

8-7 Skills Practice***The Law of Cosines***

In $\triangle RST$, given the following measures, find the measure of the missing side.

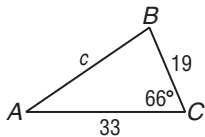
1. $r = 5, s = 8, m\angle T = 39$
2. $r = 6, t = 11, m\angle S = 87$
3. $r = 9, t = 15, m\angle S = 103$
4. $s = 12, t = 10, m\angle R = 58$

In $\triangle HIJ$, given the lengths of the sides, find the measure of the stated angle to the nearest tenth.

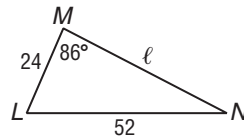
5. $h = 12, i = 18, j = 7; m\angle H$
6. $h = 15, i = 16, j = 22; m\angle I$
7. $h = 23, i = 27, j = 29; m\angle J$
8. $h = 37, i = 21, j = 30; m\angle H$

Determine whether the Law of *Sines* or the Law of *Cosines* should be used first to solve each triangle. Then solve each triangle. Round angle measures to the nearest degree and side measures to the nearest tenth.

9.



10.



11. $a = 10, b = 14, c = 19$

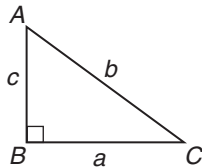
12. $a = 12, b = 10, m\angle C = 27$

Solve each $\triangle RST$ described below. Round measures to the nearest tenth.

13. $r = 12, s = 32, t = 34$
14. $r = 30, s = 25, m\angle T = 42$
15. $r = 15, s = 11, m\angle R = 67$
16. $r = 21, s = 28, t = 30$

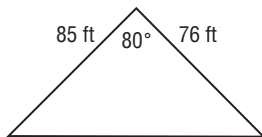
8-7 Word Problem Practice**The Law of Cosines**

- 1. RIGHT TRIANGLES** Triangle ABC is a right triangle with right angle at B . Let a be the length of the side opposite A , b be the length of the side opposite B , and c be the length of the side opposite C .

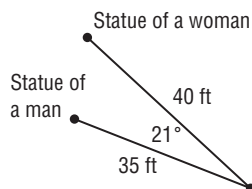


Rewrite the Law of Cosines with respect to the right angle B in simplest form.

- 2. LANDSCAPING** Hanna wants to fence a triangular lot as shown. What is the length of the missing side? Round your answer to the nearest foot.



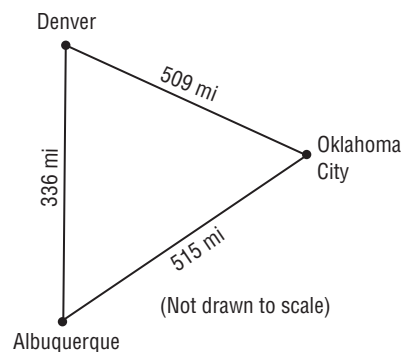
- 3. STATUES** Gail was visiting an art gallery. In one room, she stood so that she had a view of two statues, one of a man, and the other of a woman. She was 40 feet from the statue of the woman, and 35 feet from the statue of the man. The angle created by the lines of sight to the two statues was 21° . What is the distance between the two statues? Round your answer to the nearest tenth.



- 4. CARS** Two cars start moving from the same location. They head straight, but in different directions. The angle between where they are heading is 43° . The first car travels 20 miles and the second car travels 37 miles. How far apart are the two cars? Round your answer to the nearest tenth.

CITIES For Exercises 5–7, use the following information.

The cities of Denver, Oklahoma City, and Albuquerque form the vertices of a triangle.



Use the information in the figure and round your answers to the nearest tenth of a degree.

5. What is the measure of the angle at Albuquerque?
6. What is the measure of the angle at Oklahoma City?
7. What is the measure of the angle at Denver?