

(4.1) Solve the problem.

1) A straight trail with a uniform inclination of 12° leads from a lodge at an elevation of 700 feet to a mountain lake at an elevation of 6900 feet. What is the length of the trail (to the nearest foot)? 1) _____

2) John (whose line of sight is 6 ft above horizontal) is trying to estimate the height of a tall oak tree. He first measures the angle of elevation from where he is standing as 35° . He walks 30 feet closer to the tree and finds that the angle of elevation has increased by 12° . Estimate the height of the tree rounded to the nearest whole number. 2) _____

(4.2) Two sides and an angle are given. Determine whether the given information results in one triangle, two triangles, or no triangle at all. Solve any triangle(s) that results.

3) $C = 35^\circ$, $a = 18.7$, $c = 16.1$ 3) _____

4) $B = 26^\circ$, $b = 4$, $a = 28$ 4) _____

(4.2) Solve each problem.

5) A surveyor standing 69 meters from the base of a building measures the angle to the top of the building and finds it to be 35° . The surveyor then measures the angle to the top of the radio tower on the building and finds that it is 46° . How tall is the radio tower? 5) _____

6) Two tracking stations are on the equator 129 miles apart. A weather balloon is located on a bearing of $N 42^\circ E$ from the western station and on a bearing of $N 17^\circ E$ from the eastern station. How far is the balloon from the western station? Round to the nearest mile. 6) _____

(4.3) Solve each problem.

7) In flying the 82 miles from Champaign to Peoria, a student pilot sets a heading that is 11° off course and maintains an average speed of 136 miles per hour. After 15 minutes, the instructor notices the course error and tells the student to correct his heading. Through what angle will the plane move to correct the heading and how many miles away is Peoria when the plane turns? 7) _____

8) A ladder leans against a building that has a wall slanting away from the ladder at an angle of 96° with the ground. If the bottom of the ladder is 23 feet from the base of the wall and it reaches a point 52 feet up the wall, how tall is the ladder to the nearest foot? 8) _____