Wednesday (continued)

-Congruent SAS: isosceles triangle

-Hexagon—6 isosceles congruent triangles

McCrory: How do we know that they angles are equal without measuring them?

-Switch and flip them. Since SAS sides are proportional and angles are equal,they should match up.

-Hexagon:

-main point

-SAS congruence still works in hyperbolic geometry

-McCrory: Could we use isosceles triangles to prove SAS congruence?

-Yes the theorem still holds for hyperbolic Geometry.

-We are also going to look at spherical geometry which will help understand why some of these theorems work and do not work.

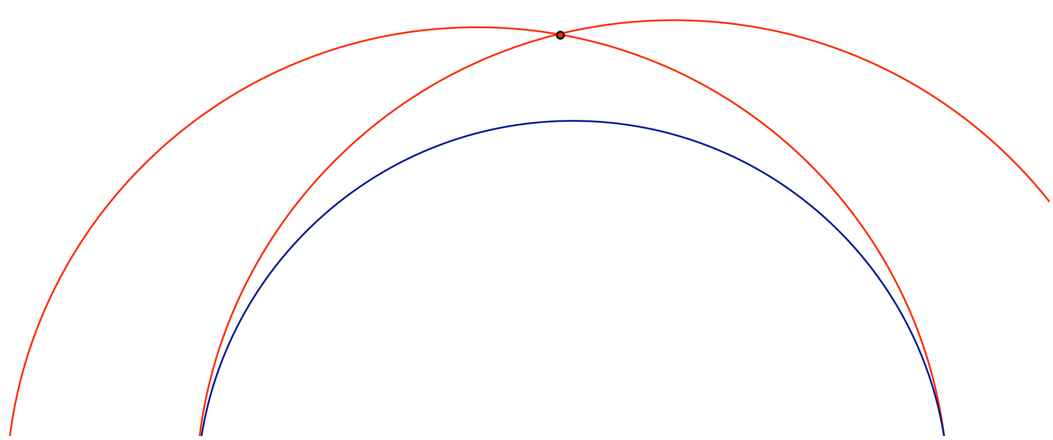
-First 5 axioms hold true for hyperbolic geometry.

-Properties of distance, use formula

-Lines work the same way as Euclidian geometry

-Parallel axiom fails in hyperbolic geometry

-Definition of parallel: no intersection



-All the lines between the red lines going through the red point are parallel to the blue line. (lots)

-Area axiom

-Congruent polygons have the same area

-Area of a rectangle = b*h (no rectangles in hyperbolic geometry)

-Area is always less than 360 degrees

-Regular quadrilateral is not a square in hyperbolic geometry. Area of the two sum of two polygons is the sum of the area.

-Any positive # 1, and 2 only defined up to a scale.

-The angle definitely is proportional to the triangle

-radians

Friday

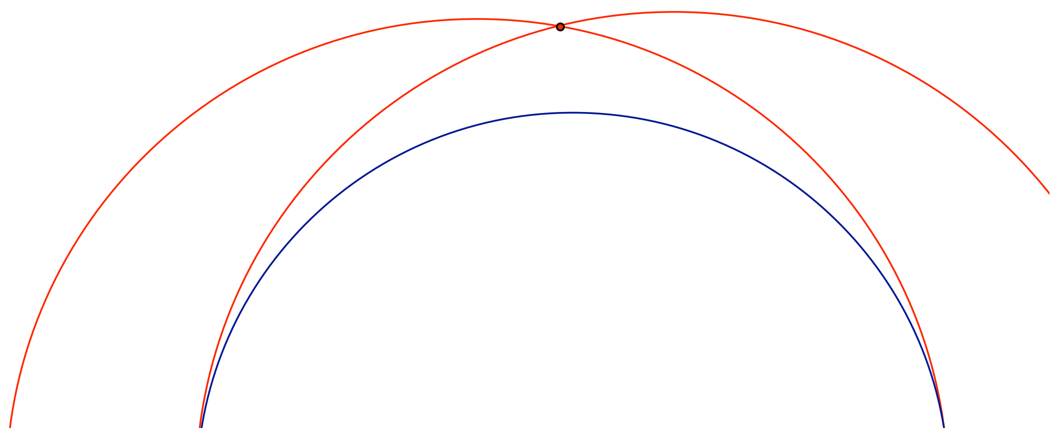
-Spherical geometry (review for the course)

-Isosceles triangle: yes it holds

-Discussion:

-review from Wednesday

-make a line, drag it upwards and it makes a parallel line to the original line



-All lines are parallel that go through this point (and b/w the lines)---Consequence of parallel lines (interval of angles that make parallel lines)

-If the line intersects somewhere on the original line, it is not parallel

***Do not hold true

-corresponding angles, alternate interior angles, triangle angle sum

-depends on where the point is and how large the angles are

-Triangle sum theorem: try using radians instead of degrees

-Congruence (ASA, SSS) hold true

-SSS must be congruent, cannot be similar (equilateral triangles)

-Area ---no because way to many parallel lines

-Area of triangle---no

-Similarity---none (SSS, SAS)

-sides are not 2:1 (proportional) for both triangles

-Angles are not equal (the smaller the triangle the closer it is to Euclidian geometry)

-AA, make one 90 degree, if no other angle is equal or shared, AA fails

***In the half plane program do not change labels

-Pythagorean Theorem---no

-If you have a triangle that the sum of two sides isles that the other sides, yes the distance axiom holds true, the triangle inequality

-Copying angles

-conformal angles are measured same as Euclidian lines between circles

-Angles between circles are between their tangent lines

-Constructing center of circles by Euclidian geometry (or you can unhide objects to find the center but may take longer)

***IMPORTANT

-hyperbolic angles between hyperbolic lines are the same as Euclidian tangent lines

Question (McCrory): what should replace the assumption of the area of a rectangle = b*h. Unit square, area = 1.

-Assymtotic triangles limit when you take vertices to infinity (lines become parallel)