Height and Distance

1. The angle of elevation of the top of a tower from a point 40 m away from its foot is 45°. What is the height of the tower?

A) 20 m

B) 40 m

C) 80 m

D) 60 m

Answer: B) 40 m

2. The shadow of a 12 m pole is 12√3 m when the sun's altitude is:

A) 30°

B) 45°

C) 60°

D) 90°

Answer: A) 30°

3. A boy 1.5 m tall casts a shadow of 1.5 m when the angle of elevation of the sun is:

A) 15°

B) 30°

C) 45°

D) 60°

Answer: C) 45°

4. The height of a tree is 10 m and its shadow is 10 m. What is the angle of elevation of the sun?

A) 30°

B) 45°

C) 60°

D) 90°

Answer: B) 45°

5. From a point 20 m away from the base of a tower, its angle of elevation is 60°, what is the height of the tower?

A) 10√3 m

B) 20√3 m

C) 30 m

D) 60 m

Answer: B) 20√3 m

6. An observer 1.6 m tall is 20 m away from a tower 18.4 m high. The angle of elevation from his eye to the top is:

A) 30°

B) 45°

C) 60°

D) 75°

Answer: C) 60°

7. A pole 8 m high casts a shadow 4√3 m long. The angle of elevation of the sun is:

A) 30°

B) 45°

C) 60°

D) 75°

Answer: C) 60°

8. A 15 m tall building casts a shadow of 15 m. What is the altitude of the sun?

A) 45°

B) 60°

C) 30°

D) 90°

Answer: A) 45°

9. The angle of elevation of the sun when the shadow of a pole is √3 times the height of the pole is:

A) 30°

B) 45°

C) 60°

D) 75°

Answer: A) 30°

10. A tree 10 m high casts a shadow 10√3 m long. What is the angle of elevation of the sun?

A) 30°

B) 45°

C) 60°

D) 90°

Answer: A) 30°

11. The distance between a tower and the point of observation is 40 m. If the angle of elevation is 45°, find the height of the tower.

A) 20 m

B) 40 m

C) 30 m

D) 45 m

Answer: B) 40 m

12. The angle of depression of a car moving on a road is measured at 30° from the top of a tower 50 m high. Find the distance of the car from the base of the tower.

A) 50√3 m

B) 100 m

C) 25 m

D) 75√3 m

Answer: A) 50√3 m

13. A ladder 15 m long reaches a window 8 m above the ground. The ladder makes what angle with the wall?

A) 30°

B) 45°

C) 53.13°

D) 60°

Answer: C) 53.13°

14. The shadow of a flagpole is 15 m. If the angle of elevation of the sun is 60°, what is the height of the pole?

A) 15 m

B) 15√3 m

C) 30 m

D) 10 m

Answer: B) 15√3 m

15. The angle of elevation of a bird from a point at 60 m from the base of a pole of height 80 m is:

A) 30°

B) 45°

C) 53.13°

D) 60°

Answer: C) 53.13°

16. Height of a building is 60 m and the angle of elevation of its top from a point is 60°. Find the distance of the point from the building.

A) 30 m

B) 60√3 m

C) 60 m

D) 20 m

Answer: B) 60√3 m

17. A man 1.6 m tall is standing 20 m from a tower. The angle of elevation of the top of the tower from his eye is 45°. Find the height of the tower.

A) 21.6 m

B) 20 m

C) 22 m

D) 23.6 m

Answer: A) 21.6 m

18. The angle of depression of a car moving on a road is 30° from the top of a tower 50 m high. Find its distance from the base of the tower.

A) 50√3 m

B) 100 m

C) 25 m

D) 60 m

Answer: A) 50√3 m

19. A balloon is flying at a height of 150 m above the ground. The angle of elevation of the balloon from a point on the ground is 60°. Find the distance of the point from the base of the balloon.

A) 100√3 m

B) 150 m

C) 200 m

D) 150√3 m

Answer: D) 150√3 m

20. A man's shadow is 4 m when the angle of elevation of the sun is 30°. Find the height of the man.

A) 4 m

B) 5 m

C) 6 m

D) 7 m

Answer: B) 4√3 m

21. The angle of elevation of the top of a building is 30°. If the height of the building is 15 m, find the distance of the point from the base of the building.

A) 15√3 m

B) 30 m

C) 20 m

D) 25 m

Answer: A) 15√3 m

22. A person is observing two buildings and the angles of elevation are 30° and 45°. Calculate the distance between the buildings if the height of the buildings are 50 m and 40 m respectively.

A) 50 m

B) 55 m

C) 60 m

D) 65 m

Answer: D) 65 m

23. The length of the shadow of a tower is 80 m when the angle of elevation of the sun is 45°. What is the height of the tower?

A) 30 m

B) 80 m

C) 50 m

D) 100 m

Answer: B) 80 m

24. A man standing on the top of the tower observes the angle of depression of two objects on the ground to be 30° and 60° respectively. If the height of the tower is 40 meters, find the distance between the objects.

A) 30 m

B) 40 m

C) 50 m

D) 60 m

Answer: B) 40 m

25. The angle of elevation of the top of a hill from a point on the ground is 30°. If the hill is 50 m high, how far is the point from the foot of the hill?

A) 50 m

B) 50√3 m

C) 150 m

D) 100 m

Answer: B) 50√3 m

26. A man standing near a tree observes the angle of elevation of the top of the tree to be 60°, he walks 20 m forward and the angle becomes 30°. What is the height of the tree?

A) 40 √3 m

B) 30 m

C) 60 m

D) 20 √3 m

Answer: B) 40√3 m

27. From a point 40 m away from the base of a tower, the angle of elevation to the top is 45°. Find the height of the tower.

A) 40 m

B) 60 m

C) 45 m

D) 30 m

Answer: A) 40 m

28. The angle of elevation of the top of a pole from a horizontal line 10 m away is 60°. Find height of pole.

A) 10√3 m

B) 10 m

C) 15 m

D) 20 m

Answer: A) 10√3 m

29. The shadow of a 40 m tall pole is 40 m. Find the angle of elevation of the sun.

A) 30°

B) 45°

C) 60°

D) 90°

Answer: B) 45°

30. A man is standing 20 m away from a tower. The angle of elevation of the top of the tower from his head is 45°. If the height of the man is 1.5 m, find the height of the tower.

A) 20 m

B) 21.5 m

C) 22.5 m

D) 23 m

Answer: B) 21.5 m

31. A man is 2.5 m tall. He is standing 14 m away from the building the angle of elevation of the top of building from the top of the man is 60°. What is the height of the building?

A) 4.6 m

B) 15.5 m

C) 23.5 m

D) 27 m

Answer: D) 27 m

32. The length of shadow of a tower is 10 m when the angle of elevation of the sun is 45°. Find height of pole.

A) 18 m

B) 10 m

C) 14 m

D) 12 m

Answer: B) 10 m

33. From the top of a tower whose height is 25 m, the angle of depression to points A and B on the level ground are observed to be 30° and 60° respectively. Find the distance between the points A and B.

A) 25 m

B) 43.30 m

C) 36.6 m

D) 50 m

Answer: B) 43.3 m

34. The height of a tower is 120 meters. From a point on the ground, the angle of elevation of the top of the tower is 60°. Find the distance of the point from the foot of the tower.

A) 120√3 m

B) 120 m

C) 60 m

D) 60√3 m

Answer: A) 120√3 m

35. The length of the shadow of a building is 40 m when the height of the sun is 45°. Find the height of the building.

A) 20 m

B) 40 m

C) 60 m

D) 80 m

Answer: B) 40 m

36. An aeroplane is flying at 5,000 m above the ground. The angle of elevation of the aeroplane from a point on the ground is 45°. Find the horizontal distance between the aeroplane and the point.

A) 5000 m

B) 20000 m

C) 5000√2 m

D) 10000 m

Answer: C) 5000√2 m

37. Two poles of heights 12 m and 15 m are standing on the ground 30 m apart. Determine the distance between their tops.

A) 21 m

B) 25 m

C) 30 m

D) 40 m

Answer: B) 25 m

38. The angle of elevation of the top of a tower is 30°. When the observer moves 50 m closer, the angle is 45°. Find the height of the tower.

A) $$ \frac{50}{\sqrt{3}} $$ m

B) $$ 50 \sqrt{3} $$ m

C) 25 m

D) 12.5 m

Answer: A) $$ \frac{50}{\sqrt{3}} $$ m

39. A man is standing at a distance of 40 m from the base of a tower. The angle of elevation of the top of the tower from his position is 60°. Find the height of tower.

A) 40√3 m

B) 40 m

C) 20 m

D) 60 m

Answer: A) 40√3 m

40. A tree breaks due to a storm. The broken part falls to the ground making an angle of 30° with the ground. The distance between foot of tree to where the top touches is 18 m. Find the height of the tree.

A) 18 m

B) 27 m

C) 18√3 m

D) 27√3 m

Answer: D) 27√3 m

41. The angle of elevation of top of a tower from a point 20 m away is 45°. Find the height of tower.

A) 20 m

B) 30 m

C) 25 m

D) 40 m

Answer: A) 20 m

42. A 10 m tall tree casts a shadow of length $10\sqrt{3}$ m. Find the angle of elevation of the sun.

A) 30°

B) 45°

C) 60°

D) 90°

Answer: A) 30°

43. A man standing on top of a tower observes two trains running on parallel tracks, the angles of depression of the two trains are 60° and 30° respectively. The distance between the two trains is 200 m. The height of the tower is:

A) 50 m

B) 40 m

C) 70 m

D) 100 m

Answer: A) 50 m

44. From a point 40 m far from the foot of a tower, the angle of elevation of its top is 45°. A man moves 10 m towards the tower. What will be the new angle of elevation?

A) 50°

B) 60°

C) 70°

D) 45°

Answer: B) 60°

45. The length of the shadow of a tree is equal to its height. Find the angle of elevation of the sun.

A) 30°

B) 45°

C) 60°

D) 90°

Answer: B) 45°

46. A tower is 100 meters high. The angle of elevation of its top from a point on the ground is 30°. Find the distance of the point from the tower.

A) 173 meters

B) 100 meters

C) 200 meters

D) 150 meters

Answer: A) 173 meters

47. A ladder rests against a wall, its foot is 8 m from the wall. If it reaches 15 m height on the wall, find length of ladder.

A) 15 m

B) 17 m

C) 18 m

D) 17.3 m

Answer: B) 17 m

48. The angle of elevation of the top of a tower from the foot of a building is 45°, and from the top of the building is 60°. If the building is 50 m high, find the height of the tower.

A) 70 m

B) 75 m

C) 80 m

D) 85 m

Answer: C) 80 m

49. The angle of elevation of a tower from a point standing on the ground is 60°. The length of the shadow of the tower is 40 m. Find the height of the tower.

A) 40 m

B) 40√3 m

C) 20 m

D) 60 m

Answer: B) 40√3 m

50. From a point 60 m away from the base of a tower, the angle of elevation of the top of the tower is 30°. Find the height of the tower.

A) 20 m

B) 30 m

C) 40 m

D) 60 m

Answer: A) 20 m

51. From the top of an upright pole 17.75 m high, the angle of elevation of the top of an upright tower is 60°. If the tower is 57.75 m tall, how far away is the foot of the pole from the foot of the tower?

A) $$\frac{40\sqrt{3}}{3}$$ m

B) 40 m

C) 45 m

D) 60 m

Answer: A) $$\frac{40\sqrt{3}}{3}$$ m

52. A man 1.5 m tall stands 30.5 m away from a chimney 18.4 m high. Find the angle of elevation from his eye to the top of the chimney.

A) 25°

B) 30°

C) 35°

D) 40°

Answer: B) 30°

53. The angle of depression of a car from the top of a tower 50 m high is 30°. Find the horizontal distance of the car from the tower.

A) $$50\sqrt{3}$$ m

B) 50 m

C) 75 m

D) 100 m

Answer: A) $$50\sqrt{3}$$ m

54. A ladder 15 m long rests against a vertical wall. The foot of the ladder is 9 m from the wall. Calculate the height reached by the ladder on the wall.

A) 12 m

B) 13 m

C) 14 m

D) 15 m

Answer: A) 12 m

55. The shadow of a building is 30 m long when the angle of elevation of the sun is 60°. Find the height of the building.

A) 15√3 m

B) 15 m

C) 30 m

D) 45 m

Answer: A) 15√3 m

56. A man standing 15 m from the base of a tower observes the angle of elevation to the top of the tower to be 45°. Find the height of the tower.

A) 15 m

B) 20 m

C) 25 m

D) 30 m

Answer: A) 15 m

57. The angle of depression of a car from the top of a tower of height 72 m is 30°. Calculate the horizontal distance of the car from the base of the tower.

A) 72 m

B) 72√3 m

C) 36√3 m

D) 100 m

Answer: B) 72√3 m

58. The length of the shadow of a vertical pole is 10 m when the angle of elevation of the sun is 45°. Find the height of the pole.

A) 10 m

B) 15 m

C) 20 m

D) 25 m

Answer: A) 10 m

59. Distance between a point and a tower is 12 m. The angle of elevation to the top of the tower is 45°. Find the height of the tower.

A) 10 m

B) 12 m

C) 15 m

D) 18 m

Answer: B) 12 m

60. A man 1.8 m tall standing 15 m away from a tower observes the angle of elevation of the top of the tower as 60°. Find the height of the tower.

A) 20 m

B) 25 m

C) 26.6 m

D) 30 m

Answer: C) 26.6 m

61. A man at the top of a tower observes a car on the ground at an angle of depression of 30°. Find the horizontal distance if the height of the tower is 50 m.

A) 25 m

B) 43.3 m

C) 66.6 m

D) 86.6 m

Answer: C) 86.6 m

62. The length of the shadow of a tower is 40 m when the altitude of the sun is 30°. Find the height of the tower.

A) 20 m

B) 40√3 m

C) 23 m

D) 42 m

Answer: B) 40√3 m

63. From a window 40 m above the ground, the angle of depression of a point on the ground is 60°. Find the distance of the point from the foot of the building.

A) 23.1 m

B) 40 m

C) 45.2 m

D) 69 m

Answer: A) 23.1 m

64. A building 80 m tall casts a shadow 40 m long. Calculate the angle of elevation of the sun at that time.

A) 30°

B) 45°

C) 60°

D) 75°

Answer: C) 60°

65. The angle of elevation of a ladder leaning against a wall is 60°, and the foot of the ladder is 6 m away from the wall. Find the length of the ladder.

A) 6 m

B) 8 m

C) 12 m

D) 15 m

Answer: C) 12 m

66. The height of a tower is 45 m. At a point 60 m away, the angle of elevation is observed to be:

A) 38°

B) 39.8°

C) 40°

D) 45°

Answer: C) 40°

67. A man standing on ground observes the angle of elevation to the top of a tower as 45°. If the man is 2 m tall and the length of his shadow is 2 m, find the height of the tower.

A) 12 m

B) 16 m

C) 18 m

D) 20 m

Answer: B) 16 m

68. The angle of elevation from the top of a building to the top of a tower is 45°, and the angle of depression to the base of the tower is 30°. If the building is 50 m tall, find the height of the tower.

A) 80 m

B) 70 m

C) 100 m

D) 90 m

Answer: A) 80 m

69. The height of a building is 60 m. The angle of depression from the top of the building to a point on the ground is 60°. Calculate the horizontal distance from the building to the point.

A) 30 m

B) 20 m

C) 40 m

D) 50 m

Answer: A) 30 m

70. An observer stands 40 m away from the base of a tower and the angle of elevation of the top of the tower is 30°. Calculate the height of the tower.

A) 20 m

B) 21.5 m

C) 23.1 m

D) 24 m

Answer: A) 20 m

71. The length of the shadow of a vertical pole is equal to twice its height. Calculate the angle of elevation of the sun.

A) 30°

B) 45°

C) 60°

D) 75°

Answer: A) 30°

72. A kite is flying at a height of 40√3 m from the level ground. It is attached to a string inclined at 60° to the horizontal. Find the length of the string.

A) 80 m

B) 70 m

C) 90 m

D) 100 m

Answer: A) 80 m

73. A man is observing a statue at a point such that the angle of elevation is 60°. If the statue is 15 m high, calculate the distance of the man from the statue.

A) 10 m

B) 12.5 m

C) 15 m

D) 17.5 m

Answer: A) 10 m

74. From the top of a tower 50 m high, the angle of depression of a car on the ground is 30°. Find the distance of the car from the tower base.

A) 30√3 m

B) 40 m

C) 50 m

D) 20√3 m

Answer: A) 30√3 m

75. The height of a tower is 60 m. From a point on the ground, the angle of elevation of the top of the tower is 45°. Find the distance of the point from the tower.

A) 25√3 m

B) 30 m

C) 60 m

D) 50 m

Answer: C) 60 m

76. The length of the shadow of a vertical tower made an angle of 45° with the ground. The height of the tower is 50 m. Calculate the length of the shadow.

A) 50 m

B) 30 m

C) 60 m

D) 70 m

Answer: A) 50 m

77. A ladder leaning against a wall reaches a height of 24 m with base 7 m away. Calculate the length of the ladder.

A) 25 m

B) 26 m

C) 27 m

D) 28 m

Answer: A) 25 m

78. A man standing 10 m from a building observes the angle of elevation of the top of the building is 60°. He then walks 10 m towards the building and finds the angle becomes 45°. Find the height of the building.

A) 15 m

B) 20 m

C) 25 m

D) 30 m

Answer: B) 20 m

79. A tower has height 100 m. If the shadow of the tower is 100 m long, then the angle of elevation of the sun is:

A) 30°

B) 45°

C) 60°

D) 90°

Answer: B) 45°

80. The length of the shadow of a pole is equal to its height. Find the angle of elevation of the sun.

A) 30°

B) 45°

C) 60°

D) 90°

Answer: B) 45°

81. A man standing on a point observes the angle of elevation of the top of a tower to be 30°, and the angle of depression of point lying between man and tower as 45°. If height of the tower is 150 m, find the distance of tower from the point.

A) 200 m

B) 240 m

C) 250 m

D) 270 m

Answer: B) 240 m

82. Find the length of the ladder resting against a wall which makes an angle of 60° with ground if the foot of ladder is 8 m from the wall.

A) 14 m

B) 16 m

C) 18 m

D) 20 m

Answer: B) 16 m

83. A tree 5 m tall casts a shadow of length 5√3 m. Find the angle of elevation of the sun.

A) 30°

B) 45°

C) 60°

D) 90°

Answer: A) 30°

84. From the top of a building 25 m high, the angle of elevation of the top of a tower is 30°. From the base of the building, the angle of elevation of the top of the tower is 60°. Find the height of the tower.

A) 100 m

B) 110 m

C) 120 m

D) 130 m

Answer: A) 100 m

85. A man walks 80 m towards a tower and finds the angle of elevation of the top to be 60°. He walks another 40 m and finds the angle of elevation to be 30°. Find the height of the tower.

A) 50 m

B) 55 m

C) 60 m

D) 65 m

Answer: A) 50 m

86. The shadow of a vertical pole is 12 m when the angle of elevation of the sun is 45°. The height of the pole is:

A) 12 m

B) 14 m

C) 15 m

D) 10 m

Answer: A) 12 m

87. The length of the shadow of a tower is 60 m when the angle of elevation of the sun is 30°. The height of the tower is:

A) 20√3 m

B) 30 m

C) 30√3 m

D) 60 m

Answer: A) 20√3 m

88. The height of a tower is 100 m. Calculate the distance of a point from the tower where the angle of elevation of the top of the tower is 60°.

A) 100 m

B) 150√3 m

C) 100√3 m

D) 200 m

Answer: C) 100√3 m

89. A boat is sailing towards a tower at an angle of elevation 30°. It is 50 m from the tower. Find the height of the tower.

A) 25 m

B) 30 m

C) 28 m

D) 35 m

Answer: A) 25 m

90. Angle of elevation to the top of the tower at a point is 60°. If the height of the tower is 50 m, find the distance of the point from the foot of the tower.

A) 25√3 m

B) 50 m

C) 50√3 m

D) 30 m

Answer: A) 25√3 m

91. A man at point A observes angle of elevation to the top of a tower to be 45°, walking 10 m towards tower to B. Angle of elevation at B is 60°. Find height of tower.

A) 15 m

B) 25 m

C) 30 m

D) 35 m

Answer: C) 25√3 m

92. Length of shadow of pole is equal to its height. What is the angle of elevation of the sun?

A) 30°

B) 45°

C) 60°

D) 75°

Answer: B) 45°

93. A man 1.5 m tall is standing 20 m away from a tree. The angle of elevation of the top of the tree from his eyes is 30°. Find height of tree.

A) 15 m

B) 18 m

C) 20 m

D) 22 m

Answer: B) 18 m

94. Angle of elevation of top of tower from a point certain distance away is 30°. If tower is 40 m tall, find distance from point.

A) 20 m

B) 40√3 m

C) 20√3 m

D) 80 m

Answer: B) 40√3 m

95. Height of tower 25 m, distance of point 40 m. Find angle of elevation.

A) 30°

B) 35°

C) 45°

D) 50°

Answer: C) 32°

96. Length of ladder is 12 m, which makes an angle of 60° form the ground. Calculate the height reached on the wall.

A) 8 m

B) 10 m

C) 7 m

D) 9 m

Answer: A) 10 m

97. Angle elevation of a bird from point 50 m from base of a tree is 60°. Height of tree if bird at top is?

A) 50√3 m

B) 30 m

C) 25 m

D) 45 m

Answer: A) 50√3 m

98. The height of a building is 80m. The angle of elevation of the sun is 45°, find the length of the shadow of the building.

A) 80 m

B) 90 m

C) 70 m

D) 60 m

Answer: A) 80 m

99. From a point on ground, angle elevation of top of tower is 60°, tower height 40 m, distance between point and tower base?

A) 40 m

B) 20 m

C) 30 m

D) 50 m

Answer: B) 40/√3 m

100. A man walks a distance of 40 m towards a tower, the angle of elevation of top of tower changes from 30° to 60°. Find height of tower.

A) 30 m

B) 20 m

C) 25 m

D) 28 m

Answer: A) 30 m