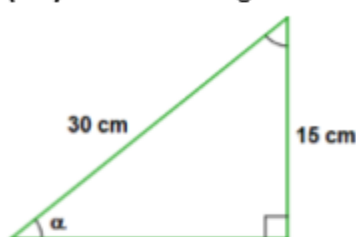# TRIGONOMETRY TEST – 4º ESO
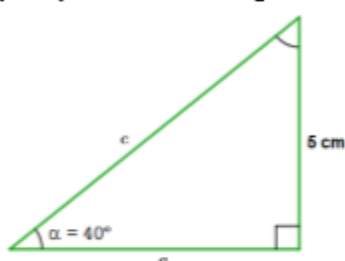
Exercise 1: **(2.25 ptos)**

a) **(1.5)** Find the six trigonometric functions of the angle α. You cannot use Pythagoras' theorem.

$$\sin\alpha = \frac{1}{2} \qquad \cos\alpha = \frac{\sqrt{3}}{2} \qquad \tan\alpha = \frac{\sqrt{3}}{3}$$

$$\csc\alpha = 2 \qquad \sec\alpha = \frac{2\sqrt{3}}{3} \qquad \cot\alpha = \sqrt{3}$$

b) **(0.75)** Find the missing sides. You cannot use Pythagoras' theorem.

$$c = 7.78 \text{ cm}$$
$$a = 5.96 \text{ cm}$$

Exercise 2: **(1 pto)** Find the three principal trigonometric functions (sine, cosine and tangent) of the angle 240°, without using a calculator $\quad \sin 240° = \frac{-\sqrt{3}}{2} \qquad \cos 240° = \frac{-1}{2} \qquad \tan 240° = \sqrt{3}$

Exercise 3: **(1.5 ptos)** If $\tan\alpha = 3$ and $0° < \alpha < 90°$, find the values of the other five trigonometric functions without using a calculator.

$$\cos\alpha = \frac{\sqrt{10}}{10} \qquad \sin\alpha = \frac{3\sqrt{10}}{10} \qquad \csc\alpha = \frac{\sqrt{10}}{3} \qquad \sec\alpha = \sqrt{10} \qquad \cot\alpha = \frac{1}{3}$$
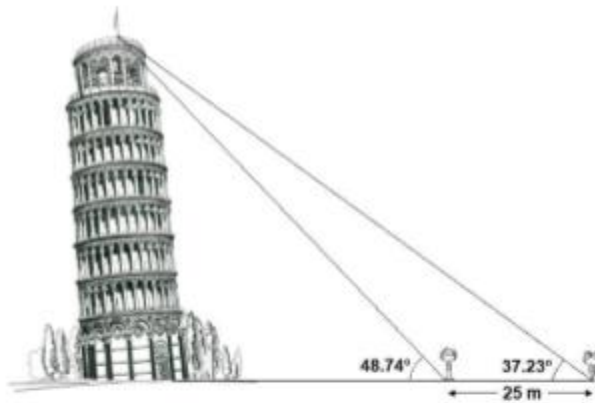
Exercise 4: **(1.25 ptos)** If $\cos\alpha = 0.62$ and $270° < \alpha < 360°$ find the values of $\sin\alpha$ and $\tan\alpha$ and the value of the angle α

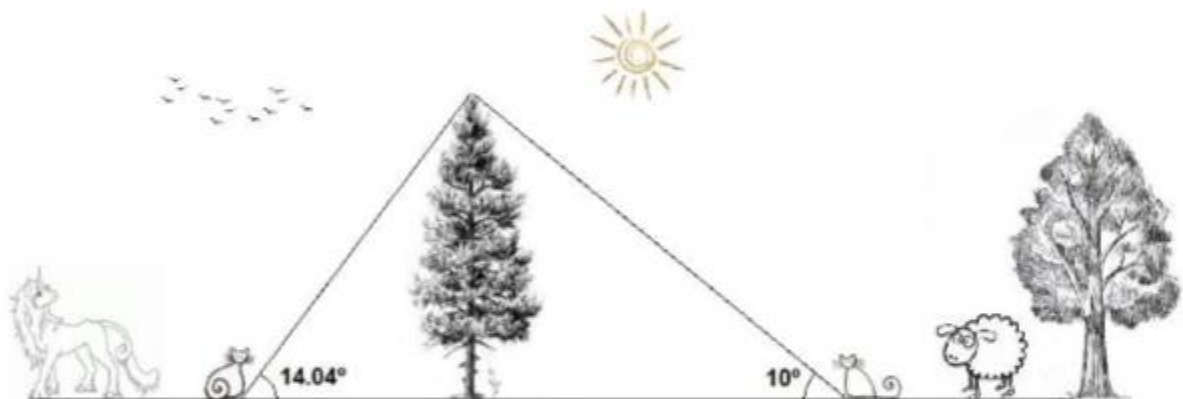$$\sin\alpha = -0.78 \qquad \tan\alpha = -1.27 \qquad \alpha = 308.32°$$

Exercise 5: **(1 pto)** The base of an isosceles triangle is 40 cm long and the angle between the two equal sides is $30°$. Find the area of the triangle. $\quad A_T = 1492.82 \text{ cm}^2$

Exercise 6: (2 ptos) Find the height of the Leaning Tower of Pisa $h = 57\ \text{m}$

48.74°   37.23°
25 m

Exercise 7: (1 pto) Find the distance between the cats if the tree is 3 m high $d = 29.01\ \text{m}$

14.04°   10°

PS: I am bored