MATHS

BOOKS - BEYOND PUBLICATION

APPLICATIONS OF TRIGNOMETRY

Example

1. The top of a clock tower is observed at angle of elevation of α° and the foot of the tower is

at the distance of d meters from the observer.
Draw the diagram for this data.

2. Rinky observes a flower on the ground from the balcony of the first floor of a building at an angle of depression $\beta°$. The height of the first floor of the building is x meters. Draw the diagram for this data.

3. A large balloon has been tied with a rope and it is floating in the air. A person has observed the balloon from the top of a building at angle of elevation of θ_1 and foot of the rope at an angle of depression of θ_2. The height of the building is h feet. Draw the diagram for this data.

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4. A boy observed the top of an electric pole at an angle of elevation of $60°$ when the

observation point is 8 meters away from the foot of the pole. Find the height of the pole.

5. Rajender observes a person standing on the ground from a helicopter at an angle of depression $45°$. If the helicopter flies at a height of 500 meters from the ground, what is the distance of the person from Rajender?

6. Draw diagram for the following situtions :

A person is flying a kite at an angle of elevation α and the length of thread from his hand to kite is 'l'.

7. Draw diagram for the following situtions :

A person observes two banks of a river at angles of depression θ_1 and $\theta_2 (\theta_1 < \theta_2)$ from the top of a tree of height 'h' which is at a side of the river. The width of the river is 'd'.

8. You are observing top of your school building at an angle of elevation α from a point which is at 'd' meter distance

9. A ladder of length x meter is leaning against a wall making angle θ with the ground. Which trigonometric ratio would you like to consider

to find the height of the point on the wall at which the ladder is touching?

10. A tower stands vertically on the ground. From a point which is 15 meter away from the foot of the tower, the angle of elevation of the top of the tower is $45°$. What is the height of the tower?

11. A tree breaks due to storm and the broken part bends so that the top of the tree touches the ground by making $30°$ angle with the ground. The distance between the foot of the tree and the top of the tree on the ground is 6 m. Find the height of the tree before falling down.

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12. A contractor wants to set up a slide for the children to play in the park. Hed wants to set it

up at the height of 2m and by making an angle of $30°$ with the ground. What should be the length of the slide?

13. Length of the shadow of a 15 meter high pole is $5\sqrt{3}$ meters at 7 o'clock in the morning. Then, what is the angle of elevation of the Sun rays with the ground at the time?

14. You want to erect a pole of height 10 m with the support of three ropes. Each rope has to make an angle $30°$ with the pole. What should be the length of the rope?

15. Suppose you are shooting an arrow from the top of a building at a height of 6 m to a target on the ground at an angle of depression of $60°$. What is the distance between you and the object ?

16. An electrician wants to repair an electric connection on a pole of height 9m. He needs to reach 1.8 m below the top of the pole to do repair work. What should be the length of the ladder which he should use, when he climbs it at an angle of $60°$ with the ground? What will be the distance between foot of the ladder and foot of the pole?

17. A boat had to cross a river. It crosses the river by making an angle of $60°$ with the bank of the river due to the stream of the river and travel a distance of 600 m to reach the another side of the river. What is the width of the river ?

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18. An observer of height 1.8 m is 13.2 m away from a palm tree. The angle of elevation of the

top of the tree from his eyes is $45°$. What is the height of the palm tree ?

19. In the given figure, AC= 6 cm, AB= 5 cm and $\angle BAC = 30°$. Find the area of the triangle.

20. Two men on either side of a temple of 30 meter height observe its top at the angles of

elevation $30°$ and $60°$ respectively. Find the distance between the two men.

21. A straight highway leads to the foot of a tower. Ramaiah standing at the top of the tower observe a car at an angle of depression $30°$. The car 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.

22. A T.V. tower stands vertically on the side of a road. From a point on the other side directly opposite to the tower the angle of elevation of the top of tower is $60°$. From another point 10 m away from the point, on the line joining the point of the foot of the tower, the angle of

elevation of the top of the tower is $30°$. THe width of the road is......

23. A 1.5 m tall boy is looking at the top of a temple which is 30 m in height from a poin at certain distance. The angle of elevation from his eye to the top of the crown of the temple increases from $30°$ to $60°$ as he walks towards the temple. Find the distance he walked towards the temple.

24. A statue stands on the top of a 2m tall 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 pedstal is $45°$. Find the height of the statue.

25. From the top of a building, the angle of elevation of the top of a cell tower is $60°$ and the angle of depression to its foot is $45°$. If distance of the building from the tower is 7m, then find the height of the tower.

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26. A wire of length 18m had been tied with electric pole at an angle of elevation $30°$ with the ground. As it is covering a long distance, it

was cut and tied at an angle of elevation $60°$ with the ground. How much length of the wire was cut?

27. The angle of elevation of the top of a building from the foot of the 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 30m high, find the height of the building.

28. Two poles of equal height are standing opposite to each other on either sidef of the road, which is 120 feet wide. From a point between then on the road, the angles of elevation of the top of the poles are $60°$ and $30°$ respectively. Find the height of the poles and the distances of the point from the poles.

29. The angles of elevation of the top of a tower from two points at a distance of 4m and 9m, find the height of the tower from the base of the tower and in the same straight line with it are complementary.

30. 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 ot the jet plane.

31. The angle of elevation of the top of a tower from the foot of the building is $30°$ and the angle of elevation of fhe top of the building from the foot of the tower is $60°$. What is the ratio of heights of tower and building?

32. A 1.2m tall girl spots a balloon moving with the wind in a horizontal line at a height of 88.2 m from the ground. The angle of elevation of the balloon from the eyes of the girl at any instant is $60°$. After sometimes, the angle of elevation reduces to $30°$. Find the distance travalled by the balloon during the interval.

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33. The angles of elevation of the top of a lighthouse from 3 boats A,B and C in a straight

line of same side of the lighthouse are a,2a,3a respectively. If the distance between the boats A and B is x meters. Find the height of lighthouse.

34. Inner part of a cupboard is in the cuboidical shape with its length, breadth and height in the ratio $1:\sqrt{2}:1$. What is the angle made by the longest stick which can be inserted cupboard with its base inside?

35. An iron spherical ball of volume 232848 cm^3 has been melted and converted into a cone wih the vertical angle of $120°$. What are its height and base?

36. A right circular cylindrical tower, height 'h' and radius 'r', stands on the ground. Let 'P' be a point in the horizontal plane ground and

ABC be the semi-circular edge of the top of the tower such that B is the point in it nearest to P. The angles of elevation of the points A and B are $45°$ and $60°$ respectively. Show that $\dfrac{h}{r} = \dfrac{\sqrt{3}\left(1 + \sqrt{3}\right)}{2}$.

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37. The angle of elevation of the top of a tower from the foot of the building is $30°$ and the angle of elevation of fhe top of the building

from the foot of the tower is $60°$. What is the

ratio of heights of tower and building?

38. The angles of elevation of the top of a

tower from two points at a distance of 4m and

9m, find the height of the tower from the base

of the tower and in the same straight line with

it are complementary.

39. A wire of length 25 m had been tied with electric pole at an angle of elevation $30°$ with the ground. Because it was covering a long distance, it was cut and tied at an angle of elevation $60°$ with the ground how much length of the wire was cut.

40. Two boys are on opposite sides of a tower of 200 m height. They measure the angle of elevation of the top of the tower as $45°$ and

$60°$ respectively. Find the distance throught which the boys are separated.

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41. The tower height is 15mts and length of shadow is $15\sqrt{3}$m what is the angle of elevation of the sun.

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42. A person from the top of a building of height 25 m has observed another building top and bottm at an angle of elevation $45°$ and at an angle of depression $60°$ respectively. Draw the diagram for this data.

43. A ladder of 3.9 m length is laid against a wall. The distance between the foot of the wall

and the ladder is 1.5 m. Find the height at which the ladder touches the wall.

44. An observer flying in an aeroplane at an altitude of 900 m observes two ships in front of him, which are in the same direction at an angles of depression of $60°$ and $30°$ respectively. Find the distance between the two ships.

45. If the angle of elevation of sun increases from '0' to 90 then the length of shadow of a tower decreases. Is this true? Justify your answer.

46. A boat has to cross a river. It crosses river by making an angle of $60°$ with bank, due to the stream of river it travels a distance of

450m to reach another side of river. Draw a diagram to this data.

47. Two poles of equal heights are standing opposite to each other on either side of the road, which is 80 m wide. From a point between them on the road, the angles of elevation of the top of the poles are $60°$ and $30°$ respectively. Find the height of poles.

48. In the adjacent figure AC = 7 cm, AB = 6 cm and $\angle BAC = 45°$ then find the area of the triangle ABC.

49. In the adjacent figure AC = 8 cm, AB = 5 cm and $\angle BAC = 30°$ then find the area of the triangle ABC.

50. You want to erect a pole of height 10 m with the support of three ropes. Each rope has to make an angle $30°$ with the pole. What should be the length of the rope?

51. You want to erect a pole of height 25 m with suppot of three ropes each has to make an angle $30°$ with the pole what should be the length of the rope.

52. A ladder of 5 m length is laid against a wall. The distance between the foot of the wall and the ladder is 2.7 m find the height at which the ladder touches the wall.

53. A ladder of 4 m length is laid against a wall. The distance between the foot of the wall and

the ladder is 1.8 m find the height at which the ladder touches the wall.

54. An observer flying in an aeroplane at an altitude of 900 m observes two ships in front of him, which are in the same direction at an angles of depression of $60°$ and $30°$ respectively. Find the distance between the two ships.

55. An observe flying in an aeroplane at an altitude of 1500 m observes two ships in front of him. Which are in the same direction at an angles of depression of $60°$ and $30°$ respectively. Find the distance between two ships.

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Exercise

1. Two men on either side of a temple of 30 meter height observe its top at the angles of elevation $30°$ and $60°$ respectively. Find the distance between the two men.

2. From a ship mast-head 150m.high, the angle of depression of a boat is observed to be $45°$. It's distance from the ship is........

3. A person, walking 20 mts from a point towards a flag-post along a horizontal passing throught it base, observes that its angle of elevation changes from $30°$ to $45°$. Find the height of te flag-post.

4. A ladder 6 mts long is placed against a vertical wall, so that it makes an angle $60°$

with the ground. At what height above the ground does the ladder touch the ground?

5. A vertical pole is 10 mts. High. The length of its shadow is $10\sqrt{3}$ mts. What is the angle of elevation of the sun?

6. Find the height of a mountain cliff, if the angle of elevation of its top, from a point 200 mts from its foot is found to be $60°$

7. A man on the top of a cliff 100 mts high, observes the angle of depression of the two points on opposite sides of the cliff as $30°$ and $60°$ respectively. Find the distance between the two points.

A.

B.

C.

D.

Answer:

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8. The angles of elevation of the top of a rock

from the top and foot of a 100 mts high tower

are respectivley $30°$ and $60°$ respectivley. Find the distance between the two points.

9. The shadow of a tower standing on a level ground is found to be 40 m longer when sun's altitude is $30°$ then when it was $60°$. Find the height of the tower.

10. The angle of elevation of a tower from a point on the same level as the foot of the tower is $30°$ on advancing 150 meters towarsd the foot of the tower, the angle of elevation of the tower becomes $60°$. Find the height of the tower.

11. A circus artist is climbing a 16 m long rope, 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 level is $60°$.

12. From the top of a cliff 60 mt high, the angles of depression of top and bottom of a tower are $30°$, $60°$. The height of the tower is

13. If a pole 6 m high casts a shadow $2\sqrt{3}$m long on the ground. Then the sun's angle of elevation is

A. $60°$

B. $45°$

C. $30°$

D. $90°$

Answer:

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14. If the angle of elevation of a tower from a distance of 100 m from its foot is $60°$. Then the height of the tower is ....m.

A. $100\sqrt{3}$

B. $\dfrac{100}{\sqrt{3}}$

C. $50\sqrt{3}$

D. $\dfrac{50}{\sqrt{3}}$

Answer:

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15. The height of a tower is 10m. The length of its shadow when sun's altitude is $45°$ is..........m.

    A. 10

    B. 20

    C. $10\sqrt{3}$

    D. 50

Answer:

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16. The length of the shadow of a tower on the plane ground is $\sqrt{3}$ times the height of the tower. The angle of elevation of sun is

A. $30°$

B. $45°$

C. $60°$

D. $90°$

Answer:

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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. $45°$

    B. $30°$

    C. $75°$

    D. $90°$

Answer:

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18. If two towers of height X and Y subtend angles of $30°$ and $60°$ respectively at the centre of the line joining their feet, then X:Y is equal to

    A. $1:3$

    B. $1:\sqrt{3}$

    C. $3:1$

    D. $\sqrt{3}:1$

Answer:

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19. A wall of 8m long casts a shadow 5m long. At the same time, a tower casts a shadow 50m long. Then the height of tower is

A. 20 m

B. 40 m

C. 80 m

D. 200 m

Answer:

20. If the sun's angle of elevation is $60°$. Then a pole of height 6m will cast a shadow of length..........m.

A. $\sqrt{3}$

B. $5\sqrt{3}$

C. $6\sqrt{3}$

D. $2\sqrt{3}$

Answer:

21. A pole of 12m high casts a shadow $4\sqrt{3}m$ on the ground. Then the sun's angle of elevation is

A. $60°$

B. $120°$

C. $45°$

D. $30°$

Answer:

22. If the height and length of the shadow of a man are the same, then the angle of elevation of the sun is

A. $60°$

B. $45°$

C. $90°$

D. $120°$

Answer:

23. What is the angle of elevation of the top of a temple of height 10 m at a point whose distance from the base of the tower is $10\sqrt{3}$ m?

A. $30°$

B. $60°$

C. $45°$

D. $90°$

Answer:

24. The length of the shadow of 5 m height tree whose angle of elevation of the Sun is $30°$ is ?

A. 5 m

B. $\sqrt{3}m$

C. $5\sqrt{3}m$

D. 10 m

Answer:

25. From the top of a 10 m height tree the angle of depression of a point on the ground is $30°$ then the distance of the point from the foot of the tree is

    A. 10 m

    B. $10\sqrt{3}m$

    C. $\dfrac{10}{\sqrt{3}}m$

D. $5\sqrt{3}m$

Answer:

26. Ladder 'x' meters long is laid against a well making an angle $'\theta'$ with the ground. If we want to directly find the distance between the foot of ladder and foot of the wall, which trigonometrical ratio should be considered?

A. $\sin\theta$

B. $\cos \theta$

C. $\tan \theta$

D. $\cot \theta$

Answer:

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27. Top of a building was observed at an angle of elevation α from a point. Which is at distance 'd' meters from the foot of the

building. Which trigonometrical ratio should be considered for finding height of buildings?
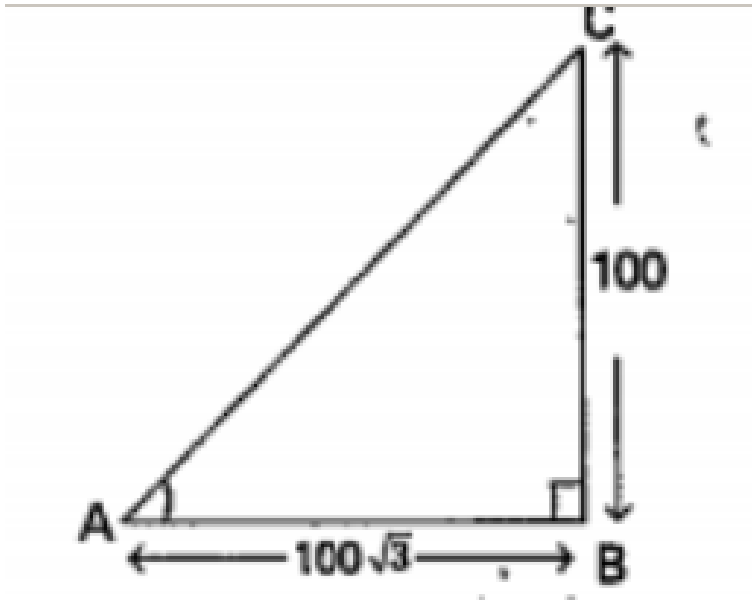
A. $\tan \alpha$

B. $\sin \alpha$

C. $\cos \alpha$

D. $\sec \alpha$

Answer:

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28. In the given figure, the value of angle θ is
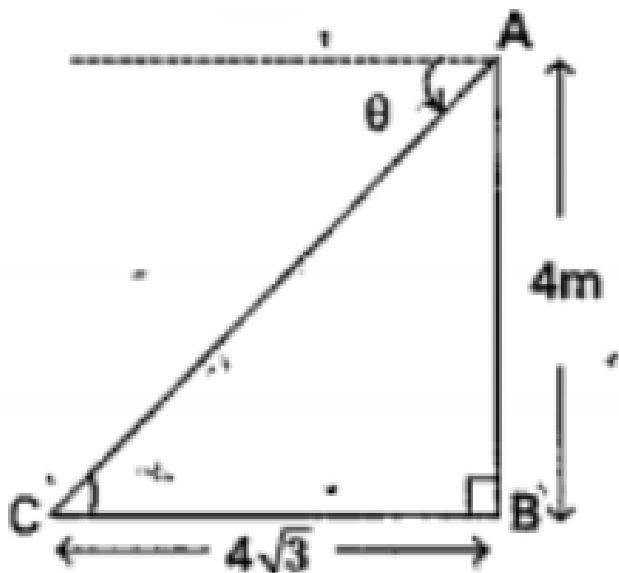

A. $30°$

B. $60°$

C. $45°$

D. $90°$

Answer:

29. The given figure shows the observation of point 'C' from point A . The angle of depression from A is.

A. $30°$

B. $45°$

C. $90°$

D. $75°$

Answer:

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30. If the length of the shadow of a tower is $\dfrac{1}{\sqrt{3}}$ times the height of the tower, then the

angle of elevation of the sun is..........

A. $30°$

B. $45°$

C. $60°$

D. $75°$

Answer:

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31. A tower is 50m high. Its shadow is x m shorter when the sun's altitude is $45°$ then when it is $30°$, then x=..........m.

    A. 105

    B. 20

    C. 10

    D. 100

Answer:

32. The length of the string of a kitef flying at 100m above the ground with the elevation of 60° is...............

A. $\dfrac{200}{\sqrt{3}}$

B. $\dfrac{20}{\sqrt{3}}$

C. $\dfrac{291}{\sqrt{3}}$

D. none

Answer:

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33. A player sitting on the top of a tower of height 40m observes the angle of depression of a ball lying on the ground is $60°$. The distance between the foot of the tower and ball is.............m.

A. 20

B. $\dfrac{80}{\sqrt{61}}$

C. $\dfrac{40}{\sqrt{3}}$

D. $\dfrac{40}{\sqrt{6}}$

Answer:

34. If the ratio of height of a tower and the length of its shadow on the ground is $\sqrt{3}:1$, then the angle of elevation of the sun is............

A. $80°$

B. $60°$

C. $70°$

D. $100°$

Answer:

35. If the angle of elevation of a tower from a distance of 100 m from its foot is $60°$. Then the height of the tower is ....m.

A. 18.1

B. 16.3

C. 36.6

D. 26.7

Answer:

36. An object is placed above the observer's horizontal, we call the angle between the line of sight and observer's horizontal is..........

    A. angle of elevation

    B. angle of depression

    C. point

    D. none

Answer:

37. Angle of elevation of the top of a building from a point on the ground is $30°$, Then the angle of depression of this point from the top of the building is..............

A. $65°$

B. $60°$

C. $70°$

D. $30°$

Answer:

38. What change will be observed in the angle of elevation as we move away from the object?

A. increase

B. decrease

C. can't be determined

D. none

Answer:

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39. An objcet is placed below the observer's horizontal, then what is the angle between line of sight and observer's horizontal ?

    A. angle of elevation

    B. angle of depression

    C. can't be determined

    D. none

Answer:

40. What change will be observed in the angle of elevation as we approach the foot of the tower?

A. 0

B. $60°$

C. Data not correct

D. none

Answer:

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41. In the figure given below, the imaginary line through the object and eye of the observer is called...........

A. line of sight

B. angle of depression
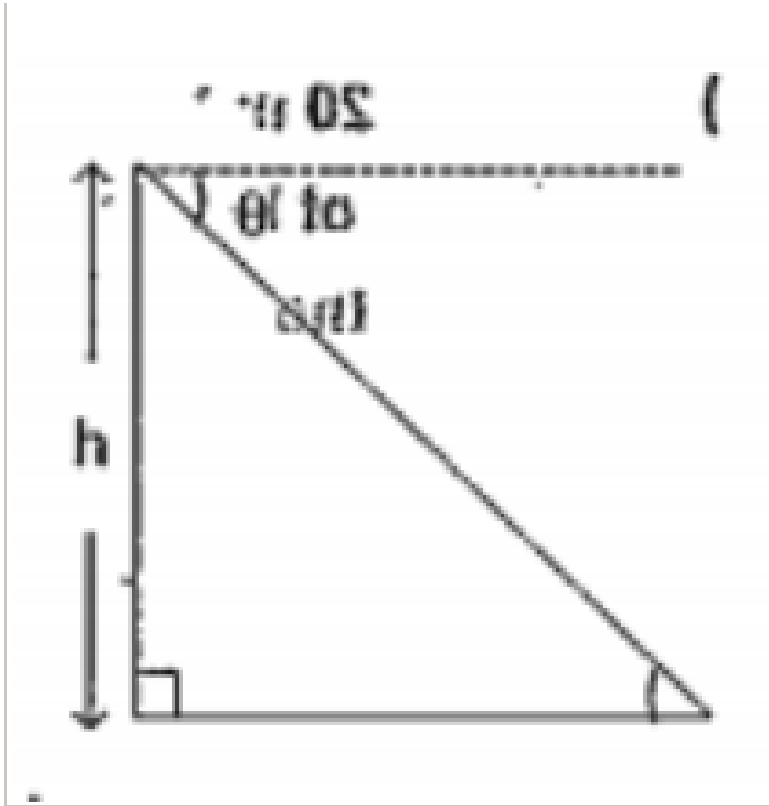
C. angle of elevation

D. none

Answer:

42. In the figure given below, a man on the top

of cliff observes a boat comint towards him.

Then θ represents the angle of ....

A. depression

B. elevation

C. equal

D. none

Answer:

43. If a pole height 6m casts a shadow $2\sqrt{3}$m long on the ground, then the sun's elevation is
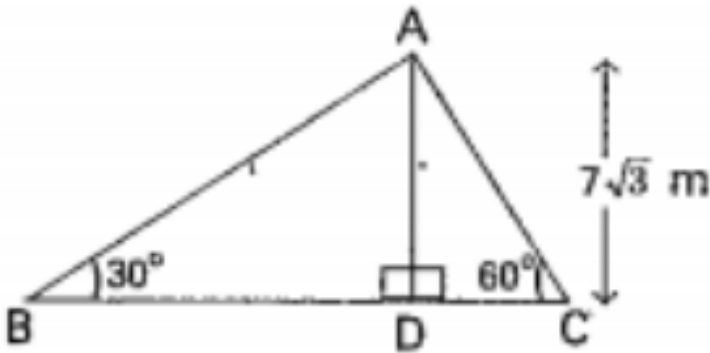
A. $70°$

B. $20°$

C. $80°$

D. $60°$

Answer:

44. In the figure given below, if AD = $7\sqrt{3}m$,

then BC = ...m.

A. 13

B. 19

C. 28

D. none

Answer:

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45. The length of the shadow of a tree is 7m high, when the sun's elevation is………….

A. $45°$

B. $60°$

C. $70°$

D. $90°$

Answer:

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46. If two tangents inclined at an angle of $60°$ are drawn to a circle of radius 3 cm, then length of tangents is equal to............m.

A. $4\sqrt{3}$

B. $2\sqrt{91}$

C. $\sqrt{3}$

D. $3\sqrt{3}$

Answer:

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47. The angle formed by the line of sight with horizontal, when the point being viewed is above the horizontal level is called..........

A. angle of elevation

B. angle of depression

C. point

D. none

Answer:

48. $\cot^2 B - \cos ec^2 B$=.............

A. 0

B. -1

C. 1

D. 2

Answer:

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49. $\dfrac{\tan\theta}{\sec\theta}$ =...............

A. $-\cos\theta$

B. $\sin\theta$

C. $-\tan\theta$

D. none

Answer:

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50. A boy observed the top of an electrical pole to be at angle of elevation of $60°$ when the observation point is 8m away from the foot of the pole then the height of the pole is..........m.

A. $18\sqrt{3}$

B. 14

C. $7\sqrt{3}$

D. $8\sqrt{3}$

Answer:

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51. Suppose you are shooting an arrow from the top of a building at a height of 6 m to a target on the ground at an angle of

depression of $60°$. What is the distance between you and the object ?

A. 9

B. $7\sqrt{3}$

C. $12\sqrt{3}$

D. none

Answer:

52. $\sin \dfrac{\pi^e}{2}$ =............

A. 4

B. 3

C. 1

D. -1

Answer:

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53. Domain of $\sin \theta$=.............

A. R

B. $R - \{30^\circ\}$

C. N

D. none

Answer:

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54. $\tan \dfrac{\pi^e}{4}=$..............

A. 2

B. 3

C. -1

D. 1

Answer:

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55. $\cot 15° =$...............

A. $2 + \sqrt{3}$

B. $2 - \sqrt{3}$

C. $\sqrt{2}$

D. $\sqrt{3} - 1$

Answer:

56. $A + B = 180°$ then $\cos A + \cos B$=............

A. 4

B. 1

C. 0

D. none

Answer:

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57. $\sin 15^\circ = $ ....

A. $\dfrac{\sqrt{3}}{9\sqrt{2}}$

B. $\dfrac{\sqrt{3} - 1}{2\sqrt{2}}$

C. $\dfrac{\sqrt{3} + 1}{2}$

D. none

Answer:

58. $\tan A = \dfrac{n}{n+1}$, $\tan B = \dfrac{1}{2n+1}$, $A + B$ =..........

A. 4

B. 3

C. -1

D. 1

Answer:

59. The angle of elevation of tower at a point 40m apart form it is $\cot^{-1}\left(\dfrac{3}{5}\right)$. Obtain the height of the tower.

A. $\dfrac{200}{3}m$

B. $\dfrac{100}{3}m$

C. $\dfrac{210}{17}m$

D. none

Answer:

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60. A ladder 20m long is placed against a vertical wall of height 10m, then the distance between the foot of the ladders and wll is.......... m.

A. $7\sqrt{3}$

B. $20\sqrt{3}$

C. $30\sqrt{3}$

D. none

Answer:

61. $\sin 18^\circ = \ldots\ldots\ldots$

A. $\dfrac{\sqrt{5}}{4}$
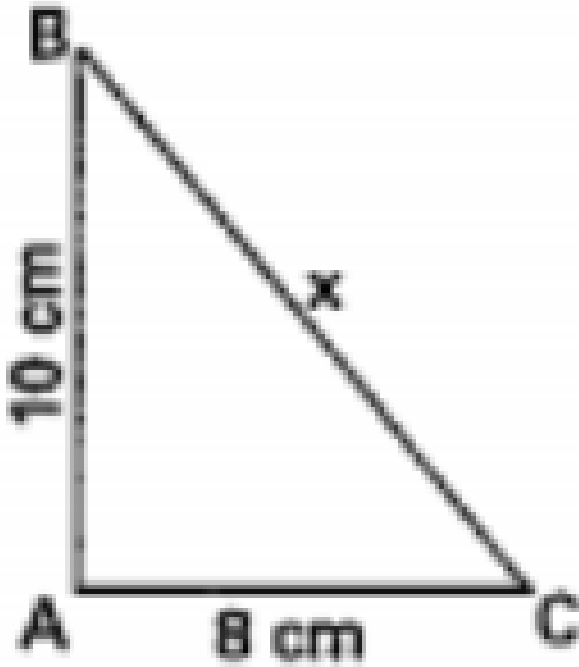
B. $\dfrac{\sqrt{5} - 1}{4}$

C. $\dfrac{1 + \sqrt{3}}{2}$

D. $\dfrac{\sqrt{3} - 1}{4}$

Answer:

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62. In the below figure x =..............cm.

A. 10

B. 12

C. 13

D. 19

Answer:

63. $\cot(90 - A) =$ ....

A. 3 tan A

B. sin A

C. cot A

D. tan A

Answer:

64. $\cos^4 A - \sin^4 A$=............

A. $\sin^2 A$

B. $\cos^2 A$

C. $\cos 2A$

D. $\cos 3A$

Answer:

65. If $\cos ec\theta + \cot \theta = k$ then $\cos \theta$=.............

A. $\dfrac{k^2 - 1}{k^2 + 1}$

B. $\dfrac{k^2}{k^2 - 1}$

C. $\dfrac{k^2 + 1}{k}$

D. none

Answer:

66. కింది వాటిలో θ ను లోపింప చేయండి. i)

$$x = a(\sec\theta + \tan\theta), y = b(\sec\theta - \tan\theta)$$

A. -1

B. 0

C. 1

D. 2

Answer:

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67. $\tan 15° = $..............

A. $\dfrac{\sqrt{3}}{\sqrt{3}+1}$

B. $\dfrac{\sqrt{3}-1}{\sqrt{3}+1}$

C. $\dfrac{\sqrt{3}-1}{2}$

D. none

Answer:

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68. $\cos ec\theta$=..........

A. $\sqrt{1 + \cot^2 \theta}$

B. $\sqrt{\cot^2 \theta - 1}$

C. $\sqrt{1 + \sin \theta}$

D. $\sqrt{\cot \theta - 1}$

Answer:

69. $x = a \sin \theta, y = a \cos \theta$ then $x^2 + y^2$

=...........

A. $\dfrac{a}{3}$

B. $\dfrac{a}{2}$

C. a

D. a^2

Answer:

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70. Example of a Pythagorean Triplet is............

A. 5, 12, 13

B. 5, 10, 11

C. 8, 9, 11

D. none

Answer:

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71. $\sec^2 A$=..............

A. $1 - \tan^2 A$

B. $1 + \tan^2 A$

C. $\cot^2 A$

D. none

Answer:

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72. Show that $\dfrac{1}{\cos \theta} - \cos \theta = \tan \theta . \sin \theta$

A. $\tan \theta . \sin \theta$

B. $\sec\theta . \cos\theta$

C. $\tan\theta . \cot\theta$

D. none

Answer:

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73. $\sin\theta = \cos\theta, \theta \in Q_1$ then θ-

A. `pi^c / 2

B. $\dfrac{\pi^c}{3}$

C. $\dfrac{2\pi^c}{3}$

D. $\dfrac{\pi^c}{4}$

Answer:

74. $72° =$................

A. $\dfrac{\pi^c}{2}$

B. $\dfrac{\pi^c}{3}$

C. $\dfrac{2\pi^c}{5}$

D. $\dfrac{\pi^c}{5}$

Answer:

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75. $\sin^2 105° + \cos^2 105° = \ldots\ldots\ldots$

A. 1

B. 0

C. 9

D. 10

Answer:

76. $\sin 45^\circ (\cos 45^\circ) = $..............

A. 1

B. $\dfrac{1}{2}$

C. 3

D. none

Answer:

77. $\cos 40° = 0.76$ then $\sin 50°$ =.............

A. 0.76

B. 7.6

C. 76.6

D. none

Answer:

78. At a point 15m away form the base of a 15m high pole, the angle of elevation of the top is..........

A. $30°$

B. $45°$

C. $60°$

D. $90°$

Answer:

79. When the length of the shadow of a person is equal to his height, then the elevation of source of light is

A. 15°

B. 30°

C. 45°

D. 60°

Answer:

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80. The angle of elevation of top of a tree is $30°$. On moving 20m nearer, the angle of elevation is $60°$. The height of the tree is

A. $15\sqrt{3}$

B. $2\sqrt{3}$

C. $10\sqrt{3}$

D. $5\sqrt{3}$

Answer:

81. The ratio of length of a pole and its shadow is $1 : \sqrt{3}$. The angle of elevation is

A. $90°$

B. $60°$

C. $45°$

D. $30°$

Answer:

82. The upper part of a tree is broken by wind and makes an angle of $30°$ with the ground and at a distance of 21m from the foot of the tree. Find the total height of the tree.

A. $30\sqrt{3}m$

B. 21 m

C. 30 m

D. $21\sqrt{3}m$

Answer:

83. From a bridge 25m high, the angle of depression of a boat is $45°$. Find the horizontal distance of the boat from the bridges.

A. $25\sqrt{3}m$

B. 25 m

C. $\dfrac{25}{\sqrt{3}}m$

D. 45 m

Answer:

84. A tower makes an angle of elevation equal to the angle of depression from the top of a cliff 25m height. Find the heigh of the tower.

A. 25 m

B. 75 m

C. 5 m

D. 50 m

Answer:

85. When the angle of elevation of a pole is $45°$, the length of the pole and its shadow are

    A. equal

    B. length gt shadow

    C. shadow gt length

    D. none of the above

Answer:

86. In a rectangle, if the angle between a diagonal and a side is $30°$, and the length of the diagonal is 6 cm, the area of the rectangle is

    A. $18cm^2$

    B. $9cm^2$

    C. $18\sqrt{3}cm^2$

D. $9\sqrt{3}cm^2$

Answer:

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87. Two posts are 15 m and 25m high and the line joining their tope make an angle of $45°$ with the horizontal, the distance between the two posts is

A. 15 m

B. 25 m

C. 18 m

D. 10 m

Answer:

88. An electric pole 20m high stands up right on the ground with the help of steel wire to its top and affixed on the ground. If the steel

wire makes $60°$ with the horizontal ground, find the length of steel wire.

A. $60\sqrt{3}m$

B. 20 m

C. 60 m

D. $\dfrac{20}{\sqrt{3}}m$

Answer:

89. A building casts a shadow of length $50\sqrt{3}$ m when the sun is $30°$ about the horizontal. The height of the building is

    A. 30 m

    B. 40 m

    C. 50 m

    D. 60 m

Answer:

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90. When the angle of elevation of a light changes from $30°$ to $45°$, the shadow of pole becomes $100\sqrt{3}$ m less. The height of the pole is

   A. 30 m

   B. 120 m

   C. 75 m

   D. 100 m

Answer:

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91. From the top of a building 50m from horizontal, the angle of depression made by a car is $30°$. How far is the car from the building?

A. $\dfrac{50}{\sqrt{3}}m$

B. $50\sqrt{3}m$

C. 150 m

D. $30\sqrt{3}m$

Answer:

92. From the top of a building with height $30(\sqrt{3}+1)$m two cars make angle of depression of $45°$ and $30°$ due east. What is the distance between two cars?

    A. 30 m

    B. 60 m

    C. 45 m

D. 75 m

Answer:

93. A person standing on the bank of a river observes that the angle subtended by a tree on the opposite bank is $60°$. When he retires 40m from the bank, he finds the angle to be $30°$. The breadth of the river is

A. 10 m

B. 15 m

C. 20 m

D. 25 m

Answer:

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94. A ladder of 10 m length touches a wall at a height of 5 m. The angle made by it with the horizontal is

A. $30°$

B. $45°$

C. $60°$

D. $90°$

Answer:

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95. A tree breaks due to storm and the broken part bends so that the top of the tree touches the ground by making $30°$ angle with the

ground. The distance between the top of the tree and the ground is 10m. Find the height of the tree.

A. 10 m

B. $30\sqrt{3}m$

C. $10\sqrt{3}m$

D. 30 m

Answer:

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96. The angle of elevation of a cloud from a point 200 m above the lake is $30°$ and the angle of depression of its. reflection in the lake is $60°$. The height of the cloud above the lake is

    A. 100 m

    B. 200 m

    C. 300 m

    D. 400 m

Answer:

97. An aeroplane flying horizontally 1 km above the ground is observed at an elevation of $60°$. After a flight of 10 seconds, its angle of elevation is observed to be $30°$ from the same point on the ground. Find the speed of the aeroplane.

A. 415.7 km /h

B. 215.3 km/h

C. 700 km/h

D. none of the above

Answer:

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98. If AB=4m, and AC=8m, then the angle of

elevation of A as observed from C is

   A. $30°$

   B. $45°$

   C. $60°$

D. $90°$

Answer:

99. If a pole height 6m 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°

Answer:

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100. Find the elevation of the sun at the moment when the length of the shadow of a tower is just equal to its height.

A. 30°

B. 45°

C. $60°$

D. $90°$

Answer:

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101. If the shadow of a tree is $\dfrac{1}{\sqrt{3}}$ times the height of the tree, then the angle of elevation of the sun is

A. $30°$

B. $45°$

C. $60°$

D. $90°$

Answer:

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102. Length of the shadow of a 15 meter high pole is $5\sqrt{3}$ meters at 7 o'clock in the morning. Then, what is the angle of elevation of the Sun rays with the ground at the time?

103. A boat has to cross a river. It crosses river by making an angle of $60°$ with bank, due to the stream of river it travels a distance of 450m to reach another side of river. Draw a diagram to this data.

104. The angles of elevation of Top of a rock from the Top and foot of 200 mts high tower are respectively $45°$ and $60°$. Find the height of the rock and tower.

105. A person from the top of a building of height 25 m has observed another building top and bottm at an angle of elevation $45°$

and at an angle of depression $60°$ respectively. Draw the diagram for this data.

106. A Ladder of 4.6 m Length is laid against a wall. The distance between the foot of a wall and the ladder is 2.3 m find the height at which the ladder touches the wall.

107. The angle of elevation of an aeroplan flying at a height of 1500 m from the gruond is found to be $60°$ from the airport. Find the horizontal distance of the aeroplane from the airport is

A. $1000\sqrt{3}m$

B. $150\sqrt{3}m$

C. $2000\sqrt{3}m$

D. $500\sqrt{3}m$

Answer:

108. The tops of two poles of heights 10 metres and 12 metres are connected by a rope. If the rope makes an angle $30°$ with the horizontal, the length of the rope in metres is

A. 9 m

B. 12 m

C. 6 m

D. 3 m

Answer:

---

109. The slope of a hill makes an angle of $60°$ with the horizontal. If one has to walk 500 m to reach the top of the hill. Then the height of the hill is

    A. $350\sqrt{3}m$

    B. $250\sqrt{3}m$

    C. $\dfrac{500}{\sqrt{3}}$

D. $280\sqrt{3}m$

Answer:

110. If the shadow of 10 m high tree is $10\sqrt{3}m$.

Then find the angle of elevation of the sun.

A. $45°$

B. $90°$

C. $15°$

D. $30°$

Answer:

111. If a tree of heigh 21 m is broken but not completely separated and the top of the tree touches the ground at an angle of $30°$. Then the height at which the tree was broken is..........

A. 28 m

B. 19 m

C. 7 m

D. 41 m

Answer:

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112. From the top of a 10 m high tower, the angle of depression of a point on the ground is found to be $30°$. Find the distance of the point from the base of the tower is

A. $8\sqrt{3}m$

B. $10\sqrt{3}m$

C. $7\sqrt{3}m$

D. $5\sqrt{3}m$

Answer:

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113. The angle of elevation of the top of a tower from a point situated at a distance of

100 m from the base of tower is 30 degrees.

find the height of the tower is

A. $30\sqrt{3}m$

B. $\dfrac{100}{\sqrt{3}}m$

C. $10\sqrt{3}m$

D. $\dfrac{120}{\sqrt{3}}m$

Answer:

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114. If altitude of the sun is 60 degrees, the height of a tower which casts a shadow of length 30 m is.............

A. $15\sqrt{3}m$

B. $30\sqrt{3}m$

C. $20\sqrt{3}m$

D. $8\sqrt{3}m$

Answer:

115. The ratio of the lengths of a tree and its shadow is $1 : \left(\dfrac{1}{\sqrt{3}} \right)$ The angle of Sun's elevation is..........

    A. $90°$

    B. $30°$

    C. $60°$

    D. $45°$

Answer:

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116. The length of the string of a kitef flying at 100m above the ground with the elevation of $60°$ is..............

A. $200\sqrt{3}m$

B. $100\sqrt{3}m$

C. $50\sqrt{3}m$

D. $150\sqrt{3}m$

Answer:

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117. The angle of elevation of the top of a tower from a point of the ground which is 30 m away from the foot of a tower of heigh $10\sqrt{3}m$ is...........

A. $60°$

B. $90°$

C. $30°$

D. $120°$

Answer:

118. The angle of elevation of the top of a tree from a point at a distance of 200 m from its base is 60. The height of the tree is

A. $50\sqrt{3}m$

B. $200\sqrt{3}m$

C. $\dfrac{200}{\sqrt{3}}m$

D. $100\sqrt{3}m$

Answer:

119. A steel pole is 10 m high. To keep the pole upright one end of a steel wire is tied to the top of the pole while the other end has been fixed on the ground. If the steel wire makes an angle of 45 with the horizontal through the base point of the pole, find the lenght of the steel wire is

A. $10\sqrt{3}m$

B. $10\sqrt{2}m$

C. $15\sqrt{2}m$

D. $8\sqrt{2}m$

Answer:

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120. If the angle of elevation of Sun is $45°$, then the length of the shadow of a 12 m hihgh tree is..........

A. h'm

B. $\dfrac{h}{4}m$

C. $\dfrac{h}{2}m$

D. $\dfrac{h}{3}m$

Answer:

121. A tower subtends an angle α at a point A on the same level as the foot of the tower B is a point vertically above A and AB = h metres.

The angle of depression of the foot of the tower from B is β. The height of the tower is

A. $l \tan \alpha \cot \beta$

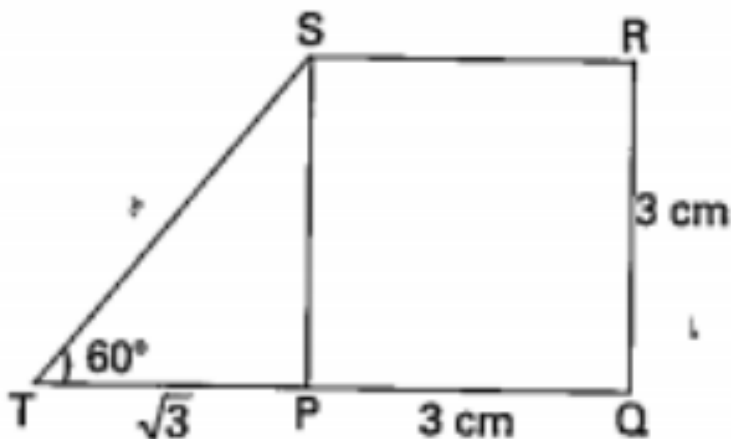B. $l \tan \beta \cot \alpha$

C. $l \tan \alpha \cot \beta$

D. $l \tan \alpha \tan \beta$

Answer:

122. In the diagram if PQRS is a square of side 3 cm and $\angle PTS = 60°$. Then the length of TR approximately is.

A. $3 - \sqrt{3}m$

B. $1 - \sqrt{3}m$

C. $3 + \sqrt{3}m$

D. $1 + \sqrt{3}m$

Answer:

123. In the given figure, AC= 6 cm, AB= 5 cm and $\angle BAC = 30°$. Find the area of the triangle.

124. In the given figure, AC= 6 cm, AB= 5 cm and $\angle BAC = 30°$. Find the area of the triangle.

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125. If $\triangle ABC$, $\angle B = 90°$. If AB = 12, $\angle C = 30°$. Then find BC.

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126. The length of the shadow of tower is equal its height. Then the angle of elevation of the sun.

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127. In triangle ABC , a = 4, b = 3 and $\angle A = 60°$. Then c is root of the equation

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