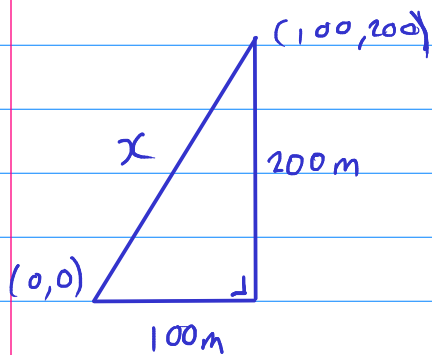


Practical Problems

2014-03-18



eg. A ship sails 100 m East from its starting point, turns anti-clockwise by 90° , then sails 200 m. How far is it from its starting point?

$$100^2 + 200^2 = x^2$$

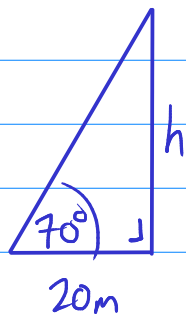
$$10000 + 40000 = x^2$$

$$50000 = x^2$$

$$\sqrt{50000} = x$$

$$223.6 \text{ m} = x$$

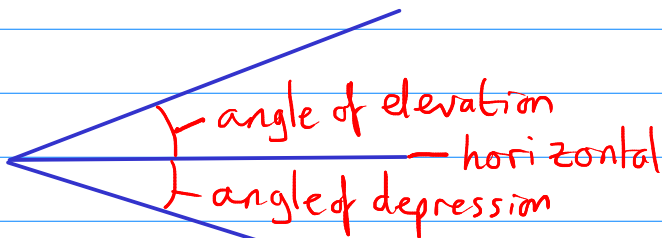
- A student stands 20 m from the base of his school. He uses a clinometer to note the roof is 70° from horizontal. How tall is the school?



$$\tan 70^\circ = \frac{h}{20}$$

$$\tan A = \frac{\text{opp}}{\text{adj}}$$

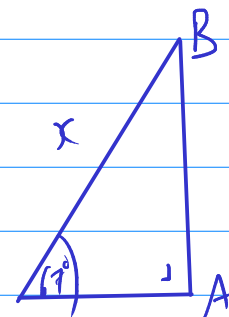
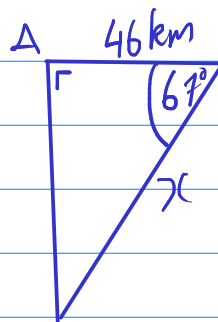
$$h = 20 \tan 70^\circ$$
$$= 54.95 \text{ m}$$



Ex 12.4 p 385
Q 1, 4, 6, 8

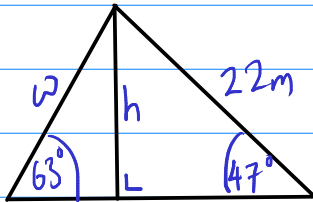
$$(x) \cos 67^\circ = \frac{46}{x} \quad (x)$$

$$x \cos 67^\circ = 46$$
$$\frac{x \cos 67^\circ}{\cos 67^\circ} = \frac{46}{\cos 67^\circ}$$



2014-03-19

4.



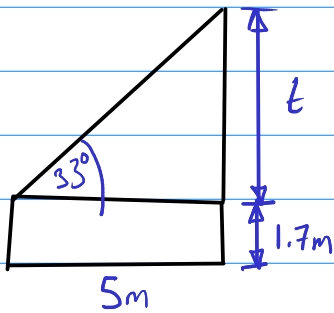
$$\sin 47^\circ = \frac{h}{22}$$

$$h = 22 \sin 47^\circ \\ = 16.09 \text{ m}$$

$$\sin 63^\circ = \frac{h}{w}$$

$$w = \frac{16.09}{\sin 63} \\ = 18.06 \text{ m}$$

6



$$\tan 33^\circ = \frac{t}{5}$$

$$t = 5 \tan 33^\circ \\ = 3.25 \text{ m}$$

$$\text{Height} = 3.25 + 1.7 \\ = 4.95 \text{ m}$$

8



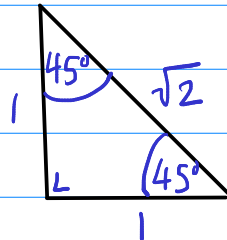
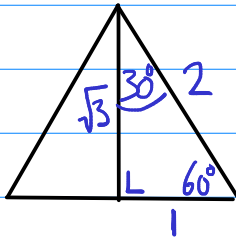
$$\tan 78^\circ = \frac{h}{100}$$

$$h = 100 \tan 78^\circ \\ = 470.5 \text{ m}$$

Special Angles

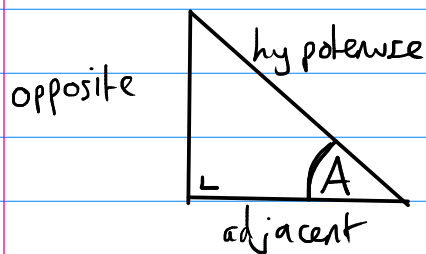
2014-03-19

A	30°	45°	60°
$\sin A$	$\frac{1}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{\sqrt{3}}{2}$
$\cos A$	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{1}{2}$
$\tan A$	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$



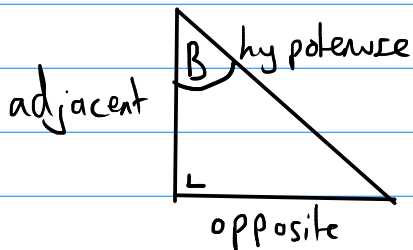
$$\begin{aligned} & \bullet \tan 45^\circ + \sin 30^\circ \\ &= 1 + \frac{1}{2} \\ &= 1\frac{1}{2} \end{aligned}$$

Ex 12.5 p 382 Q 3, 4, 5, 6, 7, 8



$$\sin A = \frac{\text{opp}}{\text{hyp}} \quad \cos A = \frac{\text{adj}}{\text{hyp}} \quad \tan A = \frac{\text{opp}}{\text{adj}}$$

$$\cos 45^\circ = \frac{|BC|}{7\sqrt{2}}$$



$$\begin{aligned} \frac{1}{\sqrt{2}} &= \frac{|BC|}{7\sqrt{2}} \\ |BC| &= 7 \end{aligned}$$