Math 3   Name: KEY
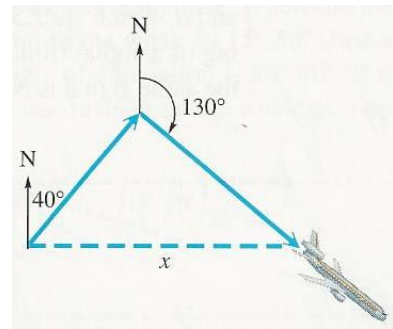
Unit 1.8 Further Applications of Right Triangles PRACTICE

Solve each right triangle.

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

220 miles

2) Two ships leave a port at the same time. The first ship sails on a bearing of 40° at 18 knots (nautical miles per hour0 and the second at a bearing of 130° at 26 knots. How far apart are they after 1.5 hr?

47 nautical miles

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

5856 m

4) The bearing from Atlanta to Macon is S 27° E, and the bearing from Macon to Augusta is N 63° 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.

130 miles

5) A ship leaves its home port and sails on a bearing of N 28°10′ E. Another ship leaves the same port at the same time and sails on a bearing of S 61°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.
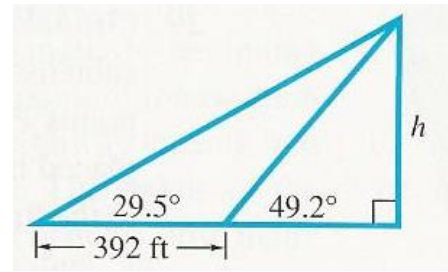
148 miles

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°20′ E, while from B the bearing of the same signal is N 53°40′ W. Find the distance of the transmitter from B.
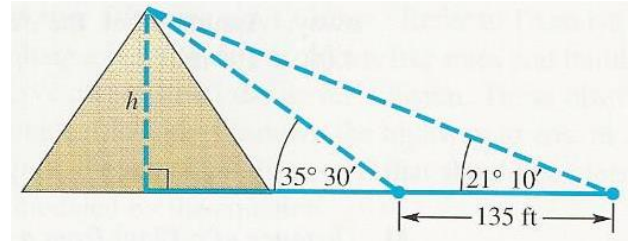
2.01 miles

7) Find h as indicated in the figure.

433 ft

29.5°   49.2°

$\leftarrow$ 392 ft $\rightarrow$

h
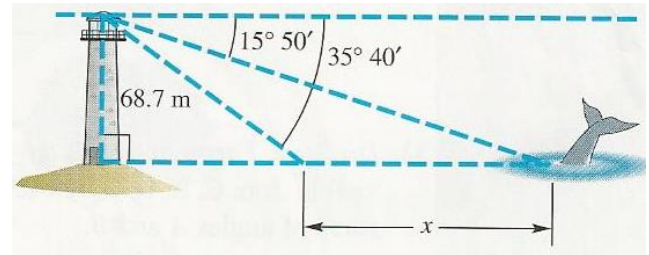
8) The angle of elevation from a point on the ground to the top of a pyramid is 35°30'. The angle of elevation from a point 135 ft farther back to the top of the pyramid is 21°10'.
Find the height of the pyramid.

114 ft

h

35° 30'   21° 10'

$\leftarrow$ 135 ft $\rightarrow$

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°50'. Just as the whale turns away from the lighthouse, the angle of depression is 35°40'. If the height of the lighthouse is 68.7 m, find the distance traveled by the whale as it approaches the lighthouse.

147 m

15° 50'   35° 40'

68.7 m

x

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°10', and the angle of elevation to the bottom of the antenna is 18°10'.
Find the height of the antenna.

5.18 m

11) The angle of elevation from Lone Pine to the top of Mt. Whitney is 10°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°40'.
Find the height of the top of Mt Whitney above the level of the road.

2.47 km