

## Soccer Ball Model of the Hyperbolic Plane

We will construct a model of the hyperbolic plane using hexagons and heptagons.

1. Each heptagon is bordered by 7 hexagons.
2. Each hexagon is bordered by 3 heptagons and 3 hexagons, where the heptagons and hexagons alternate around the central hexagon.
3. At each vertex is 1 heptagon and 2 hexagons.

Tips for constructing the soccer ball model:

1. Cut the shapes exactly.
2. Use just the right length of tape—have one person cutting pieces of tape whose lengths are the side lengths of your polygon.
3. No 2 heptagons touch, and no 3 hexagons meet at a vertex.
4. Build layers outward from a central heptagon.
5. Put the grid lines for the polygons all on the same side.
6. Use **pencil** when drawing on the hyperbolic plane!