Questions of 2 marks each

Q.1.	A ladder leaning against a wall, makes an angle of 60° with the horizontal. If the foot of the ladder is 2.5m away from the wall, find the length of the ladder.
Q.2.	If the shadow of a tower is 30m long, when the Sun's elevation is 30°, then what is the length of the shadow when the Sun's elevation is 60° ?
Q.3.	The position of an eagle and two identical geese are shown in the figure below. All the birds are at the same height from the ground. Assume that the Eagle can fly at the same speed in all directions and that the geese are unaware of the Eagle's intention and will not move from their positions. (CFQ)
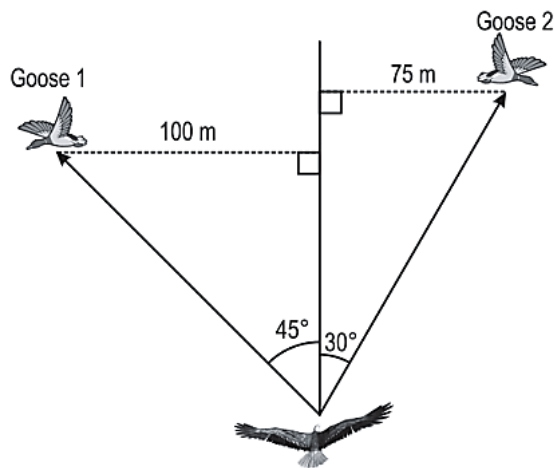
If the eagle wants to attack the goose that is nearer to it, which one should it attack? (Use $\sqrt{2} = 1.41$)

Q.4.	The shadow of a tower at a time is three times as long as its shadow when the angle of elevation of the sun is 60°. Find the angle of elevation of the sun at the time of the longer shadow.
Q.5.	The tops of two poles of heights 16m and 10m are connected by a wire of length *l* metres. If the wire makes an angle of 30° with the horizontal, then find *l.*

	Questions of 3 marks each
Q.6.	A moving boat is observed from the top of a 150 m high cliff moving away from the cliff. The angle of depression of the boat changes from 60° to 45° in 2 minutes. Find the speed of the boat in m/h.
Q.7.	A man standing on the deck of a ship, which is 10 m above water level, observes the angle of elevation of the top of a hill as 60° and the angle of depression of the base of the hill as 30°. Find the distance of the hill from the ship and the height of the hill.
Q.8.	The angle of elevation of an airplane from a point on the ground is 60°. After a flight of 30 seconds, the angle of elevation becomes 30°. If the airplane is flying at a constant height of $3000\sqrt{3}$ m, find the speed of the airplane.
Q.9.	From a window 15m high above the ground in a street, the angles of elevation and depression of the top and foot of another house on the opposite side of the street are 30° and 45° respectively. Show that the height of the opposite house is 23.66m. (CFQ)
Q.10.	A ship was moving towards the shore at a uniform speed of 36km/h. Initially, the ship was 1.3 km away from the foot of a lighthouse which is 173.2 m in height. Find the angle of depression, x, of the top of the lighthouse from the ship after the ship had been moving for 2 minutes. Show your steps and give reasons. (Take $\sqrt{3} = 1.732$, $\sqrt{2} = 1.414$) (CFQ)
	Questions of 5 marks each
Q.11.	From the top of a building 60m high, the angles of depression of the top and bottom of a tower are observed to be 30° and 60° respectively. Find the height of the tower. Also, find the distance between the building and the tower. (Use $\sqrt{3} = 1.732$)
Q.12.	Amit, standing on a horizontal plane, finds a bird flying at a distance of 200m from him at an elevation of 30°. Deepak standing on the roof of a 50m high building, finds the angle of elevation of the same bird to be 45°. Amit and Deepak are on opposite sides of the bird. Find the distance of the bird from Deepak.

Q.13.	A bird is sitting on the top of an 80 m high tree. From a point on the ground, the angle of elevation of the bird is 45°. The bird flies away horizontally in such a way that it remained at a constant height from the ground. After 2 seconds, the angle of elevation of the bird from the same point is 30°. Find the speed of flying of the bird. (Take $\sqrt{3}$ =1.732)
Q.14.	At a point A, 20 metres above the level of water in a lake, the angle of elevation of a cloud is 30°. The angle of depression of the reflection of the cloud in the lake, at A is 60°. Find the distance of the cloud from A.
Q.15.	There are two poles, one each on either bank of a river just opposite to each other. One pole is 60 m high. From the top of this pole, the angle of depression of the top and foot of the other pole are 30° and 60° respectively. Find the width of the river and height of the other pole.

ANSWERS

Q.1	5m	Q.2	10m	Q.3	Goose 1	Q.4	30°
Q.5	12m	Q.6	$1500(3 – \sqrt{3})$ m/hr	Q.7	$10\sqrt{3}$ m, 40m	Q.8	200 m/s
Q.10	60°	Q.11	34.64 m, 40 m	Q.12	$50\sqrt{2}$ m	Q.13	29.2m/s
Q.14	40 m	Q.15	$20\sqrt{3}$ m, 40m				