

Geometer Sketchpad Lab  
Proof That an Angle Inscribed in a Semicircle is a Right Angle  
By Chris Cunningham

This lab has been designed for students enrolled in Math 121, Introduction to Mathematics, at West Virginia University at Parkersburg. Math 121 is a survey course designed to give students the opportunity to sample different mathematical topics. Topics that we explore include; problem solving, set theory, number theory, numeration, and geometry. Though the course is open to any student enrolled at the college, individuals who are in the elementary education program are the only students who are required to take the course. For this reason the content of the course is directed at their needs. We spend about four weeks exploring euclidean geometry and briefly discuss the possibility of other geometries.

Due to the fact that we only have about four weeks to spend on the topic of euclidean geometry, there is not enough time to build the skill of writing a formal proof. Some of the students in the course have never had a formal geometry course, while even those that have really struggle as a whole in proof construction. In the past I have had students construct a proof after I have given them all the “pieces.” I do this to give them a “feel” for proof writing. Though they give great effort to their proofs, and show an understanding of the proof once I construct it for them, their proofs usually fall considerably short of the mark.

As of this writing I have not had the opportunity to have my students work on this lab, I am optimistic that their proofs will show improvement. The idea being that if the students construct the “pieces” of the proof themselves, they will be able to see how those “pieces” fit together much more readily than if I had just handed them out.

In a more rigorous course students would prove that the measure of an inscribed angle is equal to one-half the measure of its intercepted arc. Since the proof for this involves several cases, I choose this a simpler alternative. Once they have an understanding of this proof, it is usually not difficult to sketch a proof to the more general theorem.

Though I have not seen one, I’m sure there has been a lab written on this topic. But, anyone who finds this particular take on the subject useful is more than welcome to use it.