Applications of Trigonometry

1. Draw diagram for the following situations :
(i) A person is flying a kite at an angle of elevation a and the length of thread from his hand to kite is 'l'.
(ii) A person observes two banks of a river at angles of depression q1 and q2 (q1 < q2) from the top of a tree of height h which is at a side of the river. The width of the river is 'd'.

A large balloon has been tied with a rope and it is floating in the air. A person has observed the balloon from the top of a building at angle of elevation of q1 and foot of the rope at an angle of depression of q2. The height of the building is h feet. Draw the diagram for this data.

1. A tower stands vertically on the ground. From a point which is 15 meter away from the foot of the tower, the angle of elevation of the top of the tower is 45º. What is the height of the tower?

2. A tree breaks due to storm and the broken part bends so that the top of the tree touches the ground by making 30º angle with the ground. The distance between the foot of the tree and the top of the tree on the ground is 6m. Find the height of the tree before falling down.

3. A contractor wants to set up a slide for the children to play in the park. He wants to set it up at the height of 2 m and by making an angle of 30º with the ground. What should be the length of the slide?

4. Length of the shadow of a 15 meter high pole is 15 3 meters at 8 O'clock in the morning. Then, what is the angle of elevation of the Sun rays with the ground at the time?

5. You want to erect a pole of height 10 m with the support of three ropes. Each rope has to make an angle 30º with the pole. What should be the length of the rope?

6. Suppose you are shooting an arrow from the top of a building at an height of 6 m to a target on the ground at an angle of depression of 60º. What is the distance between you and the object?

7. An electrician wants to repair an electric connection on a pole of height 9 m. He needs to reach 1.8 m below the top of the pole to do repair work. What should be the length of the ladder which he should use, when he climbs it at an angle of 60º with the ground? What will be the distance between foot of the ladder and foot of the pole?

8. A boat has to cross a river. It crosses the river by making an angle of 60º with the bank of the river due to the stream of the river and travels a distance of 600m to reach the another side of the river. What is the width of the river?

9. An observer of height 1.8 m is13.2 m away from a palm tree. The angle of elevation of the top of the tree from his eyes is 45º. What is the height of the palm tree?