MATHS

BOOKS - UNITED BOOK HOUSE

Application of Trigonnometric Ratios : Heights of Distance

Exercise

1. Multiple Choice Questions (MCQ) If the length of the shadow of a 13 metre high palm

tree is $13\sqrt{3}$ metre, then the angle of elevation of the sun is

A. $30°$

B. $45°$

C. $60°$

D. $90°$

Answer:

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2. If the length of the shadow of a pillar is equal to the length of the pillar, then the angle of elevation of the sun is

A. $30°$

B. $45°$

C. $60°$

D. $90°$

Answer:

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3. If the angle of elevation of the Sun is $60°$, then the length of the shadow of a vertical pole of length h metre is

A. $\dfrac{h}{\sqrt{3}}metre$

B. $h\sqrt{3}metre$

C. $\sqrt{3}h metre$

D. $\sqrt{\dfrac{h}{/}}3metre$

Answer:

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4. A ladder is placed against a wall which is inclined at an angle $60°$ with the ground. The foot of the ladder is 4.6m. Away from the wall. Then the length of the ladder is

    A. 9.1 metre

    B. 9.2 metre

    C. 9.3 metre

    D. 9.4 metre

Answer:

5. A boy is flying a kite by a string. If the kite is at a height of 120 metres from the ground and the string makes an angle, $30°$ with the horizontal then the length of the string is

A. 100metre

B. 120metre

C. 180metre

D. 240 metre.

Answer:

6. If the angle of elevation of a kite is $60°$ and the length of the string is $80\sqrt{3}$ metre, then the height of the kite from the ground is

    A. 80metre

    B. 100metre

    C. $40\sqrt{3}$ metre

    D. 120metre.

Answer:

7. The height of the mobile tower is $40\sqrt{3}$ metre. The angle of elevation of the top of the tower from a point a distance 120 metre from the foot of the tower is

A. $30°$

B. $45°$

C. $60°$

D. none of these.

Answer:

8. If the ratio between langth of shadow of a palm tree and its height is $1:\sqrt{3}$, then the angle of elevation of the sum is

A. 30°

B. 45°

C. $60°$

D. none of these.

Answer:

9. An observer of 1.6m tall is $20\sqrt{3}$ away from a tower. The angle of elevation, from his eyes to the top of the tower is $30°$. The heights of the tower is_____

A. 19.6 metre

B. 20.6 metre

C. 21.6 metre

D. 22.3 metre.

Answer:

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10. The shadow of a tower is 16 metre when the angle of elevation of the sun is $30°$. The

length of the shadow when the sun's elevation is $60°$ will be

A. 4 metre

B. 4.5 metre

C. 5.3 metre

D. 6 metre.

Answer:

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11. The angle of elevation of the sun, when the length of the shadow of a tree $\sqrt{3}$ times the height of the tree is____

A. $30°$

B. $60°$

C. $45°$

D. $90°$

Answer:

12. An observer of 1.6m tall is $20\sqrt{3}$ away from a tower. The angle of elevation, from his eyes to the top of the tower is $30°$. The heights of the tower is_____

    A. 24.7 m

    B. 23.2 m

    C. 21.6 metre

    D. none of these.

Answer:

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13. When a point is observed, the angle formed by the line of sight with the horizontal level where the point being viewedis above the horizontal plane is known as____

   A. Angle is known as___

   B. Angle of depression

   C. Angle of elevation

   D. none of these.

Answer:

14. When we lower our head to look at the object, the angle formed by the line of sight with horizontal is known as___

    A. obtuse angle

    B. Angle of depression

    C. acute angle

    D. angle of elevation

Answer:

15. When the length of the shadow of a pillar is equal to its height, the elevation at source of sight is____

A. $30°$

B. $45°$

C. $60°$

D. $90°$

Answer:

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16. The tops of two poles of height 10 m and 18 m are connected with wire. If wire makes an angle of $30°$ with horizontal, the length of wire is____

A. 10 m

B. 12 m

C. 16 m

D. 18 m

Answer:

17. If the angle of elevation of the top of a tower from two points distant a and b from the base and in the same straight line with it are comple mentary, then the height of the tower is____

A. ab

B. $\sqrt{ab}$

C. a/b

D. $\sqrt{\dfrac{a}{b}}$

Answer:

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18. If the angles of elevation of a tower from two points distance a and b $(a > b)$ from its foot and in the same straight line from it are $30°$ and $60°$, then the height of the towers

A. $\sqrt{a} + b$

B. $\sqrt{a} - b$

C. $\dfrac{\sqrt{a}}{b}$

D. $\sqrt{ab}$

Answer:

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19. Two persons are a metres a part and the height of one is double that of the other. If from the middle point of the line joining their

feet, an observer finds the angular elevation of their tops to be complementary then the height of the shorten post is____

A. a/2

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

C. (a)/(sqrt2)`

D. $a\sqrt{2}$

Answer:

20. The angle of elevation of a cloud from a point 200 m above a lake is $30°$ and the angle of depression of its reflection in the lake is $45°$. Find the height of the cloud from the lake.

    A. $h \tan(45° + \theta)$

    B. $h \cot(45° + \theta)$

    C. $h \cot(45° - \theta)$

    D. $h \tan(45° - m)$

Answer:

21. A tower subtends an angle of $30°$ at a point on the same level as its foot. At a second point h metres above the first, the depression of the foot, of the tower is $60°$. The height of the tower is____

A. h/2 m

B. $\sqrt{3}hm$

C. h/3 m

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

Answer:

22. From a light house the angles of depression of two ships on opposite sides of the light house are observed to be $30°$ and $45°$. If the height of the light house is h metres, the distance between the ships is____

A. $\left(\sqrt{3} + 1\right)h$

B. $\left(\sqrt{3} - 1\right)h$

C. $\sqrt{3}h$

D. $1 + \left(1 + \dfrac{1}{\sqrt{3}}\right)h$

Answer:

23. The angle of elevation of the top of a tower standing on a horizontal plane from a point A is alpha. After walking a distance d towards the foot of the tower the angle of elevation is

found to be beta. The height of the tower is____

A. $\dfrac{d}{\tan \beta + \tan \alpha}$

B. $\dfrac{d}{\tan \beta - \tan \alpha}$

C. $\dfrac{d}{\cot \beta + \cot \alpha}$

D. $\dfrac{d}{\cot \alpha - \cot \beta}$

Answer:

24. It is found that on walking x metres towards a chimney in a horizontal line through its base, the elevation of its top changes from $30°$ to $60°$. The height of the chimney is____

A. $3\sqrt{2}x$

B. $2\sqrt{3}x$

C. $\dfrac{\sqrt{3}}{2}x$

D. $\dfrac{2}{\sqrt{3}}x$

Answer:

25. From the top of a cliff 25 m high the angle of elevation of a tower is found to be equal to the angle of depression of the foot of the lower. The height of the tower is____

A. 25 m

B. 50 m

C. 75 m

D. 100 m

Answer:

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26. Find the angle of depression of a boat from the bridge at a horizontal distance of 25 m from the bridge, if the height of the bridge is $25\sqrt{3}$ m____

    A. $30°$

    B. $45°$

    C. $60°$

D. none of these.

Answer:

27. In the figure D is the midpoint of BC, $\angle CAB = \alpha$, $\angle DAB = \beta$ then $\tan \alpha : \tan \beta$ is equal to____

A. 2 : 1

B. 1 : 2

C. 1 : 1

D. 1 : 3

Answer:

28. The length of the shadow of a tower standing on level ground is found to be 2x metres longer when the sun's elevation is $30°$

than when it was $45°$. The height of the tower in metres is____

A. $\left(\sqrt{3}+1\right)x$

B. $\left(\sqrt{3}-1\right)x$

C. $2\sqrt{3}x$

D. $2\sqrt{3}x$

Answer:

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29. The angle of elevation of a cloud from a point 200 m above a lake is $30°$ and the angle of depression of its reflection in the lake is $45°$. Find the height of the cloud from the lake.

A. $\dfrac{2h}{\tan\alpha - \tan\beta}$

B. $\dfrac{2h\sec\alpha}{\tan\alpha - \tan\beta}$

C. $\dfrac{2h\sec\alpha}{\tan\beta - \tan\alpha}$

D. none of these.

Answer:

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