

2 Dimensions Hyperbolic

definitions & theorems from Origametry by Daniel Heath.

While working in a group make sure you:

- Expect to make mistakes but be sure to reflect/learn from them!
- Are civil and are aware of your impact on others.
- Assume and engage with the strongest argument while assuming best intent.

Postulate 7. *If two parallel lines are cut by a transversal, then alternate interior angles are congruent.*

Theorem Playfaire's Theorem. *Given a line l , and a point $A \notin l$, there is a unique line m through A and parallel to l .*

Postulate 7H. *Given a line l and a point $A \notin l$, there are at least two lines m_1 and m_2 through A and parallel to l .*

1. Open up a game of Pool in J. Week's Hyperbolic games. Note that the pool cue and the white line (outlining the path forward) are considered straight in this model of Hyperbolic Geometry.
 - (a) Can you position the pool table so that the pool cue is approximating a line we would consider straight in Euclidean Geometry. If so, draw the configuration, if not, hypothesize why not.
 - (b) Identify two lines in this space that are parallel (do not intersect).
 - (c) Identify a family of lines in this space that are parallel (do not intersect)