

Draw Diagrams. Show work. Round off all answers to one decimal place. (3 marks each)

1. The angle of elevation of the Rock Mountain fire-control tower from the top of Blue Mountain 3.0 km away (horizontal distance) is 18° . How much higher than Blue Mountain is the fire-control tower? **1.0 km**
2. The angle of elevation of the summit from the bottom of the second lift at Snow Bowl is 33° . If a skier rides 1000 m on this lift to the summit, what is the vertical distance between the bottom of the lift and the summit? **544 m**
3. The angle of depression of an aircraft carrier from an approaching airplane is 52.2° . If the plane is 700 m above level of the deck of the carrier, how far away is the carrier? **886 m**
4. The navigator on a bomber finds that the angle of depression of a target 4.00 km away is 11.4° . At what altitude is the plane flying? **0.800 km**
5. Billy's kite has a string 40 m long and is flying 27 m above his eye level. Find the angle of elevation of the kite. **42.5°**
6. At an airport, cars drive down a ramp 96 m long to reach the lower level baggage-claim area 13 m below the main level. What angle does the ramp make with the ground at the lower level? **7.8°**
7. A surveyor standing in a ravine finds the angle of elevation of the top of one side is 15.13° . If he is standing 14 m from the base of this side, how deep is the ravine? **3.8 m**
8. As an airplane flying north passes directly over a civil defense air watch unit, another unit 4.30 km due north finds the angle of elevation of the plane to be 19.17° . Find the altitude of the plane. **1.5 km**
9. Find the length of the altitude of an isosceles triangle whose base has length 20.0 cm and whose base angles each has a measure of 45° . **10.0 cm**
10. A pendulum 40 cm long is moved 30° from the vertical. How much is the lower end of the pendulum lifted? **5.4 cm**
11. The top of a vertical tree broken by the wind hits the ground 25.0 m from the foot of the tree. If the upper portion makes an angle of 30° with the horizontal ground, what was the original height of the tree? **43.3 m**
12. The angle of depression of the top of Billings Building from the roof of the Wolcott Building (in the same vertical plane) is 33.10° , and from the 15th floor it is 21.50° . If the distance between the roof and the 15th floor is 101 m, how far apart are the buildings? **391.5 m**
13. From a point on the ground 75 m from the base of a building, the angle of elevation of the top of a flagpole on the edge of the roof of the building is 45.20° and the angle of elevation of the bottom of the flagpole is 38.40° . Find the height of the pole. **16.1 m**
14. How far from the vertical wall of a building is the base of a thirty-foot ladder, which makes a 75° angle with the ground? **7.8 ft**