



# ST. LAWRENCE HIGH SCHOOL



## A Jesuit Christian minority Institution

Subject: Mathematics

Class- X

Date:15/05/2020

### Answer key of Worksheet-28

### Chapter- Heights and Distance

### Topic- Concept of Heights and Distance

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1. Choose the correct alternative. (Red coloured and underlined options are the correct ones)  $1 \times 15 = 15$

a) A and B are standing on the ground 50 meters apart. The angles of elevation for these two to the top of a tree are  $60^\circ$  and  $30^\circ$ . What is the height of the tree?

- i)  $25\sqrt{3}$  m    ii)  $50\sqrt{3}$  m    iii)  $25/\sqrt{3}$  m    iv) none of these

b) Raj stands in a corner of his square farm. Angle of elevation of a scarecrow placed in diagonally opposite corner is  $60^\circ$ . He starts walking backward in a straight line and after 80 ft he realizes that angle of elevation of the scarecrow now is  $30^\circ$ . What is the area of the field?

- i) 400sqft    ii) 800 sqft    iii) 1000 sqft    iv) none of these

C) Angles of elevation of a pole are  $60^\circ$  and  $45^\circ$  from points at distances  $m$  and  $n$  on the ground respectively. Here  $m$ , when measured from base of the pole is less than  $n$ . What is the height of the pole?

- i)  $3mn$  unit    ii)  $\sqrt{3}mn$  unit    iii)  $\sqrt{mn\sqrt{3}}$  unit    iv) none of these    30

d) Ramesh and Suresh's mud forts have heights 8 cm and 15 cm. They are 24 cm apart. How far are fort's tops from each other?

- i) 25 cm    ii) 30 cm    iii) 40 cm    iv) none of these

e) Rohit while seeing a bird on a top of a tree made  $45^\circ$  angle of elevation. He walks 240 ft towards the tree to observe the bird closely, thus making  $60^\circ$  angle of elevation. How far was Rohit from the tree initially?

- i)  $240\sqrt{3}$  ft    ii)  $240\sqrt{3}/\sqrt{3}$ ft    iii)  $\frac{240\sqrt{3}}{(\sqrt{3}-1)}$  ft    iv) none of these

f) tree top's angle of elevation is  $30^\circ$  from a point on the ground, 300 m away the tree. When the tree grew up its angle of elevation became  $60^\circ$  from the same point . How much did the tree grow?

- i)  $200\sqrt{3}$  m    ii)  $200/\sqrt{3}$  m    iii)  $600\sqrt{3}$  m    iv) none of these

g) Due to sun a 6 ft man cast a shadow of 4 ft, whereas a pole cast a shadow of 36 ft. Find height of the pole.

- i) 63ft    ii) 54 ft    iii) 72 ft    iv) none of these

h) Shadow of a man is  $1/\sqrt{3}$  times the height of the man. What will be the sun's angle of elevation?

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

i) A tree breaks and falls to the ground such that its upper part is still partially attached to the stem. At what height did it break , if the original height of the tree was 24 ft and it makes an angle of  $30^\circ$  with the ground.

- i) 12 ft    ii) 8 ft    iii) 10 ft    iv) none of these

j) There is a tower of 10 m between two parallel roads. The angle of depression of the roads from the top of the tower are  $30^\circ$  and  $45^\circ$ . How far are the roads from each other.

- i)  $10+10\sqrt{3}$  m    ii)  $10\sqrt{3}$  m    iii) 20 m    iv) none of these

k) Mohan looks at a tree top and the angle made is  $45^\circ$ . He moves 10 cm back and angle made  $30^\circ$  . How high the tree top from the ground?

- i)  $10(\sqrt{3}-1)$  cm    ii)  $10/(\sqrt{3}-1)$  cm    iii)  $10\sqrt{3}$  cm    iv) none of these

l) when height of a tree is equal to the length of its shadow , What is the angle of elevation of the sun?

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

m) A poster is on the top of a building . Rajesh is standing on the ground at a distance of 50 m from the building. The angle of elevation to the top of the poster and the bottom are  $45^\circ$  and  $30^\circ$  respectively. What is the height of the poster?

- i)  $\frac{50(\sqrt{3}-1)}{\sqrt{3}}$  m    ii)  $50/\sqrt{3}-1$  m    iii)  $50(\sqrt{3}-1)$  m    iv) none of these

n) Guddi was standing on a road near a mall. She was 1000 m away from the mall and able to see the top of the mall from the road in such a way that the top of a tree which is in between her and mall was exactly in the line of sight with the top of the mall. The tree height is 10 m and it is 30 m away from Guddi. How tall the mall is?

i) 420 m    ii) 450 m    iii) 470 m    iv) none of these

o) Two houses are in front of each other. Both have chimneys on their top. The line joining the chimneys makes an angle of  $45^\circ$  with the ground. How far are the houses from each other if one house is 10 m high and the other one is 25 m high.

i) 15 m    ii) 30 m    iii) 25 m    iv) none of these

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