Due to the nature of this test, it is a Take-Home Test. Therefore, the following rules apply to play:

- The test is due **Monday, August 29, 2005** at the beginning of your class. **Not** after class, **not** Tuesday, and **not** whenever you kind of just feel like it. The test will not be accepted after the time I take it up on Monday.

- You **must** turn in your work. **All of it**. I know some of you don’t like it. I’m sorry. Do it anyways. If you don’t, the problem’s wrong. The whole, entire, beautiful problem is wrong. Sorry.

- The pencil is your friend and mine. Especially yours. I will have you redo it if it’s not done in pencil.

1. Given triangle ABC, where angle A = 41°, angle B = 77°, and side a = 10.5, find the length of side b.

2. Given triangle ABC, where angle A = 67°, side c = 125, and side a = 100, find the measure(s) of angle C, if possible.

3. Given triangle ABC, where angle B = 36° 40’, side b = 8.7, and side a = 12.4, find the measure(s) of angle A, if possible.

4. Given triangle ABC, where angle A = 60°, side b = 20, and side c = 30, find the measure of side a.

5. Given triangle ABC, where side c = 12, side b = 15, and side a = 10, find the measure(s) of angle B, if possible.

6. A hill makes an angle of 17° with the horizontal. At the top of the hill is a pole that stands 40 feet tall. Find the length of rope that will reach from the top of the pole to a point 72 feet downhill from the base of the pole.

7. A parallelogram has side lengths 30 cm and 70 cm. Find the length of the longer diagonal if one of the angles is 65°.

8. A forest ranger at a fire tower notices a fire in the direction of N 27° E. Another ranger at a fire tower 6 miles due east of the first tower sights the same fire at N 52° W from where she is. How far is the first ranger from the fire?

9. Lisa and Ken sight a helicopter due east. The observers are 3540 feet apart. The angle of elevation to the helicopter from where Lisa is standing is 32°, and the angle of elevation to the helicopter from where Ken is standing is 44°. How far away from the helicopter is Lisa?

10. The Pentagon is the largest office building in the world. It is a regular pentagon, 921 feet on a side. Find the greatest straight-line distance from one point on the outside of the building to another outside point through the middle of the building (the length of a diagonal).

11. Find the perimeter of a regular hexagon where the distance from the center of the pentagon to a vertex point on the pentagon is 10 cm.

12. A walkway 3 meters wide is constructed along the outside edge of a square courtyard. If the perimeter of the courtyard is 320 meters and fencing costs $12.00 a meter, what is the cost of the fencing that will be needed along the outer edge of the walkway to completely encircle the courtyard and walkway?