

CBSE CLASS X
Mathematics Standard (041)

QUESTION PAPER

From previous CBSE Board Exam questions

Code: JADN12**Questions: 50****Maximum Marks: 167****Generated: 2026-06-15 13:05****SELECTIONS USED**

Source	Previous-year board
Subject	Mathematics
Lessons	Some Applications of Trigonometry
Year	2022-2026
Questions selected	50

Composition — Types: 18 Long · 11 Case-based · 11 MCQ · 5 Short · 4 Very short · 1 Assertion–reason

Q1. § 9.1 Heights and Distances**[4]**

Kite festival is celebrated in many countries at different times of the year. In India, every year 14th January is celebrated as International Kite Day. On this day many people visit India and participate in the festival by flying various kinds of kites. The picture given below, shows three kites flying together. In Fig. 5, the angles of elevation of two kites (Points A and B) from the hands of a man (Point C) are found to be 30° and 60° respectively. Taking $AD = 50$ m and $BE = 60$ m.

Case Study - 1 : Kite Festival. In Fig. 5, the angles of elevation of two kites (Points A and B) from the hands of a man (Point C) are found to be 30° and 60° respectively. Taking $AD = 50$ m and $BE = 60$ m, find:

- (1) the lengths of strings used (take them straight) for kites A and B as shown in the figure. [2]
- (2) the distance 'd' between these two kites [2]

Previously asked in: 2022 30/2/1 Q13

♦ Some Applications of Trigonometry

Angle of elevation

Distance between two points using trigonometry

Q2. § 9.1 Heights and Distances § 9.2 Summary**[2]**

Find the length of the shadow on the ground of a pole of height 18 m when angle of elevation θ of the sun is such that $\tan \theta = \frac{6}{7}$.

Previously asked in: 2023 30/6/1 Q23

♦ Some Applications of Trigonometry

Shadow and height problems using trigonometric ratios ($\tan \theta$)**Q3.** § 9.1 Heights and Distances § 9.2 Summary**[5]**

A pole 6m high is fixed on the top of a tower. The angle of elevation of the top of the pole observed from a point P on the ground is 60° and the angle of depression of the point P from the top of the tower is 45° . Find the height of the tower and the distance of point P from the foot of the tower. (Use $\sqrt{3} = 1.73$)

Previously asked in: 2024 30/1/1 Q35

♦ Some Applications of Trigonometry

Angle of elevation and angle of depression combined problem

Q4. § 9.1 Heights and Distances § 9.2 Summary

[4]

Elevated water storage tanks are built to store and supply water to nearby colonies. In the diagram given above, AB is an elevated water tank and CD is a nearby multistorey building. The building is 54 metres away from the water tank. From a window (W) of the building, the angle of elevation of top of the tank is 45° and angle of depression of its foot is 30° .

Based on the above information, answer the following questions:

- (i) Write a relation between d (the height of window) and y . [1]
- (ii) Determine the value of h . [1]
- (iii) Determine height of the water tank. OR Find the value of x and height of the window above ground level. [2]

Previously asked in: 2026 30/5/1 Q38

♦ Some Applications of Trigonometry 9.1 Heights and Distances

Q5. § 9.1 Heights and Distances § 9.2 Summary

[1]

A wire is attached from a point A on the ground to the top of a pole BC , making an angle of elevation as 60° . If $AB = 5\sqrt{3}$ m, then length of the wire is

- (A) 10 m
- (B) $10\sqrt{3}$ m
- (C) 15 m
- (D) $\frac{5}{\sqrt{3}}$ m

Previously asked in: 2026 30/5/1 Q17

♦ Some Applications of Trigonometry Finding length of wire/hypotenuse using angle of elevation and horizontal distance

Q6. § 9.1 Heights and Distances § 9.2 Summary

[3]

An aeroplane when flying at a height of 3125 m from the ground passes vertically below another plane at an instant when the angles of elevation of the two planes from the same point on the ground are 30° and 60° respectively. Find the distance between the two planes at that instant.

Previously asked in: 2022 30/4/1 Q9

♦ Some Applications of Trigonometry 9.1 Heights and Distances

Q7. § 9.1 Heights and Distances § 9.2 Summary

[3]

In Fig. 3, AB is tower of height 50 m. A man standing on its top, observes two cars on the opposite sides of the tower with angles of depression 30° and 45° respectively. Find the distance between the two cars.

Previously asked in: 2022 30/2/1 Q8

♦ Some Applications of Trigonometry 9.1 Heights and Distances

Q8. § 9.2 Summary**[4]**

Radio towers are used for transmitting a range of communication services including radio and television. The tower will either act as an antenna itself or support one or more antennas on its structure. On a similar concept, a radio station tower was built in two Sections A and B. Tower is supported by wires from a point O.

Distance between the base of the tower and point O is 36 cm. From point O, the angle of elevation of the top of the Section B is 30° and the angle of elevation of the top of Section A is 45° .

Based on the above information, answer the following questions:

- (i) Find the length of the wire from the point O to the top of Section B. [1]
- (ii) Find the distance AB. [2]
- (iii) Find the height of the Section A from the base of the tower. [1]

Previously asked in: 2023 30/6/1 Q37

♦ Some Applications of Trigonometry

9.1 Heights and Distances

Q9. § 9.1 Heights and Distances § 9.2 Summary**[5]**

A spherical balloon of radius r subtends an angle of 60° at the eye of an observer. If the angle of elevation of its centre is 45° from the same point, then prove that height of the centre of the balloon is $\sqrt{2}$ times its radius.

Previously asked in: 2023 30/1/1 Q33(b) (OR-2)

♦ Some Applications of Trigonometry

9.1 Heights and Distances

Q10. § 9.1 Heights and Distances § 9.2 Summary**[4]**

The Statue of Unity situated in Gujarat is the world's largest Statue which stands over a 58 m high base. As part of the project, a student constructed an inclinometer and wishes to find the height of Statue of Unity using it. He noted following observations from two places:

Situation – I: The angle of elevation of the top of Statue from Place A which is $80\sqrt{3}$ m away from the base of the Statue is found to be 60° .

Situation – II: The angle of elevation of the top of Statue from a Place B which is 40 m above the ground is found to be 30° and entire height of the Statue including the base is found to be 240 m.

Based on given information, answer the following questions.

- (i) Represent the Situation – I with the help of a diagram. [1]
- (ii) Represent the Situation – II with the help of a diagram. [1]
- (iii) Calculate the height of Statue excluding the base and also find the height including the base with the help of Situation – I. [2]

Previously asked in: 2025 30/6/1 Q38

♦ Some Applications of Trigonometry

9.1 Heights and Distances

Q11. § 9.1 Heights and Distances § 9.2 Summary

[1]

A peacock sitting on the top of a tree of height 10 m observes a snake moving on the ground. If the snake is $10\sqrt{3}$ m away from the base of the tree, then angle of depression of the snake from the eye of the peacock is

- A 30°
- B 45°
- C 60°
- D 90°

Previously asked in: 2025 30/6/1 Q13

♦ Some Applications of Trigonometry

9.1 Heights and Distances

Q12. § 9.1 Heights and Distances § 9.2 Summary

[4]

Passenger boarding stairs, sometimes referred to as boarding ramps, stair cars or aircraft steps, provide a mobile means to travel between the aircraft doors and the ground. Larger aircraft have door sills 5 to 20 feet (1 foot = 30 cm) high. Stairs facilitate safe boarding and de-boarding. An aircraft has a door sill at a height of 15 feet above the ground. A stair car is placed at a horizontal distance of 15 feet from the plane.

Based on given information, answer the questions given in part (i) and (ii).

- (i) Find the angle at which stairs are inclined to reach the door sill 15 feet high above the ground. [1]
- (ii) Find the length of stairs used to reach the door sill. [1]
- (iii) If the 20 feet long stairs is inclined at an angle of 60° to reach the door sill, then find the height of the door sill above the ground. (use $\sqrt{3} = 1.732$) [2]

Previously asked in: 2025 30/5/1 Q38

♦ Some Applications of Trigonometry

9.1 Heights and Distances

Q13. § 9.1 Heights and Distances § 9.2 Summary

[1]

An observer 1.8 m tall stands away from a chimney at a distance of 38.2 m along the ground. The angle of elevation of top of chimney from the eyes of observer is 45° . The height of chimney above the ground is

- A 38.2 m
- B 36.4 m
- C 40 m
- D $(38.2)\sqrt{2}$ m

Previously asked in: 2025 30/5/1 Q13

♦ Some Applications of Trigonometry

9.1 Heights and Distances

Q14. § 9.2 Summary

[4]

A drone was used to facilitate movement of an ambulance on the straight highway to a point P on the ground where there was an accident. The ambulance was travelling at the speed of 60 km/h. The drone stopped at a point Q, 100 m vertically above the point P. The angle of depression of the ambulance was found to be 30° at a particular instant.

Based on above information, answer the following questions :

- (i) Represent the above situation with the help of a diagram. [1]
- (ii) Find the distance between the ambulance and the site of accident (P) at the particular instant. (Use $\sqrt{3} = 1.73$) [1]
- (iii) Find the time (in seconds) in which the angle of depression changes from 30° to 45° . [2]

Previously asked in: 2025 30/4/1 Q38

♦ Some Applications of Trigonometry

Angle of depression from a vertical height

Diagrammatic representation of heights and distances

Distance calculation using trigonometric ratios (tan)

Time–speed–distance application with trigonometry

Q15. § 9.1 Heights and Distances § 9.2 Summary

[2]

A 1.5 m tall boy is walking away from the base of a lamp post which is 12 m high, at the speed of 2.5 m/sec. Find the length of his shadow after 3 seconds.

Previously asked in: 2025 30/4/1 Q22(A)

♦ Some Applications of Trigonometry

9.1 Heights and Distances

Q16. § 9.1 Heights and Distances § 9.2 Summary

[1]

A 30 m long rope is tightly stretched and tied from the top of pole to the ground. If the rope makes an angle of 60° with the ground, the height of the pole is :

- (a) $10\sqrt{3}$ m
- (b) $30\sqrt{3}$ m
- (c) 15 m
- (d) $15\sqrt{3}$ m

Previously asked in: 2025 30/4/1 Q10

♦ Some Applications of Trigonometry

9.1 Heights and Distances

Q17. § 9.1 Heights and Distances § 9.2 Summary

[1]

If the length of the shadow of a tower is $\sqrt{3}$ times that of its height, then altitude of the Sun is :

- A 45°
- B 30°
- C 60°
- D 15°

Previously asked in: 2026 30/3/1 Q9

♦ Some Applications of Trigonometry

9.1 Heights and Distances

Q18. § 9.2 Summary

[4]

Tejas is standing at the top of a building and observes a car at an angle of depression of 30° as it approaches the base of the building at a uniform speed. 6 seconds later, the angle of depression increases to 60° , and at that moment, the car is 25 m away from the building.

Based on the information given above, answer the following questions :

- (i) What is the height of the building ? [1]
- (ii) What is the distance between the two positions of the car ? [1]
- (iii) What would be the total time taken by the car to reach the foot of the building from the starting point ? [2]

Previously asked in: 2026 30/2/1 Q37

♦ Some Applications of Trigonometry

9.1 Heights and Distances

Q19. § 9.1 Heights and Distances § 9.2 Summary

[4]

Radio towers are used for transmitting a range of communication services including radio and television. The tower will either act as an antenna itself or support one or more antennas on its structure. On a similar concept, a radio station tower was built in two sections 'A' and 'B'. Tower is supported by wires from a point 'O' (as shown in figure). Distance between the base of the tower and point 'O' is 6 m. From point 'O', the angle of elevation of the top of the section 'B' is 30° and the angle of elevation of the top of section 'A' is 60° .

Based on the above information, answer the following questions :

- (i) Find the length of the wire from the point 'O' to the top of section 'B'. [1]
- (ii) Find the length of the wire from the point 'O' to the top of section 'A'. [1]
- (iii) Find the distance AB. [2]

Previously asked in: 2026 30/1/1 Q37

♦ Some Applications of Trigonometry

9.1 Heights and Distances

Q20. § 9.1 Heights and Distances § 9.2 Summary

[1]

A car is moving away from the base of a 30 m high tower. The angle of elevation of the top of the tower from the car at an instant, when the car is $10\sqrt{3}$ m away from the base of the tower, is :

- (a) 30°
- (b) 45°
- (c) 90°
- (d) 60°

Previously asked in: 2026 30/1/1 Q11

♦ Some Applications of Trigonometry

9.1 Heights and Distances

Q21. § 9.1 Heights and Distances § 9.2 Summary

[4]

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. Ten 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.

Previously asked in: 2022 30/3/1 Q12

♦ Some Applications of Trigonometry

Angle of Depression and Height-Distance Problems

Q22. § 9.1 Heights and Distances § 9.2 Summary**[4]**

Gadisar Lake is located in the Jaisalmer district of Rajasthan. It was built by the King of Jaisalmer and rebuilt by Gadsingh in 14th century. The lake has many Chhatris. One of them is shown below. From a point A, h m above from water level, the angle of elevation of top of Chhatri (point B) is 45° and angle of depression of its reflection in water (point C) is 60° . If the height of Chhatri above water level is (approximately) 10 m.

Observe the picture and answer the following questions:

- (a) Draw a well-labelled figure based on the above information. [2]
(b) Find the height (h) of the point A above water level. (Use $\sqrt{3} = 1.73$) [2]

Previously asked in: 2022 30/1/1 Q14

♦ Some Applications of Trigonometry 9.1 Heights and Distances

Q23. § 9.2 Summary**[3]**

From a point on a bridge across a river, the angles of depression of the banks on opposite sides of the river are 30° and 45° respectively. If the bridge is at a height of 3 m from the banks, then find the width of the river.

Previously asked in: 2022 30/1/1 Q9(b) (OR-2)

♦ Some Applications of Trigonometry Angles of Depression – Finding Width/Distance using Two Angles from a Height

Q24. § 9.1 Heights and Distances § 9.2 Summary**[3]**

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, then find the height of the building.

Previously asked in: 2022 30/1/1 Q9(a) (OR-1)

♦ Some Applications of Trigonometry 9.1 Heights and Distances

Q25. § 9.1 Heights and Distances § 9.2 Summary**[5]**

From the top of a 7 m high building, the angle of elevation of the top of a cable tower is 60° and the angle of depression of its foot is 30° . Determine the height of the tower.

Previously asked in: 2023 30/4/1 Q32(B) (OR-2)

♦ Some Applications of Trigonometry 9.1 Heights and Distances

Q26. § 9.1 Heights and Distances § 9.2 Summary**[5]**

A straight highway leads to the foot of a tower. A man standing on the top of the 75 m high tower observes two cars at angles of depression of 30° and 60° , which are approaching the foot of the tower. If one car is exactly behind the other on the same side of the tower, find the distance between the two cars. (use $\sqrt{3} = 1.73$)

Previously asked in: 2023 30/4/1 Q32(A) (OR-1)

♦ Some Applications of Trigonometry 9.1 Heights and Distances

Q27. § 9.1 Heights and Distances § 9.2 Summary**[1]**

If a pole 6 m high casts a shadow $2\sqrt{3}$ m long on the ground, then the sun's elevation is :

- (a) 60°
(b) 45°
(c) 30°
(d) 90°

Previously asked in: 2023 30/4/1 Q9

♦ Some Applications of Trigonometry 9.1 Heights and Distances

Q28. § 9.1 Heights and Distances § 9.2 Summary**[2]**

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

Previously asked in: 2023 30/2/1 Q24(a) (OR-1)

♦ Some Applications of Trigonometry

9.1 Heights and Distances

Q29. § 9.2 Summary**[5]**

From a point on a bridge across the river, the angles of depressions of the banks on opposite sides of the river are 30° and 60° respectively. If the bridge is at a height of 4 m from the banks, find the width of the river.

Previously asked in: 2024 30/5/1 Q33

♦ Some Applications of Trigonometry

Angle of Depression – Width of River from a Bridge

Q30. § 9.1 Heights and Distances § 9.2 Summary**[5]**

Two pillars of equal lengths stand on either side of a road which is 100 m wide, exactly opposite to each other. At a point on the road between the pillars, the angles of elevation of the tops of the pillars are 60° and 30° . Find the length of each pillar and distance of the point on the road from the pillars. (Use $\sqrt{3} = 1.732$)

Previously asked in: 2024 30/4/1 Q32

♦ Some Applications of Trigonometry

9.1 Heights and Distances

Q31. § 9.2 Summary**[5]**

Two ships are sailing in the sea on either side of a lighthouse. The angles of depression to the two ships as observed from the top of the lighthouse are 60° and 45° , respectively. If the distance between the ships is $100 \left(\frac{\sqrt{3} + 1}{\sqrt{3}} \right)$ m, then find the height of the lighthouse.

Previously asked in: 2025 30/2/1 Q32 (OR-1)

♦ Some Applications of Trigonometry

9.1 Heights and Distances

Q32. § 9.1 Heights and Distances § 9.2 Summary**[1]**

A kite is flying at a height of 150 m from the ground. It is attached to a string inclined at an angle of 30° to the horizontal. The length of the string is:

- A $100\sqrt{3}$ m
- B 300 m
- C $150\sqrt{3}$ m
- D $150\sqrt{2}$ m

Previously asked in: 2025 30/1/1 Q17

♦ Some Applications of Trigonometry

9.1 Heights and Distances

Q33. § 9.1 Heights and Distances § 9.2 Summary**[5]**

A kite is flying at a height of 60 m above the ground level. Ravi, standing at the roof of the house is holding the string straight and observes the angle of elevation of kite as 30° . From the bottom of the same building, the angle of elevation of kite is 45° . Find the length of the string and height of roof from the ground. (Use $\sqrt{3} = 1.73$)

Previously asked in: 2026 30/4/1 Q34

♦ Some Applications of Trigonometry

9.1 Heights and Distances

Q34. § 9.2 Summary

[4]

From the top of an 8 m 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. (Take $\sqrt{3} = 1.732$).

Previously asked in: 2022 30/4/1 Q12

♦ Some Applications of Trigonometry

8.3 Trigonometric Ratios of Some Specific Angles

9.1 Heights and Distances

Q35. § 9.1 Heights and Distances § 9.2 Summary

[5]

The angle of elevation of the top of a tower 24 m high from the foot of another tower in the same plane is 60° . The angle of elevation of the top of second tower from the foot of the first tower is 30° . Find the distance between two towers and the height of the other tower. Also, find the length of the wire attached to the tops of both the towers.

Previously asked in: 2023 30/1/1 Q33(a) (OR-1)

♦ Some Applications of Trigonometry

8.3 Trigonometric Ratios of Some Specific Angles

9.1 Heights and Distances

Length of wire between tops of two towers (Pythagoras / distance formula in context)

Q36. § 9.1 Heights and Distances § 9.2 Summary

[5]

A boy standing on a horizontal plane is flying a kite with a string of length 60 m, at an angle of elevation of 30° . Another boy standing on the roof of a 20 m high building, finds the angle of elevation of same kite to be 45° . If both the boys are on opposite sides of the kite, find the distance of the first boy from the base of the building. Also, find the height of the kite from the ground. (Use $\sqrt{3} = 1.73$)

Previously asked in: 2026 30/3/1 Q35

♦ Some Applications of Trigonometry

8.3 Trigonometric Ratios of Some Specific Angles

9.1 Heights and Distances

Q37. § 9.1 Heights and Distances § 9.2 Summary

[1]

From a point on the ground, which is 60 m away from the foot of a vertical tower, the angle of elevation of the top of the tower is found to be 45° . The height (in metres) of the tower is :

- A $10\sqrt{3}$
- B $30\sqrt{3}$
- C 60
- D 30

Previously asked in: 2026 30/2/1 Q12

♦ Some Applications of Trigonometry

8.3 Trigonometric Ratios of Some Specific Angles

9.1 Heights and Distances

Q38. § 9.1 Heights and Distances § 9.2 Summary

[3]

The tops of two poles of heights 20 m and 28 m are connected with a wire. The wire is inclined to the horizontal at an angle of 30° . Find the length of the wire and the distance between the two poles.

Previously asked in: 2022 30/3/1 Q8

♦ Some Applications of Trigonometry

8.2 Trigonometric Ratios

8.3 Trigonometric Ratios of Some Specific Angles

Q39. § 9.1 Heights and Distances § 9.2 Summary

[5]

One observer estimates the angle of elevation to the basket of a hot air balloon to be 60° , while another observer 100 m away estimates the angle of elevation to be 30° . Find :

- (a) The height of the basket from the ground.
- (b) The distance of the basket from the first observer's eye.
- (c) The horizontal distance of the second observer from the basket.

Previously asked in: 2023 30/5/1 Q32

♦ Some Applications of Trigonometry

8.3 Trigonometric Ratios of Some Specific Angles

9.1 Heights and Distances

Q40. § 9.1 Heights and Distances § 9.2 Summary [5]

From a point on the ground, the angle of elevation of the bottom and top of a transmission tower fixed at the top of 30 m high building are 30° and 60° , respectively. Find the height of the transmission tower. (Use $\sqrt{3} = 1.73$)

Previously asked in: 2023 30/2/1 Q33(b) (OR-2)

◆ Some Applications of Trigonometry

8.3 Trigonometric Ratios of Some Specific Angles

9.1 Heights and Distances

Q41. § 9.1 Heights and Distances § 9.2 Summary [5]

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 60° . If one ship is exactly behind the other on the same side of the lighthouse, find the distance between the two ships. (Use $\sqrt{3} = 1.73$)

Previously asked in: 2023 30/2/1 Q33(a) (OR-1)

◆ Some Applications of Trigonometry

8.3 Trigonometric Ratios of Some Specific Angles

Angles of Depression – Two Ships/Objects from a Lighthouse

Q42. § 9.1 Heights and Distances § 9.2 Summary [2]

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.

Previously asked in: 2023 30/2/1 Q24(b) (OR-2)

◆ Some Applications of Trigonometry

8.3 Trigonometric Ratios of Some Specific Angles

9.1 Heights and Distances

Q43. § 9.1 Heights and Distances § 9.2 Summary [1]

At some time of the day, the length of the shadow of a tower is equal to its height. Then, the Sun's altitude at that time is :

- A 30°
- B 45°
- C 60°
- D 90°

Previously asked in: 2024 30/4/1 Q14

◆ Some Applications of Trigonometry

8.3 Trigonometric Ratios of Some Specific Angles

9.1 Heights and Distances

Q44. § 9.1 Heights and Distances § 9.2 Summary [5]

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.

Previously asked in: 2024 30/3/1 Q34

◆ Some Applications of Trigonometry

8.3 Trigonometric Ratios of Some Specific Angles

9.1 Heights and Distances

Q45. § 9.1 Heights and Distances § 9.2 Summary [1]

From a point on the ground, which is 30 m away from the foot of a vertical tower, the angle of elevation of the top of the tower is found to be 60° . The height (in metres) of the tower is :

- A $10\sqrt{3}$
- B $30\sqrt{3}$
- C 60
- D 30

Previously asked in: 2024 30/3/1 Q7

◆ Some Applications of Trigonometry

8.3 Trigonometric Ratios of Some Specific Angles

9.1 Heights and Distances

Q46. § 9.2 Summary

[5]

From the top of a 45 m high light house, the angles of depression of two ships, on the opposite side of it, are observed to be 30° and 60° . If the line joining the ships passes through the foot of the light house, find the distance between the ships. (Use $\sqrt{3} = 1.73$)

Previously asked in: 2024 30/2/1 Q34

♦ Some Applications of Trigonometry

8.3 Trigonometric Ratios of Some Specific Angles

9.1 Heights and Distances

Q47. § 9.1 Heights and Distances § 9.2 Summary

[4]

A lighthouse stands tall on a cliff by the sea, watching over ships that pass by. One day a ship is seen approaching the shore and from the top of the lighthouse, the angles of depression of the ship are observed to be 30° and 45° as it moves from point P to point Q. The height of the lighthouse is 50 metres.

Based on the information given above, answer the following questions:

- (i) Find the distance of the ship from the base of the lighthouse when it is at point Q, where the angle of depression is 45° . [1]
- (ii) Find the measures of $\angle PBA$ and $\angle QBA$. [1]
- (iii) Find the distance travelled by the ship or the speed of the ship. [2]

Previously asked in: 2025 30/3/1 Q37

♦ Some Applications of Trigonometry

8.3 Trigonometric Ratios of Some Specific Angles

Angle of Depression from top of lighthouse/tower to a moving object

Distance travelled by a moving ship using two angles of depression

Q48. § 9.1 Heights and Distances § 9.2 Summary

[1]

Assertion (A): A ladder leaning against a wall, stands at a horizontal distance of 6 m from the wall. If the height of the wall up to which the ladder reaches is 8 m, then the length of the ladder is 10 m.

Reason (R): The ladder makes an angle of 60° with the ground.

Select the correct answer from the codes (A), (B), (C) and (D) given below:

- A Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).
- B Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of the Assertion (A).
- C Assertion (A) is true, but Reason (R) is false.
- D Assertion (A) is false, but Reason (R) is true.

Previously asked in: 2025 30/3/1 Q19

♦ Some Applications of Trigonometry

8.2 Trigonometric Ratios

9.1 Heights and Distances

Q49. § 9.2 Summary

[5]

The angles of depression of the top and the bottom of an 8 m tall building from the top of another multistoried building are 30° and 45° , respectively. Find the height of the multistoried building and the distance between the two buildings.

Previously asked in: 2025 30/2/1 Q32 (OR-2)

♦ Some Applications of Trigonometry

8.3 Trigonometric Ratios of Some Specific Angles

9.1 Heights and Distances

Q50. § 9.1 Heights and Distances § 9.2 Summary

[4]

Amrita stood near the base of a lighthouse, gazing up at its towering height. She measured the angle of elevation to the top and found it to be 60° . Then, she climbed a nearby observation deck, 40 metres higher than her original position and noticed the angle of elevation to the top of lighthouse to be 45° .

Based on the above given information, answer the following questions:

- (i) Find CD in terms of h (where h is the height). [1]
- (ii) Find BD in terms of BC . [1]
- (iii) Find the height CE of the lighthouse. [Use $\sqrt{3} = 1.73$] [2]

Previously asked in: 2025 30/1/1 Q38

♦ Some Applications of Trigonometry

8.3 Trigonometric Ratios of Some Specific Angles

9.1 Heights and Distances

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<https://github.com/orgs/cbse-free-resources/repositories>