



The No. 1 CBSE Math Website In The World

In The Service of Student Community

NAME: _____

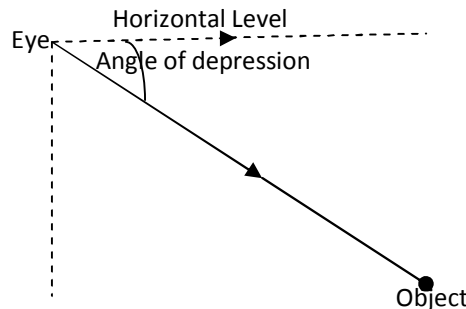
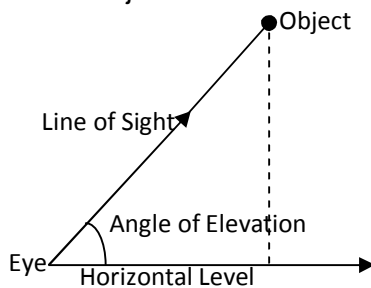
X

SECOND TERM

MATHEMATICS WORKSHEET – SOME APPLICATIONS OF TRIGONOMETRY

Don't forget:-

- **Line of Sight:-** It is the line drawn from the eyes of the observer to a point in the object where the person is viewing.
- **Angle of Elevation:-** It is the angle formed by the line of sight with horizontal through the eyes of observer when the object is above the horizontal level.



- **Angle of Depression:-** It is the angle formed by the line of sight with the horizontal when the object is below the horizontal level.

1. There is a small island in 200m wide river and a tall tree stands on the island. P and Q are points directly opposite to each other on the two banks and in the line with the tree. If the angles of elevation of the top of the tree from P and Q are 30° and 40° respectively, find the height of the tree.
2. A boy standing on a horizontal plane finds a bird flying at a distance 100m from him at an elevation of 30° . A girl standing on the roof of 20m high building, find the angle of elevation of the same bird to be 45° . Both the boy and the girl are on opposite sides of the bird. Find the distance of the bird from the girl.
3. The angle of elevation of a jet plane from a point A on the ground is 60° . After a flight of 15 seconds, the angle of elevation changes to 30° . If the jet plane is flying at a constant height of $1500\sqrt{3}$ m, find the speed of the jet plane.

Also Visit

cbsemathspapers.com

CBSE Mathematics Sample Papers, Mock Tests, Interactive Tests, Syllabus etc.

And

cbseresults2010.com

Previous Years CBSE Results – X, XII & AIEEE



The No. 1 CBSE Math Website In The World

In The Service of Student Community

4. A man on the top of a vertical tower observes a car moving at a uniform speed coming directly towards it. If it takes 12 minutes for the angle depression to change from 30° to 45° how soon after this, will the car reach the tower?
5. The angle of elevation of the top of a tower from a point A on the ground is 30° . On moving a distance of $20m$ towards the foot of the tower to a point B , the angle of elevation increases to 60° . Find the height of the tower and distance of the tower from the point A .
6. The angle of elevation of the top of a tower as observed from a point on the ground is ' α ' and on moving ' a ' meters towards the tower, the angle of elevation is ' β '. Prove that the height of the tower is
$$\frac{a \tan \alpha \tan \beta}{\tan \beta - \tan \alpha}$$
.
7. From a building $60m$ high the angle of depression of the top and bottom of lamp-post are 30° and 60° respectively. Find the distance between lamp-post and building. Also find the difference of height between building and lamp-post.
8. An aeroplane, flying horizontally $1000m$ above the ground, is observed at an angle of elevation of 60° from a point on the ground. After a flight of 10 seconds, the angle of elevation at the point of observation changes to 30° . Find the speed of the plane in m/s.
9. A bird sitting on the top of a tree, which is $80m$ high. The angle of elevation of the bird, from a point on the ground is 45° . The bird flies away from the point of observation horizontally and remains at a constant height. After 2 seconds, the angle of elevation of the bird from the point of observation becomes 30° . Find the speed of flying of the bird.
10. As observed from the top of a light-house, $100m$ high above sea level, the angle of depression of a ship, sailing directly towards it, changes from 30° to 60° . Determine the distance travelled by the ship during the period of observation. (use $\sqrt{3} = 1.732$).
11. The angle of elevation of the top of a tower from two points P and Q at distances of a and b respectively from the base and in the same straight line with it, are complementary. Prove that the height of the tower is \sqrt{ab} .
12. A man standing on the deck of a ship, which is $10m$ 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 height of the hill.

Also Visit

cbse.biz

CBSE Mathematics Sample Papers, Mock Tests, Interactive Tests, Syllabus etc.

And

cbseresults2009.com

Latest on CBSE Results 2012 – X, XII, AIPMT & AIEEE. Sign up for news letter



The No. 1 CBSE Math Website In The World

In The Service of Student Community

13. From an aeroplane vertically above a straight horizontal plane, the angle of depression of two consecutive kilometer stones on the opposite sides of the aeroplane are found to be α and β . Show that the height of the aeroplane is $\frac{\tan \alpha \tan \beta}{\tan \alpha + \tan \beta}$.
14. The angle of elevation and depression of the top and bottom of a light-house from the top of a building, 60m high, are 30° and 60° respectively. Find (i) the difference between the heights of the light-house and the building. (ii) distance between the light-house and the building.
15. From the top of a building 15m high, the angle of elevation of the top of a tower is found to be 30° . From bottom of the same building, the angle of elevation of the top of the tower is found to be 45° . Determine the height of the tower and the distance between the tower and the building.
16. If the angle of elevation of a cloud from a point h meters above a lake is α and the angle of depression of its reflection in the lake be β , prove that the distance of the cloud from the point of observation is $\frac{2h \sec \alpha}{\tan \beta - \tan \alpha}$.
17. A statue 1.6m tall stands on the top of a pedestal. From a point on the ground, the angle of elevation of the top of the statue is 60° and from the same point the angle of elevation of the top of the pedestal is 45° . Find the height of the pedestal.
18. The angle of elevation of the top of a tower as observed from a point in a horizontal plane through the foot of the tower is 32° . When the observer moves towards the tower a distance of 100m, he finds the angle of elevation of the top to be 63° . Find the height of the tower and the distance of the first position from the tower. [Take $\tan 32^\circ = 0.6248$ and $\tan 63^\circ = 1.9626$].
19. On a horizontal plane there is a vertical tower with flag pole on the top of the tower. At a point 9m away from foot of the tower the angle of elevation of the top and bottom of the flag pole are 60° and 30° respectively. Find the height of the tower and the flag pole mounted on it.
20. An aeroplane when flying at a height of 4000m from the ground passes vertically above another aeroplane at an instant when the angles of the elevation of the two planes from the same point on the ground are 60° and 45° respectively. Find the vertical distance between the aeroplanes at that instant.
21. The angle of elevation of a cloud from a point 60m above a lake is 30° and the angle of depression of the reflection of cloud in the lake is 60° . Find the height of the cloud.
22. Two pillars of equal height and on either side of a road, which is 100m wide. The angle of elevation of the top of the pillars are 60° and 30° at a point on the road between the pillars. Find the position of the point between the pillars and the height of each pillar.

Prepared BY: **ABDURAHIMAN K**

AI-HIJAS INTERNATIONAL SCHOOL, JEDDAH(IGCSE). rahman2ark@gmail.com, 00966501079040.