Unit 6 Review Name _____
Law of Sines and Cosines

Round side lengths and area to the nearest tenth and angle measures to the nearest degree for all questions. Find **all** possible solutions

1. Given: $a = 8$, $b = 5$, $m\angle C = 32^o$

Find: *length of side c*

3. Given: $a = 6$, $b = 10$, $m\angle A = 20^o$

Find: *length of side c*

2. Given: $x = 3$, $y = 6$, $z = 4$

Find: $m\angle Z$

4. Given: $p = 17$, $m\angle Q = 51^o$, $m\angle R = 87^o$

Find: *length of side r*

Solve ΔABC. Find ALL solutions

5. Given: $a = 12$, $b = 14$, $m\angle A = 24^o$

6. Given: $a = 10$, $m\angle A = 89^o$, $m\angle B = 38^o$

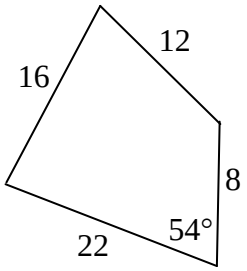
7. Given: $a = 5$, $b = 7$, $m\angle A = 126^o$

Find the area. Round your answer to the nearest tenth.

8. $m\angle D = 28^o$
e = 8 cm
f = 17 cm

9. j = 11 in
k = 7 in
l = 12 in

10.



11. In ∆ABC, side *a* is twice as long as *b* and m<C = 30. In terms of b, the area of ∆ABC is:

a) $.25b^2$ b) $.5b^2$ c) $.866b^2$ d) b^2

12. If a = 20, c = 16, and m<A = 30, how many distinct triangles can be constructed?

13. In ∆ABC, if AB = 10, BC = 8, and m<A = 45, how many distinct triangles can be constructed?

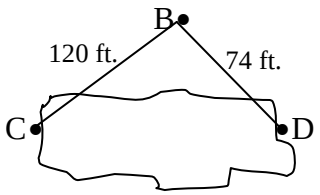
14. In ∆ABC, if a = 8, b= 5 and c = 9, what is the value of cos*A*?

15. A pilot of a transoceanic jet flying at an altitude of 12,000 m finds that a stationary ship is in the same vertical plane as the jet's course. He measures the ship's angle of depression to be 14°. Two minutes later he finds it to be 43°.

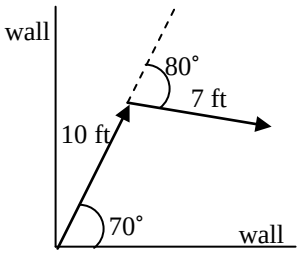
A. How far did the jet fly in those 2 minutes?

B. At what speed was the jet traveling?

16. An engineer wants to measure the width of a sinkhole. He places a stake at B as shown and measures from the stake to C and D as shown. If the angle at B is 103°, how wide is the sinkhole?



17. Suppose you start at the corner of a room and walk 10 feet at an angle of 70° to the right hand wall. Then you turn 80° clockwise and walk another 7 ft. If you had walked straight from the corner of the room to your stopping point, how far and in what direction would you have walked?



18. The pilot of a commercial airplane finds it necessary to detour around a group of thunderstorms, as shown. He turns the plane at an angle of 21° to his original path, flies 100 km, turns, and then rejoins his original path 170 km from where he left it.

a) How much further did he have to fly because of the detour?
b) At what angle did he rejoin his original course?

19. A flagpole 40 feet tall stands on top of the Wentworth Building. From a point in front of the building, the angle of elevation to the top of the pole is 54^{o}, and the angle of elevation to the bottom of the pole is 47^{o}. How high is the building?