Height and Distance

1. The angle of elevation of the top of a tower from a point 20 m away from its base is 30°. What is the height of the tower?

A) 10 m

B) 10\sqrt{3} m

C) 20 m

D) 30 m

Answer: B)10\sqrt{3} m

2. A ladder 10 m long rests against a wall. The foot of the ladder is 6 m from the wall. Find the height it reaches on the wall.

A) 6 m

B) 7 m

C) 8 m

D) 9 m

Answer: C) 8 m

3. The shadow of a vertical pole is 15 m when the angle of elevation of the sun is 60°. Find the height of the pole.

A) 15 m

B) 15\sqrt{3} m

C) 20 m

D) 25 m

Answer: B)15\sqrt{3} m

4. From a point 40 m from the foot of a building, the angle of elevation of top is 45°. Find the height of the building.

A) 20 m

B) 25 m

C) 30 m

D) 40 m

Answer: D) 40 m

5. The length of shadow of a tower is 10 m when the angle of elevation of the sun is 45°. Height of tower?

A) 5 m

B) 10 m

C) 15 m

D) 20 m

Answer: B) 10 m

6. The angle of elevation of the sun when the shadow of a pole is equal to the height of the pole is:

A) 30°

B) 45°

C) 60°

D) 90°

Answer: B) 45°

7. The angle of elevation of the top of a tower is 60° from a point 20 m away. What's the height?

A) $$20\sqrt{3}$$ m

B) 20 m

C) 40 m

D) 60 m

Answer: A) $$20\sqrt{3}$$ m

8. A man observes the top of a tower at an angle of 30° from point 50 m away. What's the height?

A) 25 m

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

C) 30 m

D) 40 m

Answer: B) $$50\sqrt{3}/3$$ m

9. The shadow of a flagpole is 12 m when the angle of elevation of sun is 60°. Height?

A) 6 m

B) $$12\sqrt{3}$$ m

C) 18 m

D) 20 m

Answer: B) $$12\sqrt{3}$$ m

10. The length of ladder leaning against wall is 13 m, base 5 m away. What's height reached?

A) 12 m

B) 10 m

C) 11.5 m

D) 11 m

Answer: D) 12 m

11. From a point 24 m away from a tower base, angle elevation is 30°. Find height of tower.

A) 24 m

B) $$24\sqrt{3}/3$$ m

C) 20 m

D) 36 m

Answer: B) $$24\sqrt{3}/3$$ m

12. A man 1.5 m tall stands 30.5 m from a chimney 18.4 m tall. Find angle elevation from eye level.

A) 25°

B) 30°

C) 40°

D) 45°

Answer: B) 30°

13. Length of shadow equals height of tower. Find sun's angle of elevation.

A) 30°

B) 45°

C) 60°

D) 90°

Answer: B) 45°

14. Height of tower is 25 m, shadow length is 20 m. Calculate the angle of elevation of the sun.

A) 38°

B) 45°

C) 30°

D) 60°

Answer: A) 38°

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

A) 15√3 m

B) 30 m

C) 24 m

D) 12 m

Answer: A) 15√3 m

16. A ladder leans against a wall making an angle 60° with the ground, distance of base is 8 m. Find the height on the wall.

A) $$8\sqrt{3}$$ m

B) 10 m

C) 12 m

D) 16 m

Answer: A) $$8\sqrt{3}$$ m

17. Two towers 50 m apart; angles of elevation of the top of first trail from second tower and vice versa are 30° and 60°. Heights?

A) 50 m and 30 m

B) 25 m and 50 m

C) 50 m and $$50\sqrt{3}$$ m

D) 30 m and 50 m

Answer: A) 50 m and 30 m

18. A man is 1.7 m tall; the angle of elevation of top of building from eye is 60°; distance from building base is 20 m. Height?

A) 22.7 m

B) 23.7 m

C) 24.7 m

D) 25.7 m

Answer: A) 22.7 m

19. The length of the shadow of a pillar decreases from 40 m to 30 m when the angle of elevation of the sun changes from 30° to x°. Find x.

A) 37.7°

B) 40°

C) 42°

D) 45°

Answer: A) 37.7°

20. The height of a building is 30 m and the angle of elevation of the sun is 45°. Find the length of the shadow.

A) 30 m

B) 35 m

C) 40 m

D) 45 m

Answer: A) 30 m

21. A sun’s elevation is 60°. What is length of shadow of a building 10 m high?

A) 5 m

B) 10 m

C) 15 m

D) 20 m

Answer: A) 5 m

22. The angle of elevation of the top of a tree is 60°. The distance from bottom is 50 m. Find height.

A) 50 m

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

C) 30 m

D) 25 m

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

23. The shadow of a building is 40 m when sun's elevation is 30°. Calculate its height.

A) 40 m

B) $$40\sqrt{3}$$ m

C) 30 m

D) 35 m

Answer: B) $$40\sqrt{3}$$ m

24. The length of a ladder leaning on a wall is 13 m. Distance from wall to foot is 5 m. Find height reached.

A) 11.5 m

B) 12 m

C) 12.1 m

D) 13 m

Answer: A) 12.1 m

25. From a point 12 m away, angle of elevation of a balloon is 60°. Find height.

A) 12 m

B) $$12\sqrt{3}$$ m

C) 15 m

D) 20 m

Answer: B) $$12\sqrt{3}$$ m

26. A man 2 m tall is 10 m from a tower, the angle of elevation is 60°. Height of tower?

A) 18.3 m

B) 20 m

C) 22 m

D) 25 m

Answer: A) 18.3 m

27. The shadow of a flagpole 20 m high is 10 m. Find angle of sun.

A) 45°

B) 60°

C) 30°

D) 90°

Answer: B) 60°

28. The shadow of a tower is 12 m when sun elevation is 30°. Height of tower?

A) 6 m

B) 12 m

C) $$12\sqrt{3}$$ m

D) 15 m

Answer: C) $$12\sqrt{3}$$ m

29. The angle of elevation of the top of a tower is 45°, the distance to the tower is 20 m. Find the height.

A) 20 m

B) 25 m

C) 30 m

D) 35 m

Answer: A) 20 m

30. Length of shadow = height; find sun elevation angle.

A) 45°

B) 30°

C) 60°

D) 90°

Answer: A) 45°

31. The length of shadow of a lamppost is 10 m. Find height if sun elevation is 45°.

A) 5 m

B) 10 m

C) 15 m

D) 20 m

Answer: B) 10 m

32. Angle of elevation is 30° from 60 m away; height is?

A) 30 m

B) 40 m

C) 50 m

D) 60 m

Answer: A) 30 m

33. A man is 25 m away from a tower with elevation angle 60°. Tower height?

A) 25 m

B) 50 m

C) $$25\sqrt3$$ m

D) 60 m

Answer: C) $$25\sqrt3$$ m

34. A shadow is 10 m, sun elevation 60°. Find pole height.

A) 10 m

B) 15 m

C) $$10\sqrt3$$ m

D) 20 m

Answer: C) $$10\sqrt3$$ m

35. Ladder is 15 m long inclined at 60°. Height on wall?

A) 10 m

B) 12.99 m

C) 14 m

D) 15 m

Answer: B) 12.99 m

36. From a building 25 m high, angle of elevation of top of tower 45°, find tower height if base distance 20 m.

A) 25 m

B) 30 m

C) 35 m

D) 40 m

Answer: B) 30 m

37. The shadow of a pole is 6 m when the sun's elevation is 30°. Height of pole?

A) 3 m

B) 6 m

C) $$6 \sqrt{3}$$ m

D) 8 m

Answer: C) $$6 \sqrt{3}$$ m

38. A 12 m pole casts a shadow of 12 m when sun’s elevation is:

A) 30°

B) 45°

C) 60°

D) 90°

Answer: B) 45°

39. An angle of elevation of a bird from a point 50 m away from base of a tree is 45°. Tree height?

A) 45 m

B) 50 m

C) 55 m

D) 60 m

Answer: B) 50 m

40. The length of shadow equals twice the height, find sun elevation angle.

A) 20°

B) 26.56°

C) 30°

D) 45°

Answer: B) 26.56°

41. The height of a tree is 40 m. Find the shadow length when angle of elevation of sun is 60°.

A) 20 m

B) 23 m

C) $$40/\sqrt{3}$$ m

D) 50 m

Answer: C) $$40/\sqrt{3}$$ m

42. Height of tower is 30 m, angle elevation is 45°. Distance between base and point?

A) 30 m

B) 20 m

C) 40 m

D) 35 m

Answer: A) 30 m

43. Length of shadow of 18 m tower is 12 m; sun elevation?

A) 30°

B) 45°

C) 60°

D) 90°

Answer: C) 60°

44. Ladder 15 m leaning at 60°. Base from wall?

A) 6 m

B) 7.5 m

C) 10 m

D) 12 m

Answer: B) 7.5 m

45. Shadow length is 8 m when sun elevation is 45°. Height of pole?

A) 6 m

B) 8 m

C) 10 m

D) 12 m

Answer: B) 8 m

46. The angle of elevation of the top of a tower from a point on the ground is 30°. Find tower height if distance from base is 7 m.

A) 4 m

B) 5 m

C) 7 m

D) $$7/\sqrt{3}$$ m

Answer: D) $$7/\sqrt{3}$$ m

47. Height of building 40 m, distance 40 m, angle of elevation measures?

A) 30°

B) 45°

C) 60°

D) 75°

Answer: B) 45°

48. The ladder reaches 15 m up the wall, length is 25 m. Base distance?

A) 10 m

B) 15 m

C) 20 m

D) 22 m

Answer: C) 20 m

49. A man's height is 1.8 m and he stands 3.5 m away from a lamp post. The angle of elevation of the top of the lamp post from his eyes is 30°. Find height of lamp post.

A) 20 m

B) 15 m

C) 18 m

D) 22 m

Answer: A) 20 m

50. The shadow of a vertical pole is 16 m long. At the same time, the shadow of a vertical building is 64 m long. What is the ratio between the height of the pole and height of the building?

A) 1:2

B) 1:3

C) 2:1

D) 3:1

Answer: D) 3:1

51. The angle of elevation of the top of a hill from a point 100 m away from the base is 30°. Find the height of the hill.

A) 50 m

B) 57.7 m

C) 66.7 m

D) 70 m

Answer: B) 57.7 m

52. A flagpole standing vertically on the ground casts a shadow 20 m long at an angle of elevation of the sun of 30°. Find the height of the flagpole.

A) 20 m

B) 30 m

C) 10√3 m

D) 25 m

Answer: C) 10√3 m

53. A man standing 12 m away from a building observes the angle of elevation of the top of the building as 60°. Find the height of the building.

A) 12√3 m

B) 15 m

C) 18 m

D) 20 m

Answer: A) 12√3 m

54. From the foot of a tower, the angle of elevation of the top is 45°, and the length of the shadow is also 40 m. Find the height of the tower.

A) 20 m

B) 30 m

C) 35 m

D) 40 m

Answer: D) 40 m

55. A man stands on the ground and observes the angle of elevation to the top of a tower to be 60°. He walks 20 m towards the tower, and the angle of elevation becomes 90°. Find the height of the tower.

A) 30 m

B) 40 m

C) 50 m

D) 60 m

Answer: B) 40 m

56. The shadow of a tower when the sun angle of elevation is 45° is 20 m. The length of the tower is:

A) 10 m

B) 20 m

C) 25 m

D) 28 m

Answer: B) 20 m

57. The angle of elevation of the top of a building from a point is 45°. The distance of the point from the base of the tower is 30 m. Find the height of the building.

A) 25 m

B) 30 m

C) 35 m

D) 40 m

Answer: B) 30 m

58. A man has to climb 20 steps to reach the top of a tower. The angle of elevation is 30°, and each step is of height 0.5 m. Find the length of the shadow of the tower.

A) 20 m

B) 10 m

C) 15 m

D) 25 m

Answer: D) 25 m

59. A vertical pole 7 m high casts a shadow of length 3.5 m. The angle of elevation of the sun is:

A) 30°

B) 45°

C) 60°

D) 90°

Answer: C) 60°

60. The angle of elevation of the top of a tower is 60°. If the length of the shadow is 50 m, find the height of the tower.

A) 40√3 m

B) 100 m

C) 50√3 m

D) 30 m

Answer: A) 50√3 m

61. From the top of a tower 60 m high, the angle of depression of a car moving away from the base is 30°. Find the distance of the car from the base of the tower.

A) 60 m

B) 60√3 m

C) 100 m

D) 90 m

Answer: B) 60√3 m

62. The length of the shadow of a building decreases from 40 m to 20 m when the angle of elevation changes from 30° to 45°. Find the height of the building.

A) 20 m

B) 30 m

C) 35 m

D) 40 m

Answer: A) 20 m

63. A man standing 45 m away from a tower observes that the angle of elevation of the tower is 60°. Find the height of the tower.

A) 45 m

B) 30√3 m

C) 60 m

D) 50 m

Answer: B) 45√3 m

64. The length of the shadow of a building is 24 m when the angle of elevation of the sun is 45°. Calculate the height of the building.

A) 18 m

B) 24 m

C) 36 m

D) 48 m

Answer: B) 24 m

65. The angle of elevation of top of a hill from a point on the ground is 45°. After moving 100 m towards the hill, the angle of elevation becomes 60°. Calculate the height of the hill.

A) 100 m

B) 120 m

C) 130 m

D) 140 m

Answer: B) 120 m

66. The angle of elevation to the top of a tree from a point 20 m away from the foot of the tree is 30°. Find the height of the tree.

A) 10 m

B) 20 m

C) $$20\sqrt{3}$$ m

D) 40 m

Answer: C) $$20\sqrt{3}$$ m

67. A ladder leans against a wall forming an angle of 60° with the ground. If the ladder reaches a height of 10 m on the wall, find its length.

A) 15 m

B) 17.32 m

C) 20 m

D) 12 m

Answer: B) 17.32 m

68. From the top of a building 45 m high, the angle of depression of a car moving away from the base at 60°. Find distance of the car from building base.

A) 45 m

B) 35 $$ \sqrt{3} $$ m

C) $$ 45 \sqrt{3} $$ m

D) $$ 60 \sqrt{3} $$ m

Answer: C) $$ 45 \sqrt{3} $$ m

69. A man 1.7 m tall is standing 14 m away from a tree. The angle of elevation of the top the tree from the eyes of the man is 45°. Find the height of the tree.

A) 14.7 m

B) 15.7 m

C) 17.7 m

D) 19 m

Answer: C) 17.7 m

70. Find the height of a tower if the length of its shadow is 40 m and the angle of elevation of the sun is 45°.

A) 30 m

B) 40 m

C) 45 m

D) 50 m

Answer: B) 40 m

71. From a point 10 m away from the base of a tower, the angle of elevation of the top is 30°. Find the height of the tower.

A) 5 m

B) 6 m

C) $$10 \sqrt{3}/3$$ m

D) 8 m

Answer: C) $$10 \sqrt{3}/3$$ m

72. The angle of elevation of the top of a building from a ground point is 45°, and the elevation to another point on the building from the same ground point is 30°. The height of the building is 30 m. Find the height of the point.

A) 12 m

B) 6 m

C) 15 m

D) 20 m

Answer: A) 6 m

73. A tree flamingo sees to be 10 m high. It casts a shadow of 25 m. Find the angle of elevation of the sun.

A) 30°

B) 25°

C) 15°

D) 45°

Answer: A) 30°

74. A ladder rests against a wall forming an angle of 45° with the ground. If the ladder reaches inside the wall for 7 m, calculate the length of the ladder.

A) 10 m

B) 9.8 m

C) 7 m

D) 14 m

Answer: D) 14 m

75. The angle of elevation of the top of a tower from a point 50 m from the foot is 60°. Find the height of the tower.

A) 50 m

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

C) 60 m

D) 65 m

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

76. An aeroplane flying at height 1000 m makes an angle of depression 30° to pilot B, who is at a point 1000 m from tower base. Find height for pilot B.

A) 1000 m

B) 707 m

C) 1714 m

D) 1414 m

Answer: C) 1714 m

77. From the top of a vertical cliff 500 m high, the depression angles of two ships on the surface are 30° and 60°. Find distance between two ships.

A) 400 m

B) 500 m

C) 600 m

D) 700 m

Answer: B) 500 m

78. For a ladder leaning on a wall at 60°, find length when height on wall is 5 m.

A) 7.5 m

B) 6 m

C) 6.5 m

D) 10 m

Answer: B) 7.5 m

79. The angle of elevation of top of a tower from a point on ground is 45°. The distance from point to foot of tower is 14 m. Find height of tower.

A) 10 m

B) 14 m

C) 15 m

D) 20 m

Answer: B) 14 m

80. From the top of a tower 40 m high, the angle of depression of base of a building is 45°, height is 30 m. Find distance between towers.

A) 20 m

B) 30 m

C) 25 m

D) 50 m

Answer: D) 50 m

81. At 45 m from tree base, angle elevation is 30°, find height of tree.

A) 22 m

B) 25 m

C) 28.5 m

D) 30 m

Answer: A) 25 m

82. Height of tower is 60 m; distance from observer 30 m; angle elevation?

A) 30°

B) 40°

C) 50°

D) 60°

Answer: D) 60°

83. A tree casts a shadow of length 40 m when sun's altitude is 30°. Calculate tree height.

A) 40√3 m

B) 40 m

C) 50 m

D) 30 m

Answer: A) 40√3 m

84. A man is standing near a building; angle elevation is 60°, he walks 10 m closer and angle of elevation becomes 75°. Find height of building.

A) 43 m

B) 45 m

C) 40 m

D) 50 m

Answer: A) 43 m

85. The angle of elevation of the top of a tower from a point on the ground is 45°. The distance of the point from the base of the tower is 50 m. Calculate height of tower.

A) 50 m

B) 60 m

C) 70 m

D) 80 m

Answer: A) 50 m

86. A tower of height 40 m stands vertically on the bank of a river. A man on the other bank observes the angle of elevation of the top of the tower is 30°. Find width of the river.

A) 20 m

B) 25 m

C) $$40\sqrt{3}$$ m

D) 22 m

Answer: C) $$40\sqrt{3}$$ m

87. The length of the shadow of a tower is 40 m when the angle of elevation of the sun is 45°. Calculate the height of the tower.

A) 40 m

B) 30 m

C) 25 m

D) 35 m

Answer: A) 40 m

88. From the foot of a tower, the angles of elevation at points A and B towards the tower top are 45° and 60°, respectively, with AB = 50 m. Find tower height.

A) 25 m

B) 40 m

C) 60 m

D) 45 m

Answer: C) 60 m

89. The shadow of a vertical pole is 20 m and the height of the pole is 15 m. Calculate the angle of elevation of the sun.

A) 30°

B) 37°

C) 45°

D) 60°

Answer: B) 37°

90. The angle of elevation of the top of a building from a point is 30°, the height of the building is 60 m. Calculate the horizontal distance of the point from building base.

A) 60√3 m

B) 50 m

C) 40 m

D) 30 m

Answer: A) 60√3 m

91. The length of the shadow of a building is 40 m when the angle of elevation of the sun is 30°. Find height of building.

A) 20 m

B) 40√3 m

C) 30 m

D) 50 m

Answer: B) 40√3 m

92. From the top of a tower 80 m high, the angle of depression of two boats on the ground is 60° and 30°. Find the distance between the boats.

A) 55.4 m

B) 70 m

C) 80 m

D) 90 m

Answer: A) 55.4 m

93. The height of a building is 100 m. The angle of elevation of the sun is 60°. Find the length of shadow.

A) 50 m

B) 80 m

C) 100√3 m

D) 200 m

Answer: C) 100√3 m

94. A ladder is resting against a wall making an angle of 30° with the ground. If the top of the ladder touches a point 6 m above the ground, find length of ladder.

A) 6 m

B) 10.39 m

C) 12 m

D) 15 m

Answer: B) 10.39 m

95. The length of the shadow of a tower is 30 m and the height of the tower is 50 m. Calculate the angle of elevation of the sun.

A) 30°

B) 45°

C) 60°

D) 75°

Answer: C) 60°

96. From the top of a pedestal, the angle of elevation of an object is 30°, the angle of depression of the foot of the object is 60°. If the height of the pedestal is 10 m, find the height of the object.

A) 20 m

B) 15 m

C) 25 m

D) 30 m

Answer: B) 15 m

97. The angle of elevation of the top of a tower from a point is 30°. After climbing 20 m, the angle becomes 45°. Find height of tower.

A) 20 m

B) 30 m

C) 35 m

D) 40 m

Answer: B) 30 m

98. A man standing atop a building 70 m tall observes the angle of depression of two cars to be 30° and 45°. Calculate the distance between the cars.

A) 60 m

B) 70 m

C) 80 m

D) 90 m

Answer: A) 60 m

99. The length of the ladder resting against a wall is 13 m and it makes an angle of 60° with the floor. How far is the base of ladder from the wall?

A) 8 m

B) 9 m

C) 10 m

D) 11 m

Answer: A) 6.5 m

100. A man observes the angle of elevation of the top of a temple as 30° from a point. After approaching 50 m towards the temple, the angle becomes 60°. Find the height of the temple.

A) 50 m

B) 65 m

C) 75 m

D) 80 m

Answer: A) 50 m