

Practice Test: Trigonometry

FMP10

Trigonometry Practice Test
/48

Name: _____

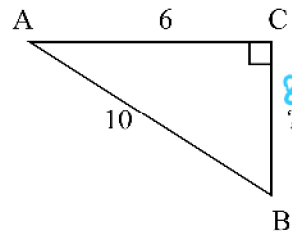
1. Determine the length of CB, then determine each ratio. Reduce to **lowest terms**, if possible. [5]

$$\sin A = \frac{8}{10} = \frac{4}{5}$$

$$\sin B = \frac{6}{10} = \frac{3}{5}$$

$$\cos A = \frac{6}{10} = \frac{3}{5}$$

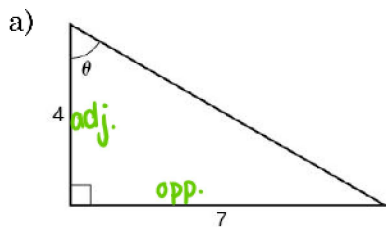
$$\tan B = \frac{6}{8} = \frac{3}{4}$$



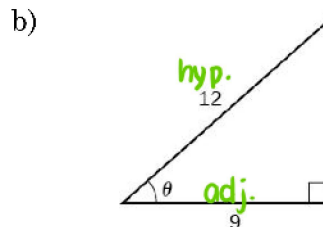
$$\begin{aligned} 10^2 - 6^2 &= 100 - 36 \\ &= 64 \\ \sqrt{64} &= 8 \end{aligned}$$

$$\begin{aligned} a^2 + b^2 &= c^2 \\ a^2 + 6^2 &= 10^2 \\ a^2 + 36 &= 100 \\ a^2 &= 100 - 36 \\ a^2 &= 64 \\ a &= \sqrt{64} = 8 \end{aligned}$$

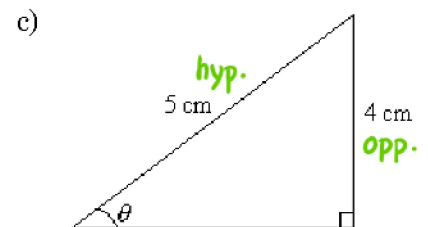
2. Calculate the measure of θ , to the **nearest degree**. [6]



$$\begin{aligned} \tan \theta &= \frac{7}{4} \\ \theta &= \tan^{-1}\left(\frac{7}{4}\right) \\ \theta &= 60^\circ \end{aligned}$$

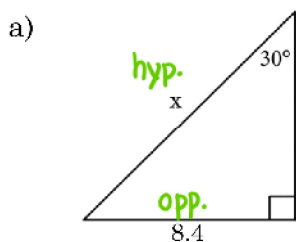


$$\begin{aligned} \cos \theta &= \frac{9}{12} \\ \theta &= \cos^{-1}\left(\frac{9}{12}\right) \\ \theta &= 41^\circ \end{aligned}$$

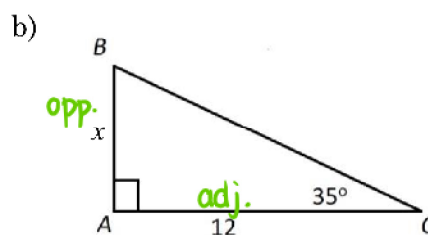


$$\begin{aligned} \sin \theta &= \frac{4}{5} \\ \theta &= \sin^{-1}\left(\frac{4}{5}\right) \\ \theta &= 53^\circ \end{aligned}$$

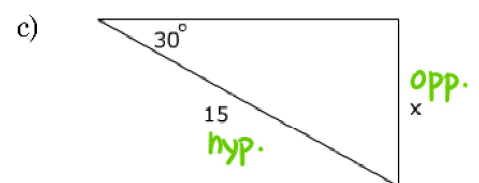
3. Calculate the length of x , to the **nearest tenth**. [6]



$$\begin{aligned} \sin 30^\circ &= \frac{8.4}{x} \\ x &= \frac{8.4}{\sin 30^\circ} \\ x &= 16.8 \end{aligned}$$



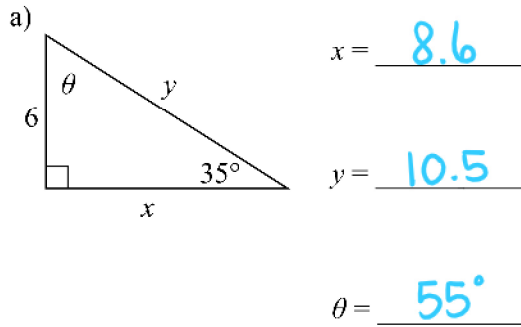
$$\begin{aligned} \tan 35^\circ &= \frac{x}{12} \\ x &= 12 \tan 35^\circ \\ x &= 8.4 \end{aligned}$$



$$\begin{aligned} \sin 30^\circ &= \frac{x}{15} \\ x &= 15 \sin 30^\circ \\ x &= 7.5 \end{aligned}$$

$$\lambda = 16.8$$

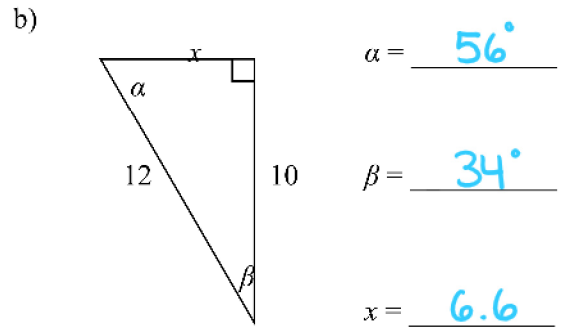
4. Solve each triangle. Show how you got each answer. Round each angle to the nearest degree and each side length to the nearest tenth. [9]



$$\tan 35 = \frac{6}{x}$$
$$x = \frac{6}{\tan 35}$$
$$x = 8.56888\dots$$

$$\sin 35 = \frac{6}{y}$$
$$y = \frac{6}{\sin 35}$$
$$y = 10.46068\dots$$

$$\theta = 180 - 90 - 35 = 55^\circ$$

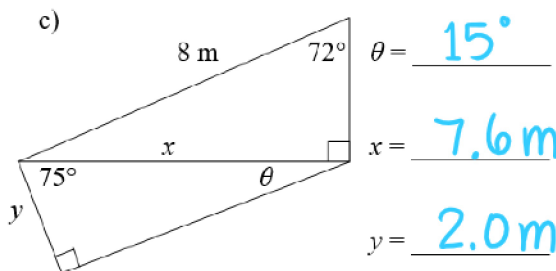


$$\sin \alpha = \frac{10}{12}$$
$$\alpha = \sin^{-1}\left(\frac{10}{12}\right)$$
$$\alpha = 56.44269\dots$$
$$\beta = 180 - 90 - 56 = 34$$

or $\cos \beta = \frac{10}{12}$

$$\beta = \cos^{-1}\left(\frac{10}{12}\right)$$

$$x = \sqrt{12^2 - 10^2}$$
$$= \sqrt{44}$$
$$= 6.63324958\dots$$



$$\sin 72 = \frac{x}{8}$$
$$x = 8 \sin 72$$
$$x = 7.60845\dots$$

$$\cos 75^\circ = \frac{y}{7.60845}$$
$$y = 7.60845 \cos 75$$
$$y = 1.9692\dots$$

$$\theta = 180 - 90 - 75 = 15$$

$$x = 1.60875...$$

$$y = 1.9692...$$

5. Determine the height of the building on the left, to the nearest tenth of a metre. [4]

$$\textcircled{1} \tan 38 = \frac{42}{x}$$

$$x = \frac{42}{\tan 38}$$

$$x = 53.7575$$

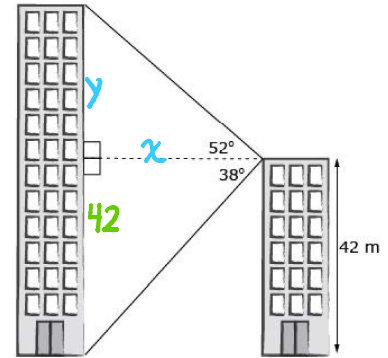
$$\textcircled{2} \tan 52 = \frac{y}{53.7575}$$

$$y = 53.7575 \tan 52$$

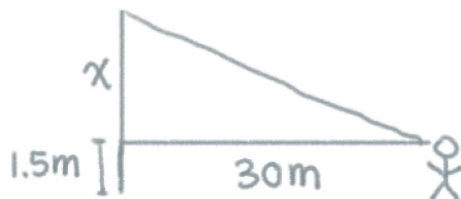
$$y = 68.806...$$

$$\textcircled{3} 42 + 68.806 = 110.806$$

The height of the building is 110.8m.



6. A surveyor is positioned 30 m from the base of a tree. She uses an inclinometer to determine the angle of elevation to the top of the tree is 28° . How tall is the tree, to the nearest metre, if the inclinometer is positioned 1.5 m above the ground? Include a diagram with your solution. [4]



$$\tan 28^\circ = \frac{x}{30}$$

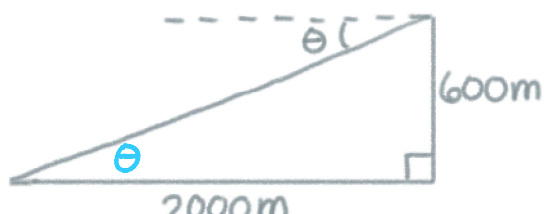
$$x = 30 \tan 28^\circ$$

$$x = 16$$

$$16 + 1.5 = 17.5$$

The tree is 18m.

7. A pilot in an airplane 600 m above the ground must descend onto a runway which is a horizontal distance of 2 km away. What is the angle of depression, to the nearest degree, from the pilot to the beginning of the runway? Include a diagram with your solution. [4]



$$\tan \theta = \frac{600}{2000}$$

$$\theta = \tan^{-1}\left(\frac{600}{2000}\right)$$

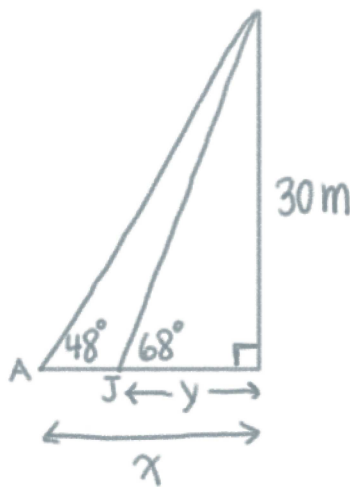
$$\theta = 16.7^\circ$$



$$\theta = 16.7^\circ$$

The angle of depression is 17° .

8. Amber and Joey are looking up at their school. From Amber's point of view, the top of the school is at an angle of elevation of 48° . From Joey's point of view, directly closer to the school, it is 68° . The school is 30 m high. How far apart are the students, to the nearest tenth of a metre? Include a diagram with your solution. [4]



$$\tan 48^\circ = \frac{30}{x}$$

$$x = \frac{30}{\tan 48^\circ}$$

$$x = 27.0$$

$$\tan 68^\circ = \frac{30}{y}$$

$$y = \frac{30}{\tan 68^\circ}$$

$$y = 12.1$$

$$27.0 - 12.1 = 14.9$$

The students are 14.9m apart.

9. Is it possible for a cosine ratio to be greater than 1? Justify your response. [2]

No, the cosine ratio is never greater than 1 since the hypotenuse is never shorter than the adjacent side.

$$\cos \theta = \frac{\text{adj.}}{\text{hyp.}}$$

Communication

Criteria	never	sometimes	always
Reasoning of question number 9 correct			

Communication

Criteria	never	sometimes	always
Proper use of operation symbols & equal signs; correct rounding; sentence answers.	0	1	2
Solutions are clear and well organized.	0	1	2