



APPLICATIONS: (diagrams will probably be very useful here!)

- 8) Professor C.J. Morrison paces off a horizontal distance of 40 feet from the base of a telegraph pole, then sights an angle of elevation of  $37^\circ$  to the top. How tall is the telegraph pole?
- 9) Ancient Egyptian surveyors and architects produced perfect  $90^\circ$  corners by stretching out ropes of lengths 3, 4, and 5 to make a right triangle (this was known long before Pythagoras). What are the other angles in this triangle?
- 10) Suppose that, when the moon is directly overhead in Davis, you contact a friend in Denver, Colorado (about 1100 miles away). Your Coloradan friend sights an angle of elevation to the moon and finds that it appears to be about  $89.7^\circ$  above the horizontal. Based on these measurements, what is the distance from the Earth's surface to the moon?
- 11) Imagine a triangle whose corners are the sun, the Earth, and the moon. When the moon is exactly half-full, the moon corner of the sun/Earth/moon triangle should be a right angle. Suppose that you measure the angle between the sun and the half-full moon and find it to be  $89.855^\circ$ . Based on your answer to the previous problem, how far is the sun from the Earth?
- 12) If you know two sides of a right triangle, or one side and one (non-right) angle, you should be able to find the rest of the triangle's measurements. What if you know all of the angles? Can you find the side lengths? If not, how much can you figure out?