Math 329 (Geometry) Homework 2

April 30, 2014 — Professor Ilya Kofman

NAME: ________________________________

1. For the five statements below, fill in the chart with **A S N** in each space.

$X1$: Two distinct points determine a unique line.
$X2$: Two distinct lines intersect in a unique point.
$X3$: For a line ℓ and point Q off ℓ, there exists a line parallel to ℓ through Q.
$X4$: For a line ℓ and point Q off ℓ, a unique line is parallel to ℓ through Q.
$X5$: If two triangles are similar then they are congruent.

	$X1$	$X2$	$X3$	$X4$	$X5$
$\mathbf{R}^2$					
S^2					
$\mathbf{R}P^2$					
$\mathbf{H}^2$					
Taxicab					

2. Given two points A, B in S^2, precisely describe an orientation-preserving isometry of S^2 that exchanges A and B. Do the same for $\mathbf{H}^2$.

3. Draw a perspective view of a tiled floor with straightedge alone (at least nine rectangular tiles).