1. A martial arts expert, E, spars in a triangular ring with three of his equally talented students, A, B, and C. The worst place he could stand is where the three students could deliver a chop or leg kick to the expert at the same time. Which point of concurrency would represent this worst place he could stand?
2. A contractor is building a gazebo in a triangular garden. He would like the gazebo to be equidistant from the sides of the garden. Describe where the contractor should build the gazebo. Write out a plan to accomplish his task. Pay close attention to detail and consider what tools he needs to place the gazebo in the correct location. How will he figure out where to build the gazebo??
4. a) Construct the inscribed circle of \( \triangle NMO \). For full credit, show all your work.
The northernmost county of Tantonia is nestled between Route 84, Route 61, and the Raccoon River. County officials are looking for a place to locate the county “fair”. The criteria for the location of the county fair is that the location must be where households in the boundaries of the county will not have a larger drive than any other household.

A) County Official McBride ordered the county planners to make sure the location is equidistant from all three county borders. Use the drawing above to find the location for the county fair. Use what you know about points of concurrency of a triangle to explain your solution.

B) County Official Henderson protests the location of the fair as ordered by County Official McBride. He asserts that most of the population of the county lives in three towns located at the intersections of Routes 84, 61, and the Raccoon River. A “fair” location for the county fair would be one that served the majority of the population. Use the drawing below to find the new location of the county fair according to County Official Henderson’s requirement. Use what you know about points of concurrency of a triangle to explain your solution.

C) Which location do you think is the better choice? Explain your opinion.