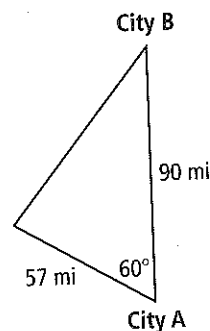


8-6

Think About a Plan

Law of Cosines

A commuter plane flies from City A to City B, a distance of 90 mi due north. Due to bad weather, the plane is redirected at take-off to a heading N 60° W (60° west of north). After flying 57 mi, the plane is directed to turn northeast and fly directly toward City B. To the nearest tenth, how many miles did the plane fly on the last leg of the trip?



1. Based on the diagram provided for this problem, which measures of 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. What concept will you use to write an equation? What is the equation?

5. Solve the equation. What is the distance of the last leg of the trip?

8-6

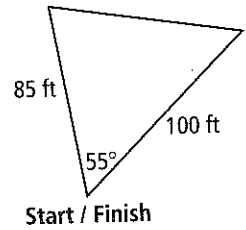
Practice (continued)

Form G

Law of Cosines

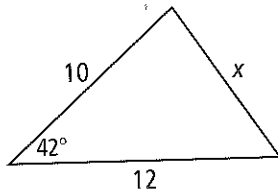
13. One airplane is 78 miles due south of a control tower. Another airplane is 52 miles from the tower at a heading of N 38° E (38° east of north). To the nearest tenth of a mile, how far apart are the two airplanes?

14. A coach sets up a triangular race course. One corner is 100 feet from the start/finish and the other corner is 85 feet from the start/finish. If the angle at the start/finish measures 55°, what is the total length of the course? Round to the nearest tenth of a foot.

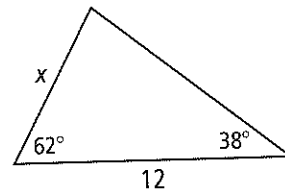


For each triangle shown below, determine whether you would use the Law of Sines or Law of Cosines to find the value of x . Explain. Then find the value of x to the nearest tenth.

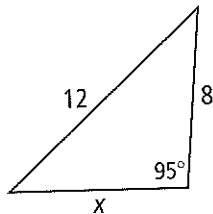
15.



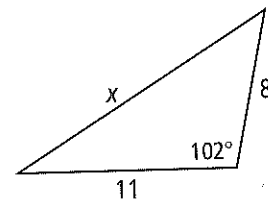
16.



17.



18.



19. **Writing** Describe two situations in which you can use the Law of Cosines to solve for unknown measures of a triangle.

20. **Reasoning** Explain how you would find the measure of the smallest angle of a triangle if you are given the measures of all three sides.