MATHS

BOOKS - OSWAAL PUBLICATION MATHS (KANNADA ENGLISH)
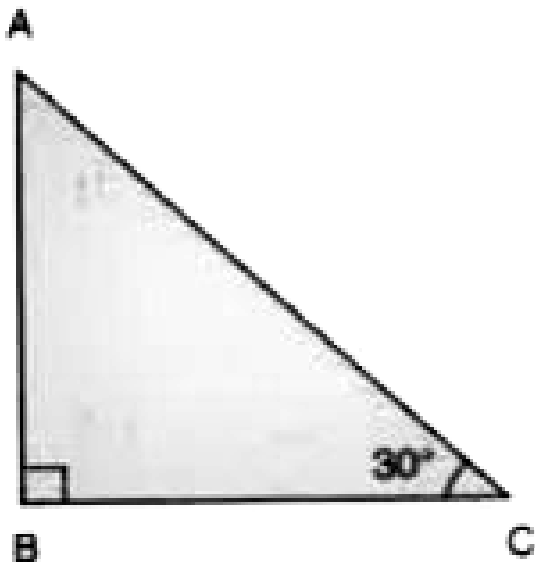
SOME APPLICATION OF TRIGONOMETRY

Mcq S

1. In the following figure $AB \perp BC$ and $\angle ACB = 30°$, given that $BC = \sqrt{300}m$.

The length of AB is:

A. 10m

B. 100m

C. $10\sqrt{3}m$

D. $100\sqrt{3}m$

Answer: A

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2. If a vertical pole of length 6 m casts a shadow 4 m long on the ground and at the samme time a tower casts a shadow 28 m long, then the height of the tower is:

A. 42m

B. 21m

C. 12m

D. 45m

Answer: A

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3. The ratio of the lengths of a tree and its shadow is $1 : \dfrac{1}{\sqrt{3}}$. The angle of elevation of

sun is:

A. $30°$

B. $45°$

C. $60°$

D. $90°$

Answer: C

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4. 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 height $10\sqrt{3}$, is:

A. $45°$

B. $60°$

C. $30°$

D. $90°$

Answer: C

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

A. vertical angle

B. angle of depression

C. angle of elevation

D. obtuse angle

Answer: C

6. 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. $15m$

C. $\dfrac{30}{\sqrt{3}}m$

D. $15\sqrt{2}m$

Answer: A

1. The angle of elevation of the top of a tower from a point on the ground, which is 30 m away from the foot of the tower is $30°$. Find the height of the tower.

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2. As observed from the top of a 100 m high light house from the sea level the angle of depression of two ships are $30°$ and $45°$. If one of the ship is exactly behind the other on the same side of the light house, find the distance between the two ships. $\left(\sqrt{3} = 1.73\right)$.

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Long Asnwer Type Questions I

1. From the top of a building 16 high the angular elevation of the top of a hill is $60°$ and the angular depression of the foot of the hill is $30°$, find the height of the hill.

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2. Two windmills of height 50 m and 40 m are on either side of the field. A person observes the top of the windmills from a point in between the towers the angle of elevation was

found to be $45°$ in both the cases. Find the distance between the windmills.

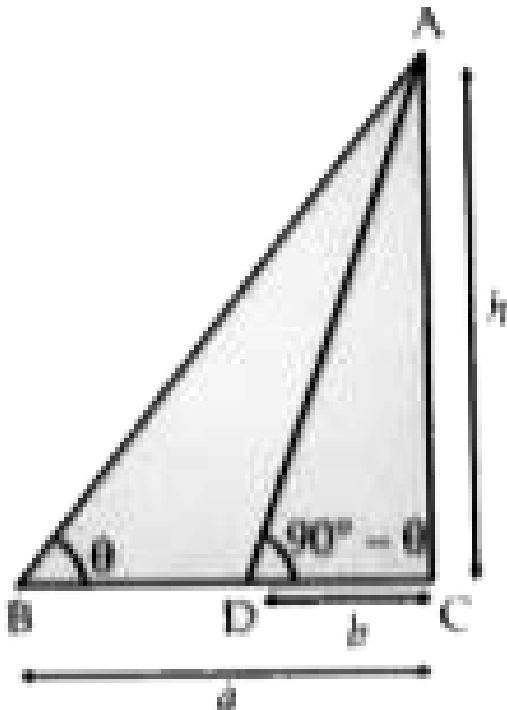**3.** From a point 50 m above the ground, the angle of elevation of a cloud is $30°$ and the angle of depression of its reflection is $60°$. Find the height of the cloud above the ground.
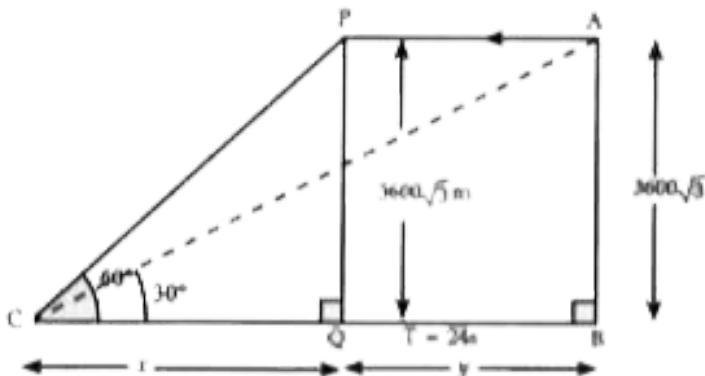
4. The angle of elevation of the top of a tower of height "h" metres from two points at a distance of "a" and "b" metres from the base and in the same straight line with it are complementary. Prove that the height of the tower is $\sqrt{ab}$ meters.

5. The angle of elevation of an aircraft from a point on horizontal of elevation of same year craft after 24 seconds which is moving horizontally to the ground is found to be 60 degree. If the aircraft from the ground is $3600\sqrt{3}$ meter. Find the velocity of a aircraft.

6. The angle of elevation of the top of a flagpost from a point on a horizontal ground is found to be $30°$. On walking 6 m towards the post, the elevation increased by $15°$. Find the height of the flagpost.

7. 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 $60°$, find the height of the cloud above the lake.

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8. From the top of a light house, angles of depression of two ships are $45°$ and $60°$. The ships are on opposite sides of the ight house

and in line with its foot. If the distance between the ships is 400 m, find the height of the light house.

Long Asnwer Type Questions Ii

1. A vertical tree is broken by the wind at a height of 6 m from its foot and its top touches the ground at a distance of 8 m from the foot of the tree. Calculate the distance between the

top of the tree before breaking and the point at which of the tree touches the ground after break.

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Textbook Corner Exercise 12 1

1. A circus artist is climbing a 20m 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 levelis $30°$ (see Figure)

2. A tree breaks due to storm and the briken part bends so that the top of the tree touches the ground making an angle $30°$ with. 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.

3. A contractor plans to install two slides for the children to the play in a park. For the children below the age of 5 years, she prefers to have slide whose top is at a height of 1.5m, and is inclined at an angle of $30°$ to the ground, whereas for elder children, she wants to have a steep slide at a height of 3m, and inclined at an angle of $60°$ to the ground. What should be the length of the slide in each case ?

4. The angle of elevation of the top of a tower from a point on the ground, which is 30 m away from the foot of the tower, is $30°$. Find the height of the tower.

5. A kite is flying at a height of 60 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.

6. A 1.5 m tall boy is standing at some distance from a 30 m tall building. The angle of elevation from his eyes to the top of the building increases from $30°$ to $60°$ as he walks towards the building. Find the distance he walked towards the building.

7. From a point on the ground, the angles of elevation of the bottom and the top of a transmission tower fixed at the top of a 20 m high building are $45°$ and $60°$ respectively. Find the height of the tower.

8. A statue, 1.6 m tall, stands on the top of a pedestal. From a point on the ground, the angle of elevation of the top of the statue is

$60°$ and from the samme point the angle of elevation of the top of the pedestal is $45°$. Find the height of the pedestal.

9. 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 50 m high, find the height of the building.

10. Two poles of equal heights are standing opposite 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 the poles and the distances of the point from the poles.

11. A TV tower stands vertically on a bank of a canal. From a point on the other bank directly opposite the tower, the angle of elevation of the top of the tower is $60°$. From another point 20 m away from this point on the line joining this point to the foot of the tower, the angle of elevation of the top of the tower is $30°$ (see figure below). find the height of the

tower and the width of the canal.
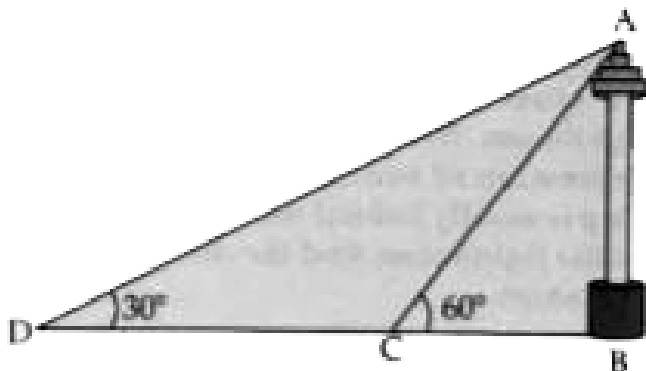
12. From the top of a 7m high building, the angle of elevation of the top of a cable tower is $60°$ and the angle of depression of its foot is $45°$.Determine the height of the tower.

13. As observed from the top of a 75 m high lighthouse from the sea-level, the angles of depression of two ships are $30°$ and $45°$. If one ship is exactly behind the other on the same side of the lighthouse, find the distance between the two ships.

14. A 1.2 m 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 some time, the angle of elevation reduces to $30°$ (see figure below). find the distance travelled by the balloon during the interval.

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15. A straight highway leads to the 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 to reach the foot of the tower from this point.

16. The angle of elevation of the top of a tower from two points at a distance of 4m and 9 m from the base of the tower and in the same straight line with it are complementary. Prove that the height of the tower is 6m.

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