

PROBLEMS

1. From the same point at 8:00am, a Buoyancy-Operated Aquatic Transport sails N 20° W at a speed of 1 mile per hour and a ship sails S 70° W at 7 miles per hour. How far apart will the B.O.A.T. and the ship be after at 9:00am?
2. From the same point, John Lloyd walked in the direction of N $35^\circ 10'$ E at 8 mph while Bea walked in the direction of N $54^\circ 50'$ W. If the bearing of John Lloyd from Bea after 30 minutes is N $65^\circ 10'$ E how far apart are they?
3. A helicopter hovers about a point between a building and a car. From an observer at a window of a building, the angle of elevation of the helicopter is 20° . From the helicopter, the angle of depression of the car is 70° . If the observer is $100\sqrt{3}$ meters from the helicopter and the helicopter is 300 meters from the car, with what angle of depression does the observer see the car?
4. The Gnomish Gnomad's Camp is 10 miles N $38^\circ 41'$ E of Itznotyerzitz Mine while The Misspelled Cemetary is 20 miles S $21^\circ 19'$ E of Itznotyerzitz Mine. How far is The Misspelled Cemetary from The Gnomish Gnomad's Camp?
5. Wile E. Coyote stands atop a cliff, 20 meters high. He spots the Roadrunner at an angle of depression of 45° . After five seconds, he spots the Roadrunner at an angle of depression of 30° . If the Roadrunner runs at a constant speed, what is its speed?
6. Crystal and Iñigo are 10 meters apart, facing each other. Suddenly, a shiny thing directly above a point between them momentarily distracted them from looking at each other. The angles of elevation of the shiny thing from Crystal and Iñigo are 60° and 75° , respectively. How far was Crystal from the shiny thing?
7. During their first anniversary, Crystal and Iñigo simultaneously saw a rocket directly above a point between them. The distances of Crystal and Iñigo from the rocket were $\sqrt{3}$ and $\frac{3}{\sqrt{2}}$ miles, respectively. If Iñigo saw the rocket at an angle of elevation of 45° , how far away are the two lovers from each other?
8. Starting from its port, a pirate ship sets sail at a course of 69° to look for booty. After travelling $2\sqrt{3} - 2$ miles, turns some degrees to its right and travels 4 miles before it finds the booty. If the ship was initially $\sqrt{8}$ miles away from the booty, at what course should the ship have initially sailed if it wants to follow a straight path from the port to the booty?
9. A telephone pole on the slope of a hill casts a shadow of 20 feet long down the hill. If the angle of elevation of the sun is 75° and the hill is inclined 45° , find the height of the telephone pole.
10. At a certain distance, an observer measured the angle of elevation of the peak of a hill to be equal to 15° . After traveling 400 m. towards the hill, he found the new angle of elevation of the peak of the hill to be 60° . What is the height of the hill?

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