



# ST. LAWRENCE HIGH SCHOOL



## A Jesuit Christian minority Institution

Subject: Mathematics

Class- X

Date:18/05/2020

### Answer key of Worksheet-30

#### Chapter- Height and Distance

#### Topic- Overall concept of height and distance

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1. Choose the correct alternative. ( Red coloured and underlined options are the correct ones) 1x15=15
- a) The angle of depression of a stone from top of a tower is  $45^\circ$ . If the stone is 120 m away from the tower. Find height of the tower.  
i) 100 m ii) 120 m iii) 150 m iv) none of these
- b) Two pillars of equal heights are on the either side of a road which is 150 m wide. The angle of elevation of the top of the pillars are  $60^\circ$  and  $30^\circ$  respectively at a point on the road between the pillars. Find height of each pillar.  
i)  $75\sqrt{3} m$  ii)  $75\frac{\sqrt{3}}{2} m$  iii)  $75 m$  iv) none of these
- c) From a quay of a river which is 600 m wide, two boats start in two different directions to reach the opposite side of the river. The first boat moves making an angle of  $30^\circ$  with this bank and the second boat moves making an angle of  $90^\circ$  with direction of the first boat and reaches the other bank of the river. Find the distance between the boats when they reach the other bank.  
i)  $800\sqrt{3}m$  ii)  $600\sqrt{3} m$  iii)  $200\sqrt{3} m$  iv) none of these
- c) From a point on the roof of a house of 11 m height, it is observed that the angles of depression of the top and foot of a lamp post are  $30^\circ$  and  $60^\circ$  respectively. Find height of the lamp post.  
i)  $22/3 m$  ii)  $32/3 m$  iii)  $22 m$  iv) none of these

d) If the angle of elevation of a top of a monument from a five storied building with height 18 m is  $45^\circ$  and angle of depression of the foot of the monument is  $60^\circ$ . Find height of the monument. ( $\sqrt{3} = 1.732$ )

i) 30.79 m   ii) 27.39 m   **iii) 28.392 m**   iv) none of these

e) A high multi-storied building stand on the bank of a river. Now angle of elevation of the top of the building from any point on the opposite side of the river is  $45^\circ$  and at a distance of 14 m from the bank the angle of elevation of the top of the building is  $30^\circ$ . Find the height of the building. ( $\sqrt{3} = 1.732$ )

**i) 19.124 m**   ii) 25.4 m   iii) 20.14 m   iv) none of these

f) Samiran observes a light post just on the opposite bank of the canal of Haskhali pole from the roof of three storied-building of his house. If the angle of depression of the foot of the post from samiran's eye is  $30^\circ$  and height of the building is 10 m. Find width of the canal. ( $\sqrt{3}=1.732$ )

**i) 17.32 m**   ii) 32.17 m   iii) 20.32 m   iv) none of these

g) If the angle of elevation of the top of mobile tower from a distance of 10 m from its foot is  $60^\circ$ , then the height of the tower is

i) 10 m   **ii)  $10\sqrt{3} m$**    iii)  $10/\sqrt{3} m$    iv) 100 m

h) At what angle an observer observes a box lying on the ground from the roof of a three storied-building, so that the height of building is equal to the distance of the box from the building.

i)  $15^\circ$    ii)  $60^\circ$    **iii)  $45^\circ$**    iv)  $30^\circ$

i) Height of a tower is  $100\sqrt{3} m$ . The angle of elevation of a top of a tower from a point at a distance of 100 m of foot of tower is

**i)  $60^\circ$**    ii)  $30^\circ$    iii)  $45^\circ$    iv) none of these

j) If the angle of elevation of a kite is  $60^\circ$  and the length of thread is  $20\sqrt{3}m$ .

Find height of the kite above the ground.

i) 40 m   **ii) 30 m**   iii) 35 m   iv) none of these

k) AC is the hypotenuse with length of 100 m of a right angles triangle ABC and if  $AB=50\sqrt{3}m$ . Find angle C

i) 60° ii) 45° iii) 30° iv) none of these

l) A tree breaks due to storm and its top touches the ground in such a way that the distance from the top of the tree to the base of the tree and present height of the tree are equal. Find angle made by the top of the tree with the base?

i) 45° ii) 60° iii) 30° iv) none of these

m) In a right angled triangle ABC , angle B=90°, D is such a point on AB that  $AB:BC:BD=\sqrt{3}:1:1$ . Let us find value of angle ACD.

i) 30° ii) 15° iii) 20° iv) none of these

n) If the ratio between length of shadow of a tower and height of tower is  $\sqrt{3}:1$  , Find the angle of elevation of the sun.

i) 60° ii) 30° iii) 45° iv) none of these

o) When angle of elevation increases from 30° to 60° . Height of the tower is  $2\sqrt{3}m$ . Find the change in the length of the shadow.

i) decreased by 4 m ii) increased by 4 m iii) remained same. iv) none of these

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