MATHS

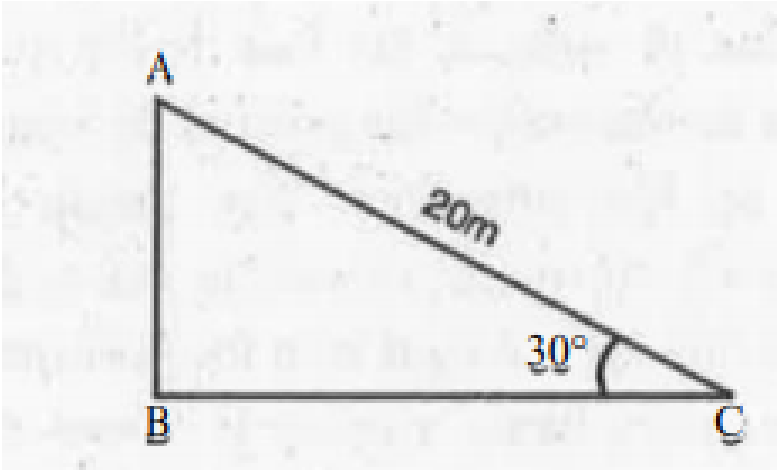
BOOKS - SWAN PUBLICATION

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 fig.).



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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 8 m. Find the height of the tree.

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3. A contractor plants 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 a slide whose top is at a height of 1.5 m, 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 3 m, 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 30 m 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 60 m above the ground. The string attached to the kite is temporarily tied to a point on the ground. The inclinationof 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 1.5 m tall boy is standing at some distance from a 30 m tall budding. The angle of elevation from his eyes to the top of the

building increasesfrom 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 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.

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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 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 50 m 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 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.

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11. 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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12. 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.

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13. 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 secondslater, the angle of depression of the car is found to be 60°. Find the further time taken by the car to reach the foot of the tower.

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14. The angles of elevation of the top of a tower from two points at a distance of 4 m and 9m from the base of the tower and in the

same straight line with it are complementary.

Prove that the height of the tower is 6 m.

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