

Geometry proof assignment Oct 5

1. Prove Theorem 2. The process is similar to the proof of theorem 1:

--name the objects, and their given properties (use the word "Let")

--suppose the opposite (complement) of the thing you are trying to prove

--use between-ness and to write out what the possible states are

--use "without loss in generality" to choose one of those states to prove the theorem for (note: this is an accepted step in a proof when all of the possible states are the same except for how they are named)

--use the properties from the distance axiom that go with between-ness to write an equation

--use the equation (and distance properties) to prove that your supposition is impossible. (because of the distance axiom)

--conclude that the theorem is true.

2. Prove Theorem 3. This is probably the shortest proof by contradiction you will ever get to do as a real theorem.

--start by assuming that the conclusion to the theorem is false, and name all of the things (points and lines) that describe the situation.

--Use the line axiom to explain why this situation is impossible

--conclude that the theorem is true.

3. Prove Theorem 5:

--read the definition of a line.

--name your points and distances and functions and the given properties (use the word "Let")

--apply the isometry properties to the distance in the hypothesis to get the conclusion.

4. Get ready to prove theorem 6:

Take a piece of paper and fold it in half lengthwise

Write only on the left side for now—we'll add in stuff on the right side next time.

Write out the givens. Name everything.

On the left side, write out in individual statements (one per line) the steps of rotating and (maybe) reflecting to move the first triangle to the position of the second. Give each of your reflections and rotations a function name. Give all of your points names.