



MATHS

BOOKS - SUPER COMPANION MADE EASY

SOME APPLICATIONS OF TRIGONOMETRY

Exercise 9 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 level is 30° (see Figure)



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

distance between the foot of the tree to the point where the top touches the ground is 8m. Find the height of the tree.



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3. A contractor plans to install two slides for the children to 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 ?



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



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



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6. A 1.5m tall boy is standing at some distance from a 30m 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.



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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 20m high building are 45° and 60° respectively. Find the height of the tower.



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8. A statue, 1.6m 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 same point the angle of elevation of the top of the pedestal is 45° . Find the height of the pedestal.



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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 50m high, find the height of the building.



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10. Two poles of equal heights are standing opposite each other on either side of the road,

which is 80m 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.



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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 20m 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). Find the height of the tower and the width of the canal.



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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.



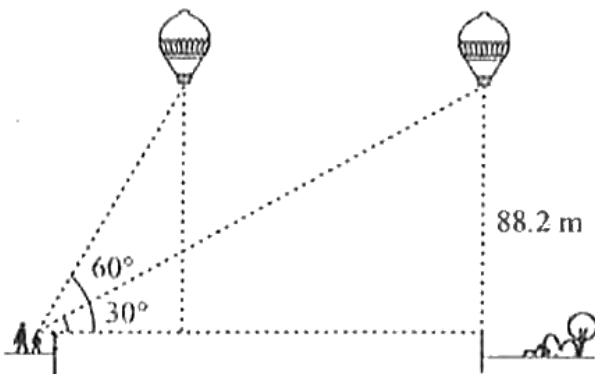
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13. As observed from the top of a 75m high lighthouse from the sea-level, the angles of depression of two ships are 30° and 45° . If one ship is exactly behind the other on the same side of the lighthouse, find the distance between the two ships.



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14. A 1.2m tall girl spots a balloon moving with the wind in a horizontal line at a height of 88.2m 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) . 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.



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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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