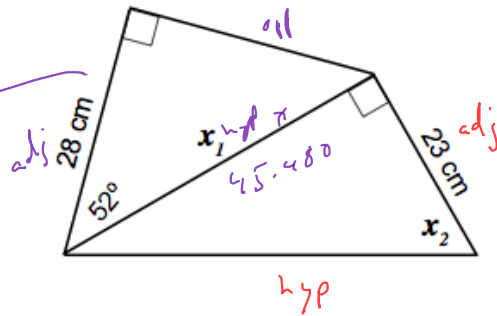


Name: _____

Trigonometry - 04

1) Find the value of x_2 in the diagram below



~~$\frac{O}{H}$~~ ~~$\frac{A}{H}$~~ ~~$\frac{O}{A}$~~

$$\frac{\cos 52^\circ}{1} = \frac{28}{x}$$

$$\frac{28(1)}{\cos 52} = x$$

$$45.480 = x_1$$

~~$\frac{O}{A}$~~ ~~$\frac{A}{H}$~~ ~~$\frac{O}{A}$~~

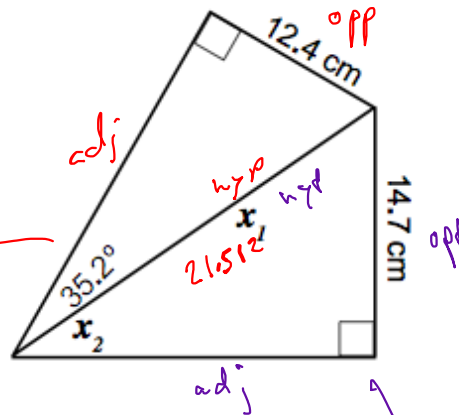
$$\frac{\tan x}{1} = \frac{45.480}{23}$$

$$\frac{45.480(1)}{23} = \frac{\tan x}{1}$$

$$1.97737 = \tan^{-1} \tan x$$

$$63.2 = x_2$$

2) Find the value of x_2 in the diagram below



$$\frac{SO}{H} \quad \frac{CA}{H} \quad \frac{TO}{A}$$

$$\frac{\sin 35.2}{1} = \frac{12.4}{x}$$

$$\frac{12.4(1)}{\sin 35.2} = x$$

$$21.512 = x$$

$$\frac{SO}{H} \quad \frac{CA}{H} \quad \frac{TO}{A}$$

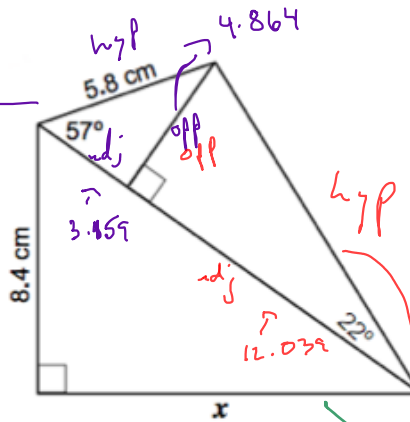
$$\frac{\sin x}{1} = \frac{14.7}{21.512}$$

$$\frac{14.7(1)}{21.512} = \sin x$$

$$0.6833395 = \sin x$$

$$43.1 = x$$

3) Find the value of x (length of edge) in the diagram below



Step 1

$$\frac{SO}{H} \quad \frac{CA}{H} \quad \frac{TA}{A}$$

$$\frac{\sin 57}{1} = \frac{x}{5.8}$$

$$\frac{\sin 57 (5.8)}{1} = x$$

$$4.864 = x$$

Step 2

$$\frac{SO}{H} \quad \frac{CA}{H} \quad \frac{TA}{A}$$

$$\frac{\cos 57}{1} = \frac{x}{5.8}$$

$$\frac{5.8 (\cos 57)}{1} = x$$

$$3.159 = x$$

Step 3

$$\frac{SO}{H} \quad \frac{CA}{H} \quad \frac{TA}{A}$$

$$\frac{\tan 22}{1} = \frac{4.864}{x}$$

$$\frac{4.864 (1)}{\tan 22} = x$$

$$12.039 = x$$

Step 4

$$3.159 + 12.039 = 15.198$$

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

$$8.4^2 + b^2 = 15.198^2$$

$$70.56 + b^2 = 230.979$$

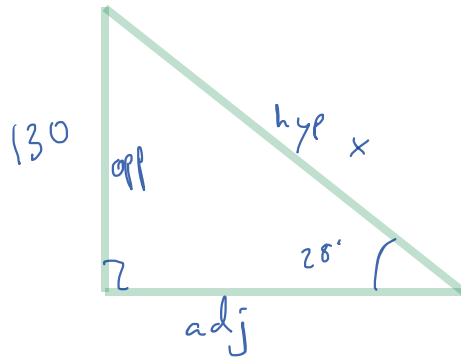
$$-70.56 \quad -70.56$$

$$\sqrt{b^2} = \sqrt{160.419}$$

$$b = 12.667$$

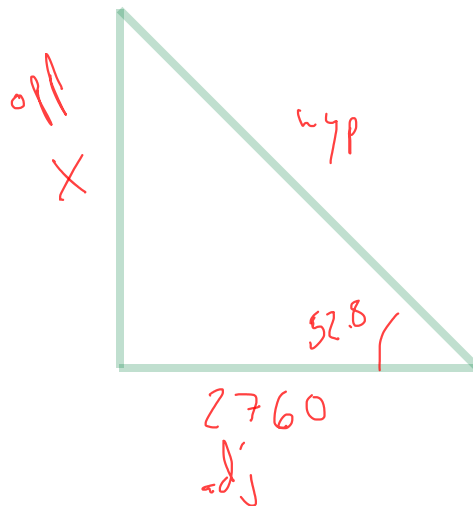
$$= 12.7$$

- 4) A drilling platform is moored (with an anchor) in the sea at a point where the sea is 130 m deep. The angle of the anchor cable with the horizontal ground is 28° . What length of cable is needed to connect the anchor to the platform?



$$\begin{aligned} & \cancel{\frac{S}{H}} \quad \cancel{\frac{C}{H}} \quad \frac{T}{A} \\ & \frac{\sin 28}{1} = \frac{130}{x} \\ & \frac{130(1)}{\sin 28} = x \\ & \boxed{276.9 = x} \end{aligned}$$

- 5) A surveyor takes a sighting of the top of a hill, which, according to her map, is 2760 meters away from her position. From where she stands, the angle of elevation of the top of the hill is 52.8° . What is the height of the hill?



$$\begin{aligned} & \cancel{\frac{S}{H}} \quad \cancel{\frac{C}{H}} \quad \frac{T}{A} \\ & \frac{\tan 52.8}{1} = \frac{x}{2760} \\ & \frac{2760(\tan 52.8)}{1} = x \\ & \boxed{3636.2 = x} \end{aligned}$$