



INDIAN SCHOOL NIZWA - WORKSHEET

MATHEMATICS CH:9-APPLICATION OF TRIGONOMETRY

Name: _____

Date: _____

Class: X Sec: ____

1.	A person standing at point P on the bank of a river observes that the angle of elevation of the top (T) of a tree (BT) standing on the opposite bank is 60° . When he moves 40 m away from the bank and reaches at the point Q, he finds the angle of elevation to be 30° . Find the height (BT) of the tree and the width (BP) of the river (Use $\sqrt{3} = 1.732$)
2.	If a tower 30 m high casts a shadow $10\sqrt{3}$ m long on the ground, then what is the angle of elevation of the sun?
3.	A student sitting in a classroom sees a picture on the black board at a height of 1.5 m from the horizontal level of sight. The angle of elevation of the picture is 30° . As the picture is not clear to him, he moves straight towards the black board and sees the picture at an angle of elevation of 45° . Find the distance moved by the student.
4.	On a straight line passing through the foot of a tower, two points C and D are at distances of 4 m and 16 m from the foot respectively. If the angles of elevation from C and D of the top of the tower are complementary, then find the height of the tower.
5.	An aero plane is flying at a height of 3000 m above the ground. Flying at this height, the angles of depression from the aero plane of two points on both banks of a river in opposite directions are 45° and 60° respectively. Find the width of the river. [Use $\sqrt{3}=1.732$]
6.	At the foot of a mountain, the angle of elevation of its summit is 45° . After ascending 2 km towards the mountain up an incline of 30° , the elevation becomes 60° . Find the height of the mountain.
7.	An Electric pole is 10m high. A steel wire tied to the top of the pole is affixed at a point on the ground to keep the pole upright. If the wire makes an angle 45° with the horizontal through the foot of the pole, find the length of the wire.
8.	A ladder rests against a wall at an angle α to the horizontal. When its foot is pulled away from the wall through a distance 'a', it slides a distance b down the wall and makes an angle β with the horizontal.. Show that $\frac{a}{b} = \frac{\cos \alpha - \cos \beta}{\sin \alpha - \sin \beta}$
9.	From an aeroplane 1500 meter above the sea level two ships are marked sailing towards it in the same direction. The angles of depression of the ships observed from aeroplane are 60° and 30° respectively. What is the distance between the two ships? (use $\sqrt{3}=1.732$)
10.	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 is β . Prove that the height of the cloud is $\frac{h(\tan \alpha + \tan \beta)}{(\tan \beta - \tan \alpha)}$
11.	A tower 60 m high. Its shadow is y metres shorter when the sun's altitude is 45° than when it is 30° . Find y.
12.	From a window (60 meters high above the ground) of a house in street, the angles of elevation and depression of the top and the foot of another house on opposite side of street are 60° and 45° respectively. Show that the height of the opposite house is $60(1 + \sqrt{3})$ metres



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13.	From the top of a lighthouse of height 200 feet the lighthouse keeper observes a Yacht and a Barge along the same line of sight. The angles of depression for the Yacht and the Barge are 45° and 30° respectively. For safety purposes the two sea vessels should be atleast 300 feet apart. If they are less than 300 feet, the keeper has to sound the alarm. Does the keeper have to sound the alarm?
14.	At a point 10 m above the lake water, the angle of elevation of a cloud is 30° . The angle of depression of the reflection of the cloud in the lake is 60° . Find the height of cloud above the lake
15.	The angle of elevation of a stationary cloud from a point 25 m above a lake is 30° and the angle of depression of its reflection in the lake is 60° . What is the height of the cloud above that lake-level?