

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?

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 km on this lift to the summit, what is the vertical distance between the bottom of the lift and the summit?

3.) The angle of depression of an aircraft carrier from an approaching airplane is 52.2° . If the plane is 700 km above level of the deck of the carrier, how far away is the carrier?

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?

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.

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.) 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?

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.

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.) A pendulum 40 cm long is moved 30° from the vertical. How much is the lower end of the pendulum lifted?

- 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?
- 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?
- 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.
- 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?