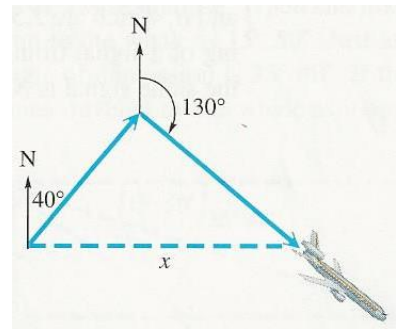


## Unit 1.8 Further Applications of Right Triangles PRACTICE

Solve each right triangle. (Some answers are rounded.)

1) A plane flies 1.3 hr at 110 mph on a bearing of  $40^\circ$ . It then turns and flies 1.5 hr at the same speed on a bearing of  $130^\circ$ . How far is the plane from its starting point?



2) Two ships leave a port at the same time. The first ship sails on a bearing of  $40^\circ$  at 18 knots (nautical miles per hour) and the second at a bearing of  $130^\circ$  at 26 knots. How far apart are they after 1.5 hr?

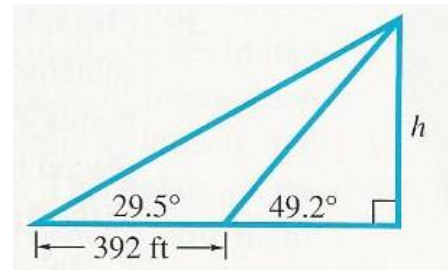
3) Two lighthouses are located on a north-south line. From lighthouse A, the bearing of a ship 3742 m away is  $129^\circ 43'$ . From lighthouse B, the bearing of the ship is  $39^\circ 43'$ . Find the distance between the lighthouses.

4) The bearing from Atlanta to Macon is  $S 27^\circ E$ , and the bearing from Macon to Augusta is  $N 63^\circ E$ . An automobile traveling at 60 mph needs 1.25 hr to go from Atlanta to Macon and 1.75 hr to go from Macon to Augusta. Find the distance from Atlanta to Augusta.

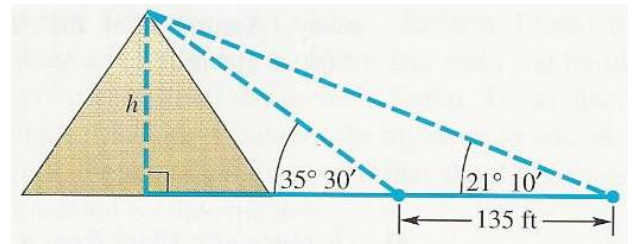
5) A ship leaves its home port and sails on a bearing of  $N 28^\circ 10' E$ . Another ship leaves the same port at the same time and sails on a bearing of  $S 61^\circ 50' E$ . If the first ship sails at 24.0 mph and the second sails at 28.0 mph, find the distance between the two ships after 4 hr.

6) Radio direction finders are set up at two points A and B, which are 2.5 miles apart on an east-west line. From A, it is found that the bearing of a signal from a radio transmitter is  $N 36^\circ 20' E$ , while from B the bearing of the same signal is  $N 53^\circ 40' W$ . Find the distance of the transmitter from B.

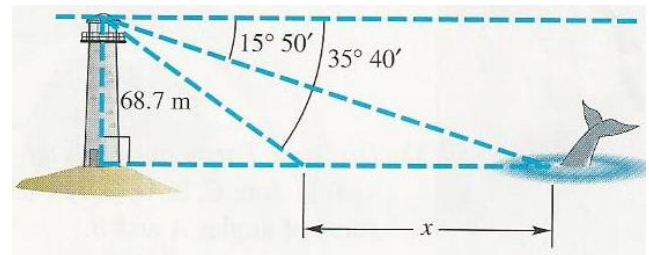
7) Find  $h$  as indicated in the figure.



8) The angle of elevation from a point on the ground to the top of a pyramid is  $35^{\circ}30'$ . The angle of elevation from a point 135 ft farther back to the top of the pyramid is  $21^{\circ}10'$ . Find the height of the pyramid.



9) Debbie Glockner, a whale researcher, is watching a whale approach directly toward a lighthouse as she observes from the top of this lighthouse. When she first begins watching the whale, the angle of depression to the whale is  $15^{\circ}50'$ . Just as the whale turns away from the lighthouse, the angle of depression is  $35^{\circ}40'$ . If the height of the lighthouse is 68.7 m, find the distance traveled by the whale as it approaches the lighthouse.



10) A scanner antenna is on top of the center of a house. The angle of elevation from a point 28.0 m from the center of the house to the top of the antenna is  $27^{\circ}10'$ , and the angle of elevation to the bottom of the antenna is  $18^{\circ}10'$ . Find the height of the antenna.

11) The angle of elevation from Lone Pine to the top of Mt. Whitney is  $10^{\circ}50'$ . Tim Taylor, traveling 7.00 km from Lone Pine along a straight, level road toward Mt. Whitney, finds the angle of elevation to be  $22^{\circ}40'$ . Find the height of the top of Mt Whitney above the level of the road.