

## WORD PROBLEMS USING RIGHT TRIANGLE TRIG

1. Suppose that Mike and Dave are making measurements for the road-paving crew. They need to know how much the land slopes downward along a particular stretch of road. Dave walks 80 **feet** from Mike and holds up a long pole, perpendicular to the ground, that has markings every inch along it. Mike looks at the pole through a sighting instrument. Looking straight across, parallel to the horizon, Mike sights a point on the pole 50 **inches** above the ground- call it point A. Then, Mike looks through the instrument at the bottom of the pole, creating an angle of depression. What is the angle of depression or slope of the road to where Mike is standing?
2. The Beatles' yellow submarine that we all live in is traveling at a depth of 250 feet and dives at an angle of  $15^\circ$  with respect to a line parallel to the water's surface. It travels a horizontal distance of 1500 feet during the dive. What is the depth of the yellow submarine after the dive?
3. A fire department's longest ladder is 110 feet long, and the safety regulation states that they can use it for rescues up to 100 feet off the ground. What is the maximum safe angle of elevation for the rescue ladder?
4. In Harry Potter and the Deathly Hallows, Hermione, Harry, and Ron go on an adventure to find Lord Voldemort's horcruxes. Hermione packs a purse filled with clothes, the invisibility cloak, and Perkins' tent. This tent has a center pole 6.25 feet high. If the sides of the tent are supposed to make a  $50^\circ$  angle with the ground, how wide is the tent?
5. In the movie, Up, an old man named Carl Fredrickson ties hundreds of balloons to his house and floats away. When the house is 4000 ft high, the angles of depression to two houses, in line with the house, are  $47^\circ$  and  $32^\circ$ . How far apart are the houses?
6. Find the angle that the straight line  $y = \frac{2}{3}x - 5$  makes with the positive half of the x-axis.

