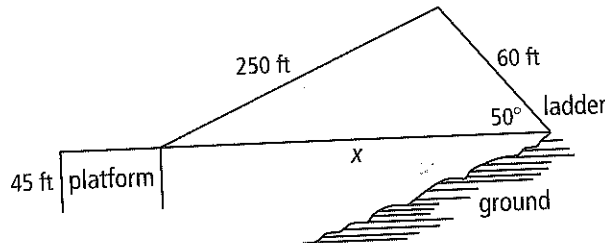


8-5 Think About a Plan

Law of Sines

A zipline is constructed over a ravine as shown in the diagram below. What is the horizontal distance x from the bottom of the ladder to the platform where the zipline ends? Round your answer to the nearest tenth of a foot.



1. Based on the diagram provided for this problem, which measures in the triangle do you know?

2. What are the values of these measures?

3. Describe the part of the triangle you need to find.

4. Can you find the measure of this part of the triangle directly using the Law of Sines? If not, what can you find?

5. What steps do you need to take to find the measure of this part of the triangle?

6. What is the horizontal distance, x ?

8-5 Standardized Test Prep

Law of Sines

Multiple Choice

For Exercises 1–5, choose the correct letter.

1. In $\triangle ABC$, $m\angle A = 45$, $m\angle C = 60$, and $BC = 10$. To the nearest tenth, what is AB ?

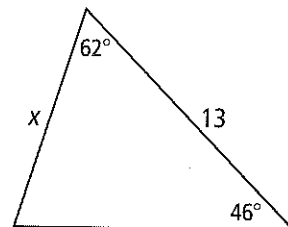
(A) 6.1 (B) 8.2 (C) 12.2 (D) 16.3

2. In $\triangle GHK$, $m\angle G = 102$, $GH = 12$, and $HK = 28$. To the nearest tenth, what is $m\angle K$?

(F) 52.0 (G) 53.2 (H) 26.0 (I) 24.8

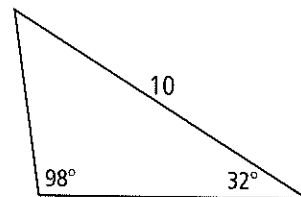
3. Use the Law of Sines. What is the value of x rounded to the nearest tenth?

(A) 9.8 (C) 12.1
(B) 10.6 (D) 14.0



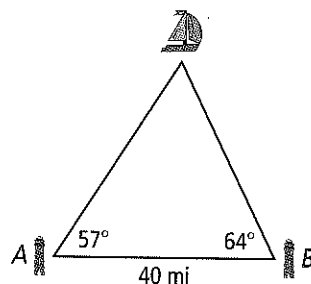
4. Use the Law of Sines. What is the perimeter of the triangle to the nearest tenth?

(F) 5.4 (H) 13.1
(G) 7.7 (I) 23.1



5. A ship has been spotted by two lighthouses as shown in the figure. What is the distance from the ship to Lighthouse A, to the nearest tenth?

(A) 37.3 mi (C) 41.9 mi
(B) 39.1 mi (D) 42.9 mi



Short Response

6. In $\triangle XYZ$, $m\angle X = 35$, $m\angle Y = 58$, and $YZ = 12$. To the nearest tenth, what are XY and XZ ?

8-5 Practice

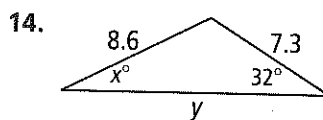
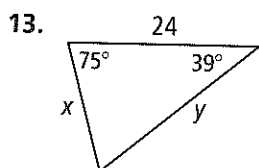
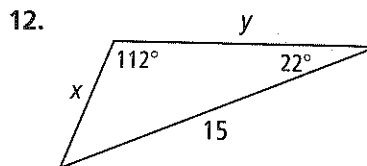
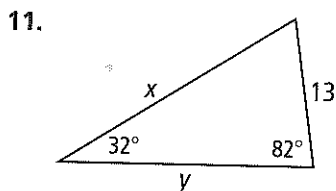
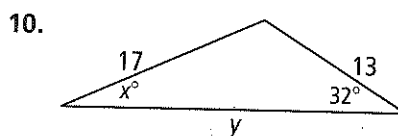
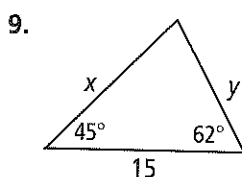
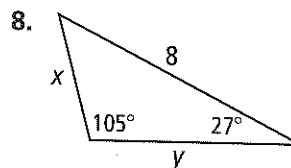
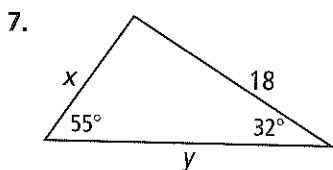
Law of Sines

Form G

Use the information given to solve.

- In $\triangle ABC$, $m\angle A = 40$, $m\angle C = 70$, and $BC = 8.5$. To the nearest tenth, what is AB ?
- In $\triangle PQR$, $m\angle P = 33$, $m\angle Q = 82$, and $PR = 14.2$. To the nearest tenth, what is the length of \overline{QR} ?
- In $\triangle GHK$, $m\angle G = 105$, $m\angle K = 32$, and $GH = 10.2$. To the nearest tenth, what is GK ?
- In $\triangle XYZ$, $m\angle Y = 76$, $XY = 15$, and $XZ = 19$. To the nearest tenth, what is $m\angle Z$?
- In $\triangle ABC$, $m\angle B = 93$, $AC = 15$, and $BC = 10$. To the nearest tenth, what is $m\angle A$?
- In $\triangle DEF$, $m\angle D = 35$, $DE = 6.3$, and $EF = 7.5$. To the nearest tenth, what is $m\angle F$?

Use the Law of Sines to find the values of x and y . Round to the nearest tenth.

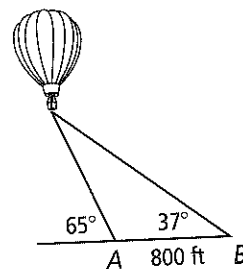


8-5

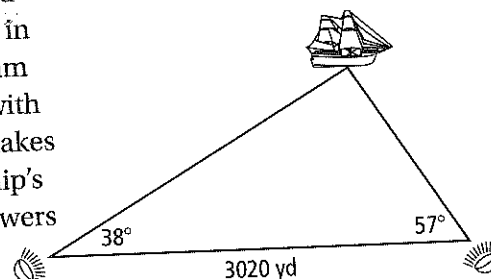
Practice (continued)

Law of Sines

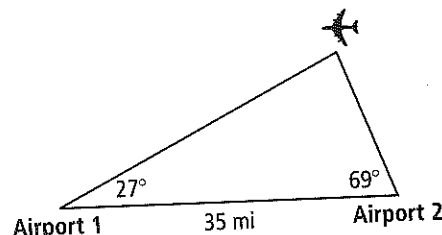
15. A hot-air balloon is observed from two points, A and B , on the ground 800 feet apart as shown in the diagram. The angle of elevation of the balloon is 65° from point A and 37° from point B . What is the distance from point A to the balloon? Round your answer to the nearest foot.



16. Two searchlights on the shore of a lake are located 3020 yards apart as shown in the diagram. A ship in distress is spotted from each searchlight. The beam from the first searchlight makes an angle of 38° with the shoreline. The beam from the second light makes an angle of 57° with the shoreline. What is the ship's distance from each searchlight? Round your answers to the nearest yard.



17. An airplane is flying between two airports that are 35 miles apart. The radar in one airport registers a 27° angle between the horizontal and the airplane. The radar system in the other airport registers a 69° angle between the horizontal and the airplane. How far is the airplane from each airport, to the nearest tenth of a mile?



In $\triangle ABC$, $m\angle A = 25$ and $m\angle B = 50$. Find each value to the nearest tenth.

18. If $BC = 6.2$, what is AC ?

19. If $AC = 14.9$, what is BC ?

20. If $AB = 53.7$, what is AC ?

21. If $AB = 27.3$, what is BC ?

22. **Writing** Suppose you know the measures of two sides of a triangle and the measure of the angle between the two sides. Can you use the Law of Sines to find the remaining side and angle measures? Explain.

23. **Reasoning** Two angles of a triangle measure 40° and one side measures 10 inches. How many possible triangles are there? What are the missing measures of each possible triangle?