1067-S1-1164   **Vi Hart*** (`vi@vihart.com`). *Hyperbolic Planes Take Off!*

This year I developed a sudden interest in making representations of the hyperbolic plane in many mediums: balloons, beadwork, drawing, plastic, sewing, and others. Some of these attempts created mathematical problems, for example how to decompose the graph of a hyperbolic tiling into optimal pieces for making it modularly out of balloons. Having physical models of the hyperbolic plane helped me to develop my intuition of the many ways the hyperbolic plane can look when embedded in three dimensions, such as how it can fold into Schwartz' P surface. Drawing and painting, especially, require this intuition, and allow the freedom to imagine the hyperbolic plane in ways it has never been seen before. These new visions led to more mathematical insights: for example, the every-day transformation of "shriveling up" can turn a Euclidean plane into a hyperbolic one, as seen in dried apple slices. This journey through representations of the hyperbolic plane highlights the ways that mathematics and art communicate with each other, leading to both beautiful art and beautiful math. (Received September 19, 2010)