

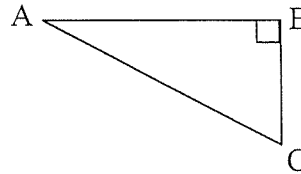
Geometry (H)  
Applications of Trig ~ More practice

Name: \_\_\_\_\_

Today and tomorrow you will be working on the following packet of problem. All work should be done on a separate sheet of paper. Draw diagrams and round answers to the nearest tenth. Answers are provided at the end of the packet.

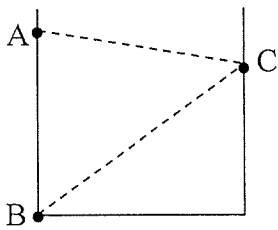
1. A ladder leaning against a house makes an angle of  $37^\circ$  with the ground. The foot of the ladder is 7 feet from the foot of the house. How long is the ladder?
2. Find the angle of elevation to the top of a building if you are standing 400 ft. away and the building is 850 ft. tall.
3. The length of one ramp is 16 ft. The vertical rise is 3 foot. Estimate the ramp's horizontal distance and its ramp angle.
4. You are in a hot air balloon that is 600 ft. above the ground where you can see your friend. If the angle of depression to your friend on the ground is  $20^\circ$ , how far is he from the point on the ground below the hot air balloon?

5. Classify each of the three angles in the figure at the right as an angle of elevation, angle of depression or neither.



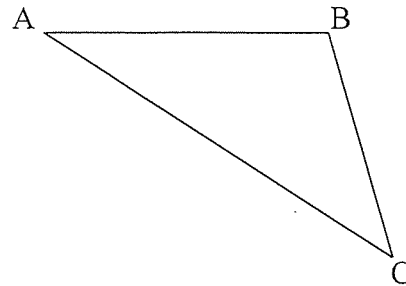
6. A dog, who is 8 meters from the base of a tree, spots a squirrel in the tree at an angle of elevation of  $40^\circ$ . What is the direct-line distance between the dog and the squirrel?
7. Two observers on the ground are looking up at the top of the same tree from two different points on the ground. The first observer, who is 83 ft. away from the base of the tree, looks up at the angle of elevation of  $58^\circ$ . The second observer is standing only 46 feet from the base of the tree.
  - a. How tall is the tree?
  - b. At what angle of elevation must the second observer look up to see the top of the tree?

8. Tammi, whose eyes are five feet off the ground, is standing 50 feet away from the base of a building, and from her eye level, she looks up at a  $73^\circ$  angle of elevation to the point on the edge of the building's roof. How tall is the building?
9. Two girls are standing 100 feet apart. They both see a beautiful seagull in the air between them. The angles of elevation from the girls to the bird are  $20^\circ$  and  $45^\circ$ , respectively. How high up is the seagull?
10. A person starts out 17 miles from the base of a tall mountain, and looks up at a  $4^\circ$  angle of elevation to the top of the mountain. When they move 12 miles closer to the base of the mountain, what will be their angle of elevation when they look to the top?
11. Two observers (located at point A and B in the diagram) are watching a climber (pt. C) on the opposite face of a gorge. The gorge is 81 feet wide. When observer A looks down to the bottom of the opposite wall of the gorge, he must look down at an angle of depression of  $51^\circ$ . However, observer A sees the climber at an angle of depression of  $20^\circ$ . Observer B will see the climber at what angle of elevation?



12. An observer on the ground looks up to the top of the building at an angle of elevation of  $30^\circ$ . After moving 50 feet closer the angle of angle of elevation of now  $40^\circ$ . How tall is the building?
13. Hobbyists often compete with their model rockets to determine which rocket flies the highest. On one test launch, a rocket was fired vertically upward. The angle of elevation to the top of the flight was measured from two points that were 20 m apart, on the same side of the launch site, and collinear with it. The angles measured at the two points were 66 degrees and 37 degrees. How high did the rocket fly, to the nearest meter?

14. A surveyor needs to find the distance from B to C across a lake as part of a project to build a bridge. The distance from point A to point B is 325 ft. The measurement of angle A is  $42^\circ$  and the measurement of angle B is  $110^\circ$ . What is the distance from B to C across the lake? (hint: you will need to drop an altitude from B to create 2 right triangles)



15. A hiker walks 1.5 km on a bearing of  $N 35^\circ E$ . At this point he turns directly south and walks 3.5 km. How far and on what bearing must he walk to return to this original starting point?