



MATHEMATICS CLASS X (SA-2)

HEIGHTS AND DISTANCE

Q.1	The shadow of a flagstaff is three times as long as the shadow of the flagstaff when the sun rays meet the ground at an angle of 60° . Find the angle between the sun rays and the ground at the time of longer shadow.
Q.2	The string of a kite is 100 metres long and it makes an angle of 60° with the horizontal. Find the height of the kite, assuming that there is no slack in the string.
Q.3	A tree 12m high, is broken by the wind in such way that its top touches the ground and makes an angle 60° with the ground. At what height from the bottom the tree is broken by the wind?
Q.4	A tree is broken by the wind. The top struck the ground at an angle of 30° and at a distance of 30 metres from the root. Find the whole height of the tree.
Q.5	A tower stands vertically on the ground. From a point on the ground, 20 m away from the foot of the tower, the angle of elevation of the top of the tower is 60° . What is the height of tower?
Q.6	The angle of elevation of a ladder leaning against a wall is 60° and the foot of the ladder is 9.5 m away from the wall. Find the length of the ladder.
Q.7	A ladder is placed along a wall of a house such that its upper end is touching the top of the wall. The foot of the ladder is 2m away from the wall and the ladder is making an angle of 60° with the level of the ground. Determine the height of the wall.
Q.8	An electric pole is 10m high. A steel wire tied to top of the pole is affixed at a point on the ground to keep the pole up right. If the wire makes an angle of 45° with the horizontal through the foot of the pole, find the length of the wire.
Q.9	A kite is flying at a height of 75 metres from the ground level, attached to a string inclined at 60° to the horizontal. Find the length of the string to the nearest metre.
Q.10	The length of a string between a kite and a point on the ground is 90 metres. If the string makes an angle θ with the ground level such that $\tan \theta = 15/8$, how high is the kite? Assume that there is no slack in the string.
Q.11	Find the angle of elevation of top of a tower $100\sqrt{3}$ m long, from a point at a distance of 100m , from the foot of the tower in a horizontal plane.

Q.12	A tower stands vertically on the ground. From a point on the ground which is 60 m away from the foot of the tower, the angle of elevation of the top of the tower is found to be 60° . Find the height of the tower.
Q.13	An electric pole is 10 m high. If its shadow is $10\sqrt{3}$ m in length. Find the angle of elevation of the sun at that time.
Q.14	A circus artist is climbing a rope 12 m long which is tightly stretched and tied from the top of a vertical pole to the ground. Find the height of the pole if the angle made by the rope with the ground is 30° .
Q.15	A ladder 15 m long just reaches the top of a vertical wall. If the ladder makes an angle of 60° with the wall, find the height of the wall.
Q.16	From the top of a 10 m tall tower the angle of depression of a point on a ground was found to be 60° . How far is the point from the base of the tower ?
Q.17	A kite is flying at a height of 90 m above the ground. The string attached to the kite is temporarily tied to a point on the ground. The inclination of the string with the ground is 60° . Find the length of the string assuming that there is no slack in the string.
Q.18	From a point on the ground 120 m away from the base of a pole, the elevation of the top of a pole was found to be 30° . Find the vertical height of the pole. [use $\sqrt{3} = 1.732$]
Q.19	Find the elevation of the sun at the moment when the length of the shadow of a vertical tower is just equal to the height of the tower.
Q.20	A tower stands vertically on the ground. From a point on the ground which is 15 m away from the foot of the tower, the angle of elevation of the top of the tower is found to be 60° . Find the height of the tower.
Q.21	Find the height of a mountain if the elevation of its top at an unknown distance from the base is 60° and at a distance 10 km further off from the mountain, along the same line, the angle of elevation is 30° .
Q.22	The angle of elevation of the top of a tower at a point on the ground is 45° . After going 40 m towards the foot of the tower, the angle of elevation of the top of tower changes to 60° . Find the height of the tower. (Use $\sqrt{3} = 1.73$)
Q.23	The shadow of a vertical tower on level ground increases by 16 m when the altitude of the sun changes from angles of elevation 60° to 45° . Find the height of the tower, correct to one place of decimal. (Take $\sqrt{3} = 1.73$)

Q.24	A person standing on the bank of a river observes that the angle of elevation of the top of the tree standing on the opposite bank is 60° . When he moves 30 m away from the bank, he finds the angle of elevation to be 30° . Find the height of the tree and the width of the river.
Q.25	The shadow of a tower standing on a level ground is found to be 40 m longer when the sun's altitude is 30° than when it is 60° . Find the height of the tower.
Q.26	As observed from the top of light house, 100 m 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 ($\sqrt{3}=1.732$)
Q.27	The length of the shadow of a tower standing on level plane is found to be 2x metres longer when the sun's altitude is 30° than when it was 45° . Prove that the height of tower is $x(\sqrt{3} + 1)$ meters.
Q.28	The shadow of a vertical tower on level ground increases by 10 metres, when the altitude of the sun changes from angle of elevation 45° to 30° . Find the height of the tower, correct to one place of decimal. (Take $\sqrt{3} = 1.73$)
Q.29	A straight highway leads to the foot of a tower of height 50m. From the top of the tower, the angles of depression of two cars standing on the highway are 30° and 60° respectively. What is the distance between the two cars and how far is each car from the tower
Q.30	The angle of elevation of a tower at a point is 45° . After going 40m towards the foot of the tower, the angle of elevation of the tower becomes 60° . Find the height of the tower.
Q.31	As observed from the top of a 150 m tall light house, the angles of depression of two ship approaching it are 30° and 45° . If one ship is directly behind the other, find the distance between the two ships.
Q.32	A person observed the angle of elevation of the top of a tower as 30° . He walked 50m towards the foot of the tower along level ground and found the angle of elevation of the top of the tower as 60° . Find the height of the tower.
Q.33	An aeroplane at an altitude of 200 m observes the angles of depression of two opposite points on two banks of the river to be 45° and 60° . Find, in metres, the width of the river. (use $\sqrt{3} = 1.732$)

Q.34	Two men on either side of a cliff, 60 m high, observe the angles of elevation of the top of the cliff to be 45° and 60° respectively. Find the distance between two men.
Q.35	From an aero plane vertically above a straight horizontal road, the angle of depression of two consecutive kilometer stone on opposite side of aero plane are observed to be α and β . Show that the height of aero plane above the road is $\frac{\tan \alpha \tan \beta}{\tan \alpha + \tan \beta}$ kilometer.
Q.36	From the top a light house, the angles of depression of two ships of the opposite sides of it are observed to be α and β . If the height of the light house be h meters and the line joining the ships passes through the foot of the light house. Show that the distance between the ships is $\frac{h(\tan \alpha + \tan \beta)}{\tan \alpha \tan \beta}$ meters.
Q.37	From an aeroplane vertically above a straight horizontal road, the angles of depression of two consecutive kilometre stones on opposite sides of the aeroplane are observed to be 60° and 30° show that height (in metres) of aeroplane above the Road is $\frac{\sqrt{3}}{4}$ km
Q.38	Two men on either of the cliff 80m high observe the angles of elevation of the top of the cliff to be 30° and 60° respectively. Find the distance between the two men.
Q.39	Two men standing on either side of a tower 60m high observe the angle of elevation of the top of the tower to be 45° and 60° respectively. Find the distance between the two men.
Q.40	The shadow of a flagstaff is three times as long as the shadow of the flagstaff when the sun rays meet the ground at an angle of 60° . Find the angle between the sun rays and the ground at the time of longer shadow.
Q.41	The angle of elevation of the top of a tower at a point on the level ground is 30° . After walking a distance of 100 m towards the foot of the tower along the horizontal line through the foot of the tower on the same level ground, the angle of elevation of the top of the tower is 60° . Find the height of the tower.
Q.42	A person standing on the bank of a river observes that the angle of elevation of the top of a tree standing on the opposite bank is 60° . When he moves 40m away from the bank, he finds the angle of elevation to be 30° . Find the height of

	the tree and the width of the river.
Q.43	At a point on level ground, the angle of elevation of a vertical tower is found to be such that its tangent is $\frac{5}{12}$. On walking 192 metres towards the tower, the tangent of the angle of elevation is $\frac{3}{4}$. Find the height of the tower.
Q.44	A man on a cliff observes a boat at an angle of depression of 30° which is approaching the shore to the point immediately beneath the observer with a uniform speed. Six minutes later, the angle of depression of the boat is found to be 60° . Find the time taken by the boat to reach the shore.
Q.45	From the top of a light house the angle of depression of a ship sailing towards it was found to be 30° . After 10 seconds the angle of depression changes to 60° . Assuming that the ship is sailing at uniform speed, find how much time it will take to reach the light house.
Q.46	A straight highway leads to foot of a tower. A man standing at the top of the tower observes a car at an angle of depression of 30° , which is approaching the foot of the tower with a uniform speed. Six seconds later the angle of depression of the car is found to be 60° . Find the time taken by the car to reach the foot of the tower from this point.
Q.47	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 of depression to change from 30° to 45° how soon after this, will the car reach the tower?
Q.48	A tree breaks due to storm and the broken part bends so that the top of the tree touches the ground making an angle of 30° with it. The distance between the foot of the tree to the point where the top touches the ground is 8 m. Find the height of the tree.
Q.49	A tree breaks due to the storm and the broken part bends so that the top of the tree touches the ground making an angle of 45° with the ground. The distance from the foot of the tree to the point where the top touches the ground is 8 m. Find the height of the tree.
Q.50	The upper part of tree is broken over by the wind makes an angle of 30° with the ground and the horizontal distance from the root of tree to the point where the top of tree meets the ground is 25 m. Find the height of tree before it was broken.

Q.51	A tree breaks due to storm and the broken part bends so that the top of the tree touches the ground making an angle 30° with it. The distance between the foot of the tree to the point where the top touches the ground is 8 m. Find the height of the tree.
Q.52	A vertical tower is surrounded by a flagstaff of height h meters. At a point on the ground, the angles of elevation of the bottom and top of the flagstaff are α & β respectively. Prove that the height of the tower is $\frac{h \tan \alpha}{\tan \beta - \tan \alpha}$ meters.
Q.53	A vertical tower stands on a horizontal plane and is surmounted by a flag-staff of height 7m. From a point on the plane, the angle of elevation of the bottom of the flag staff is 30° and that of the top of the flag-staff is 45° . Find the height of the tower.
Q.54	From a point on the ground the angle of elevation of the bottom and the top of a flagstaff situated on the top of a 120 m tall house, was found to be 30° and 45° respectively. Find the height of the flagstaff.
Q.55	A vertical tower stands on a horizontal plane and is surmounted by a vertical flag staff of height 'h'. At a point on the plane, the angles of elevation of the bottom and the top of the flag staff are 45° and 60° respectively. Find the height of the tower.
Q.56	A vertical tower stands on a horizontal plane and is surmounted by a vertical flagstaff. At a point on the plane 70 meters away from the tower, an observer notices that the angles of elevation of the top and the bottom of the flagstaff are respectively 60° and 45° . Find the height of the flagstaff and that of the tower.
Q.57	A vertical tower stands on a horizontal plane and is surmounted by vertical flag staff of height 5 meters. At a point on the plane, the angle of elevation of the bottom and the top of the flag staff are respectively 30° and 60° find the height of tower.
Q.58	A tree breaks due to storm and the broken part bends, so that the top of the tree touches the ground making an angle of 30° with the ground. The distance between the foot of the tree to the point where the top touches the ground is 8 m. Find the height of the tree.
Q.59	A tower stands vertically on the ground. From a point on the ground which is

	20 m away from the foot of the tower, the angle of elevation of the top of the tower is found to be 60° . Find the height of the tower.
Q.60	The angle of elevation of an aeroplane from a point A on the ground is 60° . After a flight of 30 seconds, the angle of elevation changes to 30° . If the plane is flying at a constant height of $3600\sqrt{3}$ mt., find the speed of the plane in km/hour.
Q.61	An aircraft is flying at a constant height with a speed of 360 km/hour. From a point on the ground, the angle of elevation at an instant was observed to be 45° . After 20 seconds, the angle of elevation was observed to be 30° . Determine the height at which the aircraft is flying. (use $\sqrt{3} = 1.732$)
Q.62	An aeroplane flying horizontally 1 km above the ground is observed at an elevation of 60° . After 10 seconds, its elevation is observed to be 30° . Find the speed of the aeroplane in km/hr.
Q.63	A tree breaks due to the storm and the broken part bends so that the top of the tree touches the ground making an angle of 30° with the ground. The distance from the foot of the tree to the point where the top touches the ground is 10 meters. Find the height of the tree.
Q.64	An aero plane is flying horizontally $1500\sqrt{3}$ m above the ground is observed at an angle 60° from a point on the ground. After 15 sec. of flight the angle of elevation is observed to be 30° . Find the speed of the aero plane in km / h .
Q.65	An aeroplane flying horizontally at a height of .1.5 km above the ground is observed at a certain point on earth to subtend an angle of 60° . After 15 seconds, its angle of elevation at the same point is observed to be 30° . Calculate the speed of the aeroplane in km/hr.
Q.66	The angle of elevation of a jet fighter from a point A on the ground is 60° . After a flight of 15seconds, the angle of elevation changes to 30° . If the jet is flying at a speed of 720 km/hour, find the constant height at which the jet is flying.
Q.67	An aero plane flying horizontally at a height of 2500 m above the ground is observed at an elevation of 60° . If after 15 seconds, the angle of elevation is observed to be 30° , find the speed of the aero plane in km per hr.
Q.68	An aero plane at an altitude of 1200 meters finds that two ships are sailing towards it in the same direction. The angles of depression of the ships as

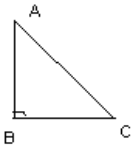
	observed from the aero plane are 60° and 30° respectively. Find the distance between the two ships.
Q.69	The angle of elevation of an aero plane from a point on the ground is 45° . After a flight of 15 sec, the elevation changes to 30° . If the aero plane is flying at a height of 3000 metres, find the speed of the aero plane.
Q.70	If the angle of elevation of cloud from a point h metres above a lake is α and the angle of depression of its reflection in the lake is β , prove that the distance of the cloud from the point of observation is $\frac{2h \sec \alpha}{\tan \beta - \tan \alpha}$.
Q.71	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 $\frac{h(\tan \beta + \tan \alpha)}{\tan \beta - \tan \alpha}$.
Q.72	The angle of elevation of a cloud from a point 60m above the lake is 30° and the angle of depression of the reflection of the cloud in the lake is 60° . Find the height of the cloud.
Q.73	A man standing on the deck of the ship which is 10 m above the sea level, observes the angle of elevation of the top of the cloud as 30° and angle of depression of its reflection in the sea was found to be 60° . Find the height of the cloud and also the distance of the cloud from the ship.
Q.74	The angles 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 building.(ii) Distance between the light house and the building.
Q.75	From a window (h metres high above the ground) of a house in a street, the angle of elevation and depression. of the top and the foot of another house on the opposite side of the street are θ and Φ respectively. Show that the height of the opposite house is $h(1 + \tan \theta \cot \Phi)$.
Q.76	The height of a house subtends a right angle at the opposite window. The angle of elevation of the window from the base of the house 60° . If the width of the road is 6 m, find the height of the house.

Q.77	From a window 15 meters 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 23.66 meters. ($\text{take } \sqrt{3} = 1.732$)
Q.78	A man is standing on the deck of a ship, which is 8 m above water level. He observes the angle of elevations of the top of a hill as 60° and the angle of depression of the base of the hill as 30° . Calculate the distance of the hill from the ship and the height of the hill.
Q.79	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 angles of depression of the top and the foot of the other pole are 30° and 60° respectively. Find the width of the river and the height of the other pole.
Q.80	From the top of a building 100m high, the angles of depression of the top and bottom of a tower are observed to be 45° and 60° respectively. Find the height of the tower. Also find the distance between the foot of the building and the bottom of the tower.
Q.81	From the top and foot of a tower 40 m high, the angle of elevation of the top of a lighthouse is found to be 30° and 60° respectively. Find the height of the lighthouse. Also find the distance of the top of the lighthouse from the foot of the tower.
Q.82	Two ships are sailing in the sea on the either side of the light house, the angle of depression of two ships as observed from the top of the light house are 60° and 45° respectively. If the distance between the ships is $200 \left(\frac{\sqrt{3} + 1}{\sqrt{3}} \right)$. Find the height of the light house.
Q.83	The angle of elevation of the top Q of a vertical tower PQ from a point X on the ground is 60° . At a point Y, 40 m vertically above X, the angle of elevation is 45° . Find the height of the tower PQ and the distance XQ.
Q.84	From the top of a building 60 m high the angles of depression of the top and the bottom of a tower are observed to be 30° and 60° respectively. Find the height of the tower.
Q.85	From the top of a hill the angles of depression of two consecutive kilometer stones due east are found to be 30° and 60° . Find the height of the hill.

Q.86	The angles of depression of the top and bottom of an 8 m tall building from the top of a multi storeyed building are 30° and 45° respectively. Find the height of the multi-storeyed building and the distance between the two buildings.
Q.87	The angle of elevation of the top of a tower from two points P and Q at distance of 4 m and 9 m respectively from the base of the tower and in the same straight line with it are 60° and 30° . Prove that the height of the tower is 6 m.
Q.88	From the top of a tower 50 m high the angles of depression of the top and bottom of a pole are observed to be 45° and 60° respectively. Find the height of the pole, if the pole and tower stand on the same plane.
Q.89	The angle of elevation of the top of a building from the foot of tower is 30° and the angle of elevation of the top of the tower from the foot of the building is 60° . If the tower is 50 m high, find the height of the building.
Q.90	The angle of elevation of the top of a building from the foot of a tower is 30° and the angle of elevation of the top of the tower from the foot of the building is 60° . If the tower is 50 m high. Find the height of the building.
Q.91	A man standing on the top of a multi-storey building, which is 30 m high, observes the angle of elevation of the top of a tower as 60° and the angle of depression of the base of the tower as 30° . Find the horizontal distance between the building and the tower. Also find the height of the tower.
Q.92	An aeroplane, when 3000 m high, passes vertically above another plane at an instant when the angles of elevation of the two aeroplanes from the same point on the ground are 60° and 45° respectively. Find the vertical distance between the two aeroplanes.
Q.93	A boy is standing on the ground and flying a kite with 100 m of string at an elevation of 30° . Another boy is standing on the roof of a 10 m high building and is flying his kite at an elevation of 45° . Both the boys are on opposite sides of both the kites. Find the length of the string that the second boy must have so that the two kites meet.
Q.94	An aero plane when flying at a height of 4000 m from the ground passes vertically above another aero plane 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 aero planes at that instant.
Q.95	A boy is standing on the ground and flying a kite with 150 m of string at an elevation of 30° . Another boy is standing on the roof of a 25 m high building

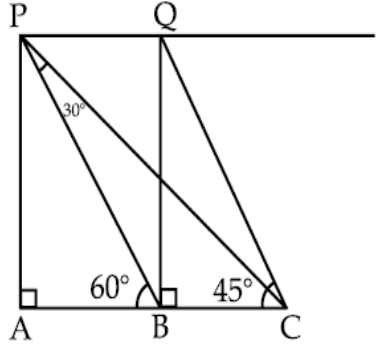
	and is flying his kite at an elevation of 45° . Both the boys are on opposite sides of both the kites. Find the length of the string that the second boy must have so that the two kites meet.
Q.96	A balloon moving in a straight line, passes above two points A and B on the ground. When it is vertically above point A, its angle of elevation at point B is found to be 60° . When it is vertically above point B, its angle of elevation as observed from A is found to be 45° . Points A and B are 1000 m apart. Find the distance of the point from A, where it touches the ground.
Q.97	A ladder rests against a wall at the 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 $\frac{a}{b} = \frac{\cos \beta - \cos \alpha}{\sin \alpha - \sin \beta}$.
Q.98	There are two poles, one each on either bank of a river. just opposite to each other. One pole is 60m high. From the top of this pole, the angles of depression of the top and the foot of the other pole are 30° and 60° respectively. Find the width of the river and the height of the other pole.
Q.99	A round balloon of radius 'r' subtends an angle θ at the eye of an observer while the angle of elevation of its centre is ϕ . Prove that the height of the centre of the balloon is $r \sin \phi \operatorname{cosec} \frac{\theta}{2}$.
Q.100	The angle of elevation of a cliff from a fixed point is θ . After going up a distance of k metres towards the top of the cliff at an angle of ϕ , it is found that the angle of elevation is α . Show that the height of the cliff is $\frac{k(\cos \phi - \sin \phi \cot \alpha)}{\cot \theta - \cot \alpha}$ metres
Q.101	At the foot of a mountain the elevation of its summit is 45° , after ascending 1000 m towards the mountain up a slope of 30° inclination, the elevation is found to be 60° . Find the height of the mountain.
Q.102	From the top of a building 15m high, the angle of elevation of the top of a tower is found to be 30° . From the bottom of the same building, the angle of elevation of the top of the tower is found to be 60° . Determine the height of the tower and the distance between the tower and building.
Q.103	From the top of a building 12m high, the angle of elevation of the top of a tower is found to be 30° . From the bottom of the same building, the angle of

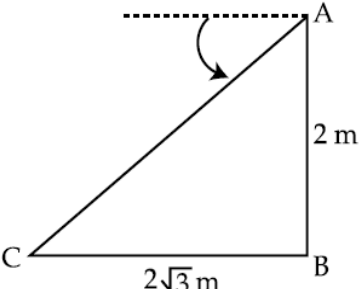
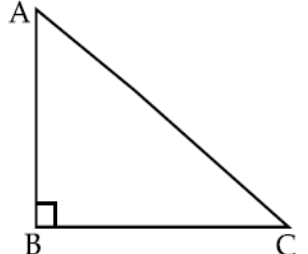
	elevation of the top of the tower is found to be 60° . Determine the height of the tower and the distance between the tower and building.
Q.104	A person standing on the bank of a river observes that the angle of elevation of the top of a tree standing on the opposite bank is 60° . When he moves 40 metres away from the bank, he finds the angle of elevation to be 30° . Find the height of the tree and the width of the river.
Q.105	An aeroplane at an altitude of 1200 metres finds that two ships are sailing towards it in the same direction. The angles of depression of the ships as observed from the aeroplane are 60° and 30° respectively. Find the distance between the two ships.
Q.106	An aeroplane at an altitude of 200 metres observes the angles of depression of opposite points on the two banks of a river to be 45° and 60° . Find the width of the river.
Q.107	As observed from the top of a light house, 100m above sea level, the angle of depression of a ship, sailing directly towards it, changes from 30° to 45° . Determine the distance travelled by the ship during the period of observation.
Q.108	The angle of elevation of the top Q of a vertical tower PQ from a point X on the ground is 60° . At a point Y, 40 m vertically above X, the angle of elevation is 45° . Find the height of the tower PQ and the distance XQ.
Q.109	From the top of a building 60 m high the angles of depression of the top and the bottom of a tower are observed to be 30° and 60° . Find the height of the tower.
Q.110	There is a small island in the middle of a 100 m wide river and a tall tree stands on the island. P and Q are points directly opposite to each other on two banks, and in line with the tree. If the angles of elevation of the top of the tree from P and Q are respectively 30° and 45° , find the height of the tree.
Q.111	The horizontal distance between two towers is 140m. The angle of elevation of the top of the first tower when seen from the top of the second tower is 30° . If the height of the second tower is 60m, find the height of the first tower.
Q.112	The angle of elevation of top of a tower from two point on the level ground, at distances a and b units ($a > b$) from the base of the tower and in the same straight line with it, are complementary. prove that the height of the tower is \sqrt{ab} unites.
Q.113	The angles of elevation of the top of a tower, as seen from two points A and B situated in the same line and at distances p and q respectively, from the foot of the tower, are 30° and 60° respectively. Prove that the height of the tower is \sqrt{pq}

Q.114	Two pillars of equal heights are on either side of a road, which is 100 m wide. The angles 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 on the road and the height of the pillars.
Q.115	A parachutist is descending vertically and makes angles of elevation of 45° and 60° at two observing points to 100m apart from each other on the left side of himself. Find the maximum height from which he falls and the distance of the point where he falls on the ground from the just observation point.
Q.116	On the same side of tower, two objects are located. When observed from the top of the tower, their angles of depression are 45° and 60° . If the height of the tower is 150m, find the distance between the objects.
(M.C.Q.) HEIGHTS AND DISTANCE	
Q.1	An electrician has to repair an electric fault on a pole of height 6 m. he needs to reach a point 2.54 m below the top of the pole. What should be the length of ladder that he should use which when inclined at an angle of 60° to the horizontal would enable him to reach the desired point? (take $\sqrt{3} = 1.73$) (a) 3.46 m (b) 4 m (c) 5.19 m (d) 7.5 m
Q.2	If $AB = 4\text{m}$ and $AC = 8\text{m}$, then angle of observation of A as observed from C is  (a) 60° (b) 30° (c) 45° (d) can not be determined
Q.3	From the top of a lighthouse 60 metres high with its base at the sea level, the angle of depression of a boat is 30° . The distance of the boat from the foot of the lighthouse is (a) $10\sqrt{3}$ m (b) $15\sqrt{3}$ m (c) $20\sqrt{3}$ m (d) none of these
Q.4	An aero plane is flying horizontally $1500\sqrt{3}$ m above the ground is observed at an angle 60° from a point on the ground. After 15 sec. of flight the angle of elevation is observed to be 30° . Find the speed of the aero plane in km / h . (a) 720 km/ h (b) 360 km / h (c) 7200 km / h (d) none of these
Q.5	If the angles of elevation of the top of a tower from two points at distances a and b from the base and in the same straight line with it are complementary, then the height of the tower is

	(a) \sqrt{ab} (b) ab (c) $\frac{a}{b}$ (d) $\sqrt{\frac{a}{b}}$
Q.6	A tree breaks due to storm and broken part bends so that the top of the tree touches the ground making an angle of 30° with ground. If the distance between the foot of the tree to the point where the top touches the ground is 8m, then the height of the tree is (a) $\frac{8}{3}$ (b) $\frac{3}{8}$ (c) $\frac{8}{\sqrt{3}}$ (d) $8\sqrt{3}$
Q.7	Find the angle of elevation of the top of a tower $100\sqrt{3}$ m long, from a point at a distance of 100m , from the foot of the tower in a horizontal plane. (a) 45° (b) 30° (c) 60° (d) NONE
Q.8	From the top of a lighthouse 60 metres high with its base at the sea level, the angle of depression of a boat is 30° . The distance of the boat from the foot of the lighthouse is (a) $10\sqrt{3}$ m (b) $15\sqrt{3}$ m (c) $20\sqrt{3}$ m (d) none of these
Q.9	The angle of elevation of the top of a tower from a point on the ground which is 30m away from the foot of the tower is 30° . Find the height of the tower. (A) 17 (B) 17.32 (C) 17.23 (D) NONE
Q.10	If a pole of height 6 m casts a shadow $2\sqrt{3}$ m long on the ground, then the sun's elevation is. (A) 30° (B) 60° (C) 45° (D) 90°
Q.11	The angle of elevation of the top of a tower from a point on the ground is 45° . If the observer is 42 m away from the foot of the tower, the height of the tower is. (A) 63 m (B) 21 m (C) 84 m (D) 42 m
Q.12	The angle between two tangents drawn from an external point to a circle is 110° . The angle subtended at the centre by the segments joining the points of contact to the centre of circle is : (A) 70° (B) 110° (C) 90° (D) 55°
Q.13	The angle of depression from the top of a tower 12 m high, at a point on the ground is 30° . The distance of the point from the top of the tower is : (A) 12 m (B) 6 m (C) $12\sqrt{3}$ m (D) 24 m

Q.14	A tree casts a shadow 4 m long on the ground, when the angle of elevation of the sun is 45° . The height of the tree (in metres) is : (A) 3 (B) 4 (C) 4.5 (D) 5.2
Q.15	If the height and length of the shadow of a man are the same, then the angle of elevation of the sun is (A) 30° (B) 60° (C) 45° (D) 15°
Q.16	If sun's elevation is 60° then a pole of height 6 m will cast a shadow of length. (A) $6\sqrt{3}$ m (B) $\sqrt{3}$ m (C) $2\sqrt{3}$ m (D) $3\sqrt{2}$ m
Q.17	The ratio of the length of a rod and its shadow is $1 : \sqrt{3}$, then the angle of elevation of the sun is : (A) 30° (B) 45° (C) 60° (D) 90°
Q.18	The length of the shadow of a 20 m tall pole, on the ground when the sun's elevation is 45° is : (A) 20 m (B) $20\sqrt{2}$ m (C) 50 m (D) $40\sqrt{2}$ m
Q.19	The measure of angle of elevation of top of tower $75\sqrt{3}$ m high from a point at a distance of 75 m from foot of tower in a horizontal plane is : (A) 30° (B) 60° (C) 90° (D) 45°
Q.20	The length of the string of a kite flying at 100 mts above the ground with the elevation of 60° is : (A) 100 m (B) $100\sqrt{2}$ m (C) $\frac{200}{\sqrt{3}}$ m (D) 200 m
Q.21	A pole 10 m high cast a shadow 10 m long on the ground, then the sun's elevation is (A) 60° (B) 45° (C) 30° (D) 90°
Q.22	If the angle between two radii of a circle is 100° , the angle between the tangents at the ends of those radii is : (A) 50° (B) 60° (C) 80° (D) 90°
Q.23	If altitude of the sun is 60° , the height of a tower which casts a shadow of length 30 m is : (A) $30\sqrt{3}$ m (B) 15 m (C) $\frac{30}{\sqrt{3}}$ m (D) $15\sqrt{2}$ m

Q.24	From the figure, the angle of depression of point C from the point P is :  (A) 90° (B) 60° (C) 30° (D) 45°
Q.25	The length of the shadow of a tree 7 m high, when the sun's elevation is 45° , is : (A) 7 m (B) 3.5 m (C) 5 m (D) 14 m
Q.26	The angle of elevation of the sun, when the length of the shadow of a pole is equal to its height, is (A) 30° (B) 45° (C) 60° (D) 90°
Q.27	The angle of elevation of the top of a building 50 m high, from a point on the ground is 45° . The distance of the point from foot of the building is (A) 100 m (B) 50 m (C) 45 m (D) 60 m
Q.28	If the angle of elevation of top of a tower from a point at a distance of 100 m from its foot is 60° , then the height of the tower is : (A) $50\sqrt{3}$ m (B) $\frac{200}{\sqrt{3}}$ m (C) $\frac{100}{\sqrt{3}}$ m (D) $100\sqrt{3}$ m
Q.29	The tops of two poles of height 20 m and 14 m are connected by a wire. If the wire makes an angle of 30° with the horizontal, then the length of the wire is (A) 34 m (B) 12 m (C) 6 m (D) 17 m

<p>Q.30</p>	<p>The Fig. 5, shows the observation of point C from point A. The angle of depression from A is :</p>  <p style="text-align: center;">Fig. 5</p> <p>(A) 60° (B) 30° (C) 45° (D) 75°</p>
<p>Q.31</p>	<p>When the angle of elevation of sun is 30° the length of the shadow cast by 50 m high building is</p> <p>(A) $\frac{50}{\sqrt{3}}$ m (B) $50\sqrt{3}$ m (C) $25\sqrt{3}$ m (D) $100\sqrt{3}$ m</p>
<p>Q.32</p>	<p>If AB = 4 m and AC = 8 m, then angle of observation of A as observed from C is.</p>  <p>(A) 60° (B) 30° (C) 45° (D) cannot be determined</p>
<p>Q.33</p>	<p>If two tangents inclined at an angle of 60° are drawn to circle of radius 3 cm, the length of each tangent is equal to</p> <p>(A) $\frac{3\sqrt{3}}{2}$ cm (B) 6 cm (C) 3 cm (D) $3\sqrt{3}$ cm</p>
<p>Q.34</p>	<p>A ladder of 10 m length touches a wall at height of 5 m. The angle θ made by it with the horizontal is</p> <p>(A) 90° (B) 60° (C) 45° (D) 30°</p>

<p>Q.35</p>	<p>If the angle of depression of an object from a 75 m high tower is 30°, then the distance of the object from the base of tower is</p> <p>(A) $25\sqrt{3}$ m (B) $50\sqrt{3}$ m (C) $75\sqrt{3}$ m (D) 150 m</p>
<p>Q.36</p>	<p>Upper part of a vertical tree which is broken over by the winds just touches the ground and makes an angle of 30° with the ground. If the length of the broken part is 20 metres, then the remaining part of the trees is of length</p> <p>(A) 20 metres (B) $10\sqrt{3}$ metres (C) 10 metres (D) $10\sqrt{2}$ metres</p>
<p>Q.37</p>	<p>The angle of elevation of the top of a tower as observed from a point on the horizontal ground is 'x'. If we move a distance 'd' towards the foot of the tower, the angle of elevation increases to 'y', then the height of the tower is</p> <p>(A) $\frac{d \tan x \tan y}{\tan y - \tan x}$ (B) $d(\tan y + \tan x)$ (C) $d(\tan y - \tan x)$ (D) $\frac{d \tan x \tan y}{\tan y + \tan x}$</p>
<p>Q.38</p>	<p>The angle of elevation of the top of a tower, as seen from two points A & B situated in the same line and at distances 'p' and 'q' respectively from the foot of the tower, are complementary, then the height of the tower is</p> <p>(A) pq (B) $\frac{p}{q}$ (C) \sqrt{pq} (D) none of these</p>
<p>Q.39</p>	<p>The angle of elevation of the top of a tower at a distance of $\frac{50\sqrt{3}}{3}$ metres from the foot is 60°. Find the height of the tower</p> <p>(A) $50\sqrt{3}$ metres (B) $\frac{20}{\sqrt{3}}$ metres (C) -50 metres (D) 50 metres</p>
<p>Q.40</p>	<p>The Shadow of a tower, when the angle of elevation of the sun is 30°, is found to be 5 m longer than when it was 45°, then the height of tower in metre is</p> <p>(A) $\frac{5}{\sqrt{3}+1}$ (B) $\frac{5}{2}(\sqrt{3}-1)$ (C) $\frac{5}{2}(\sqrt{3}+1)$ (D) None of these.</p>
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