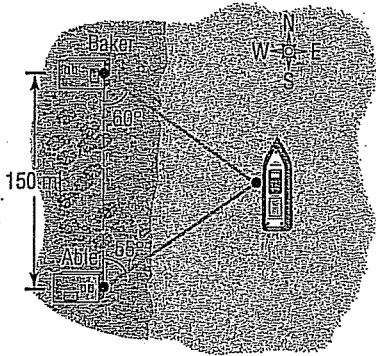
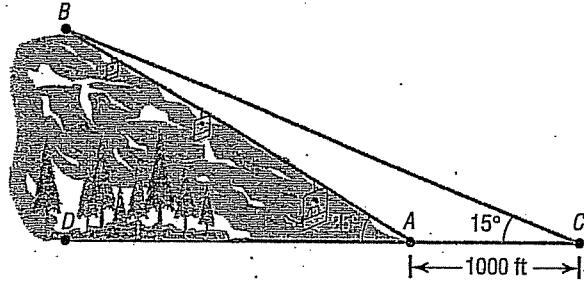


Solve each problem. Round to nearest tenth unless otherwise specified in problem.

1) **Rescue at Sea** Coast Guard Station Able is located 150 miles due south of Station Baker. A ship at sea sends an SOS call that is received by each station. The call to Station Able indicates that the ship is located  $N55^\circ E$ ; the call to Station Baker indicates that the ship is located  $S60^\circ E$ .  
(a) How far is each station from the ship?  
(b) If a helicopter capable of flying 200 miles per hour is dispatched from the nearest station to the ship, how long will it take to reach the ship?

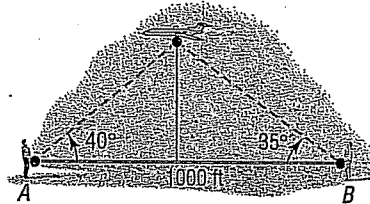


4) **Finding the Length of a Ski Lift** Consult the figure. To find the length of the span of a proposed ski lift from  $A$  to  $B$ , a surveyor measures the angle  $DAB$  to be  $25^\circ$  and then walks off a distance of 1000 feet to  $C$  and measures the angle  $ACB$  to be  $15^\circ$ . What is the distance from  $A$  to  $B$ ?

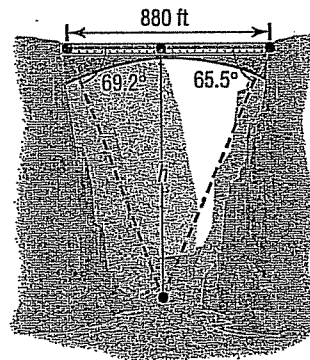


5) **Finding the Height of a Mountain** Use the illustration in Problem 31 to find the height  $BD$  of the mountain at  $B$ .

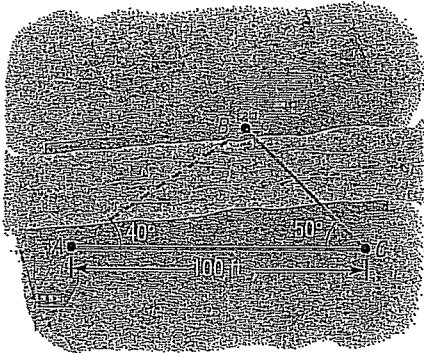
6) **Finding the Height of an Airplane** An aircraft is spotted by two observers who are 1000 feet apart. As the airplane passes over the line joining them, each observer takes a sighting of the angle of elevation to the plane, as indicated in the figure. How high is the airplane?



7) **Finding the Height of the Bridge over the Royal Gorge** The highest bridge in the world is the bridge over the Royal Gorge of the Arkansas River in Colorado.\* Sightings to the same point at water level directly under the bridge are taken from each side of the 880-foot-long bridge, as indicated in the figure. How high is the bridge?



2) **Surveying** Consult the figure. To find the distance from the house at  $A$  to the house at  $B$ , a surveyor measures the angle  $BAC$  to be  $40^\circ$  and then walks off a distance of 100 feet to  $C$  and measures the angle  $ACB$  to be  $50^\circ$ . What is the distance from  $A$  to  $B$ ?



3) **Finding the Lean of the Leaning Tower of Pisa** The famous Leaning Tower of Pisa was originally 184.5 feet high.\* At a distance of 123 feet from the base of the tower, the angle of elevation to the top of the tower is found to be  $60^\circ$ . Find the angle  $CAB$  indicated in the figure. Also, find the perpendicular distance from  $C$  to  $AB$ .

