

- #1 You lean a ladder 6.7 meters long against the wall. It makes an angle of 63° with the level ground. How high up is the top of the ladder?
- #2 You must order a new rope for the flagpole. To find out what length of rope is needed, you observe that the pole casts a shadow 11.6 meters long on the ground. The angle of elevation of the sun is $36^\circ 50'$. How tall is the pole?
- #3 An observer 80 feet above the surface of the water measures an angle of depression of $0^\circ 42'$ to a distant ship. How many miles is the ship from the base of the lighthouse? (1 mile = 5280 feet)
- #4 Commercial airliners fly at an altitude of about 10 kilometers. They start descending toward the airport when they are still far away, so that they will not have to dive at a steep angle. If the pilot wants the plane's path to make an angle of 3° with the ground, how far from the airport must he start descending?
- #5 Commercial airliners fly at an altitude of about 10 kilometers. They start descending toward the airport when they are still far away, so that they will not have to dive at a steep angle. If he starts descending at 300 kilometers from the airport, what angle will the plane's path make with the horizontal?
- #6 A submarine at the surface of the ocean makes an emergency dive, its path making an angle of 21° with the surface. If it goes for 300 meters along its downward path, how deep will it be? What horizontal distance is it from its starting point?
- #7 A submarine at the surface of the ocean makes an emergency dive, its path making an angle of 21° with the surface. How many meters must it go along its downward path to reach a depth of 1000 meters?
- #8 the Great Pyramid of Cheops in Egypt has a square base 239 meters on each side. The faces of the pyramid make an angle of $51^\circ 50'$ with the horizontal. How tall is the pyramid? What is the shortest distance you would have to climb up a face to reach the top?