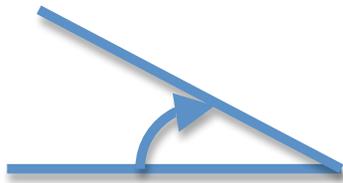
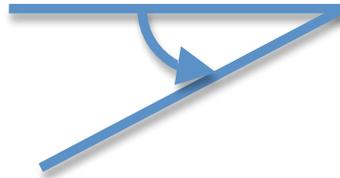


ANGLE OF ELEVATION and ANGLE OF DEPRESSION



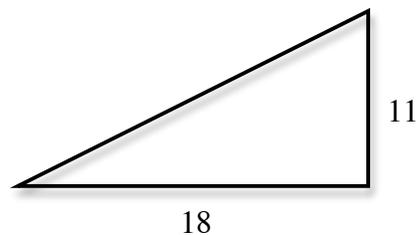
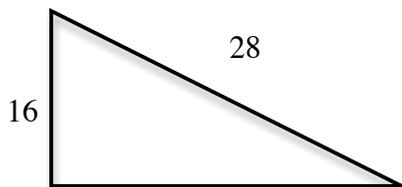
Elevation (look up)



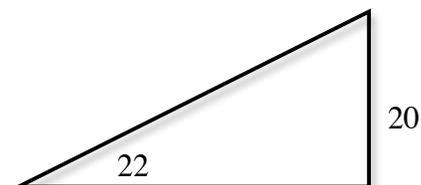
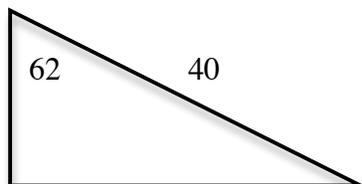
Depression (look down)



1. Determine the missing components of the right triangle: (label the triangle in a manner that best suits your needs).



2. Determine the missing components of the right triangle: (label the triangle in a manner that best suits your needs).



3. Determine the missing components of a right triangle given the following information:
angle $C = 90$, $a = 8$ and angle $B = 42$.

4. If one end of a loading ramp is 2 meters from the ground and the other end makes an angle of 16 degrees with the ground, find the length of the ramp.
5. A wire 7 meters in length is attached to the top of a flag pole that is 5.4 meters in length. Find the angle the wire makes with: a) the pole and b) the ground.
6. A 24 foot ladder is placed against the side of a building. the base of the ladder is 9 feet from the wall. How high up the wall does the ladder reach? What angle does the ladder make with the ground?
7. When a 16 foot pole casts a shadow 6 feet long, what is the angle of elevation of the sun?
8. When the angle of elevation of the sun is 58 degrees a tree casts a shadow that is 4 feet in length. What is the height of the tree?
9. An airplane is flying at a constant altitude of 30,000 feet directly towards an observer stationed on the ground. The angle of elevation of the plane is 12 degrees. What is the ground distance the plane is away from the observer? What is the air distance the plane is away from the observer?
10. The angle of depression from the top of a building to a point on the ground is 18 degrees. How far is the point from the building if the building is 46 meters high?
11. From the top of a fire tower 138 feet high, a ranger discovers a small fire. If the angle of depression of the blaze is 12 degrees how far is the blaze from the base of the tower?
12. An observer is standing at the top of a light house that is 80 feet tall. Looking due west the observer notices a sailboat that has a measured angle of depression of 19 degrees, turning and looking due south the observer notices a speedboat that has a measured angle of depression of 8 degrees. Determine the distance that separates the two boats.
13. You are at the top of a building 500 feet tall. As you look down at a nearby smaller building, you observe the angle of depression of the base is 82 degrees and the angle of depression of the top is 51 degrees. Find the height of the smaller building and the distance between the two buildings.
14. From a window in an apartment building, the angle of elevation of the top of a bank across the street is 57 degrees while the angle of depression to the base is 18 degrees. If the two buildings are 22 meters apart, find the height of the bank.
15. The length of the base of an isosceles triangle is 84 cm and each base angle has a measure of 57 degrees. Find the length of the two equal sides of the triangle.