{1/2}{1} = \frac{1}{2}$$

$$\text{tg } 60^\circ = \frac{b}{c} = \frac{\sqrt{3}/2}{1/2} = \sqrt{3}$$

4.- A partir de la figura del triángulo del ejercicio 3, obtener las razones trigonométricas del ángulo de 30°.



$$\text{sen } 30^\circ = \frac{c}{a} = \frac{1/2}{1} = \frac{1}{2} \quad \text{cos } 30^\circ = \frac{b}{a} = \frac{\sqrt{3}/2}{1} = \frac{\sqrt{3}}{2}$$

$$\text{tg } 30^\circ = \frac{c}{b} = \frac{1/2}{\sqrt{3}/2} = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$$