[**Proposition 5.**](http://aleph0.clarku.edu/~djoyce/java/elements/bookI/propI5.html)

In isosceles triangles the angles at the base equal one another, and, if the equal straight lines are produced further, then the angles under the base equal one another.

Given  such that  with extended sides  and  such that  and 

then  and 

[**Proposition 15.**](http://aleph0.clarku.edu/~djoyce/java/elements/bookI/propI15.html)

If two straight lines cut one another, then they make the vertical angles equal to one another.

Given lines  and  that intersect at point  as shown, then 

[**Proposition 27.**](http://aleph0.clarku.edu/~djoyce/java/elements/bookI/propI27.html)

If a straight line falling on two straight lines makes the alternate angles equal to one another, then the straight lines are parallel to one another.

*Note: When the Propositions about Properties assignment was first graded, I graded this problem out of 6 points (which meant 37 points possible), and then I changed my mind, and turned proposition 27 back into a 1 point possible problem (with 32 points possible for the assignment), so you should have both a score out of 6 and a score out of 1 for this problem.*

Given infinite lines  and *m* and line *n* that intersects both *l* and *m* forming angles as labelled in the diagram, such that or  \*, then the lines *l* and *m* are parallel to one another.

\*In order to get full credit at least one pair of congruent alternate angles must be listed:









It’s OK if you list just one, it’s OK if you list all of them. It’s OK if you say all must be true. It’s ideal if you say the conclusion is true if at least one of those angle congruences is known (and true). It’s kind of nice to list both an alternate interior pair and an alternate interior pair of angles.