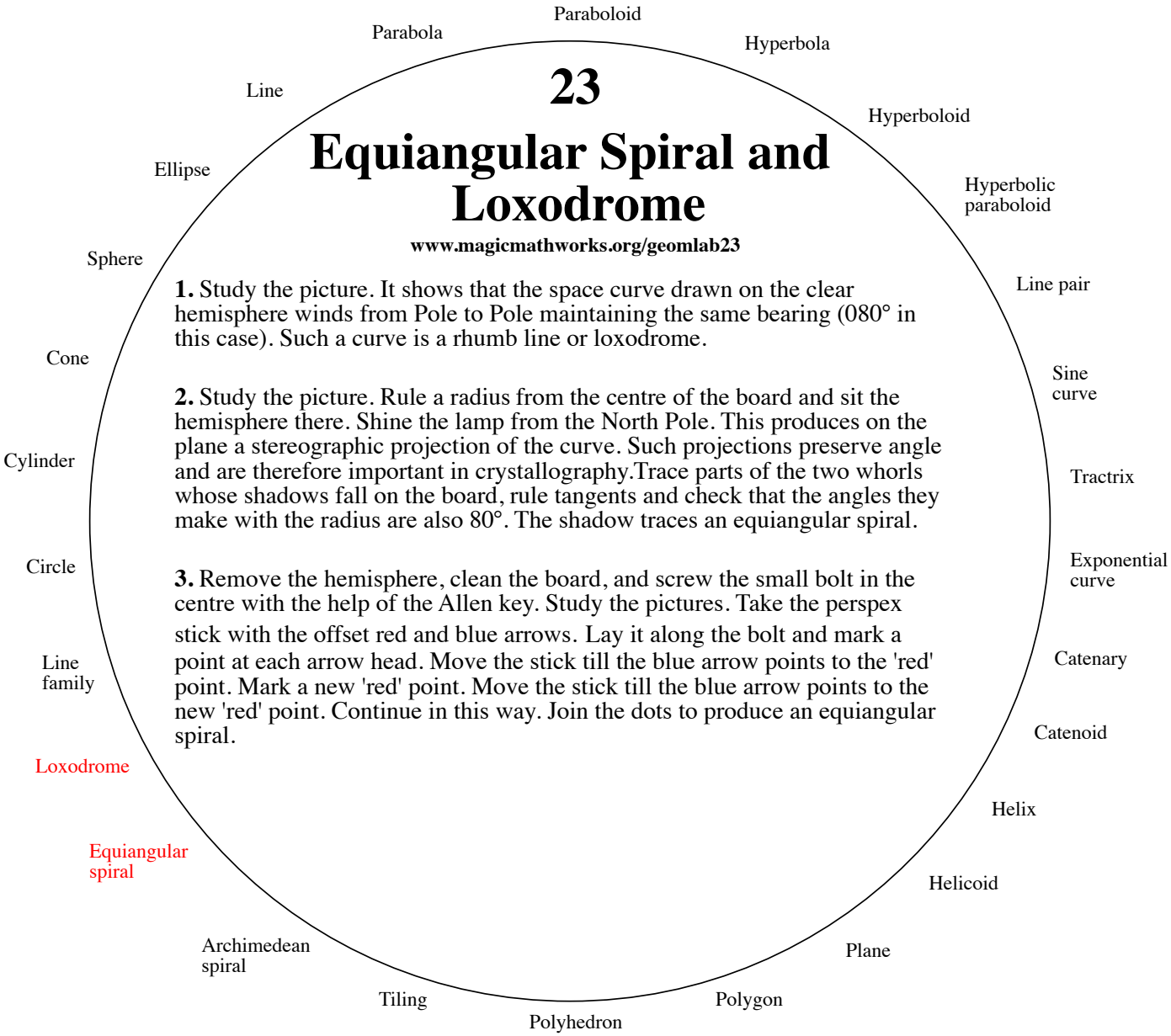
23

Equiangular Spiral and Loxodrome

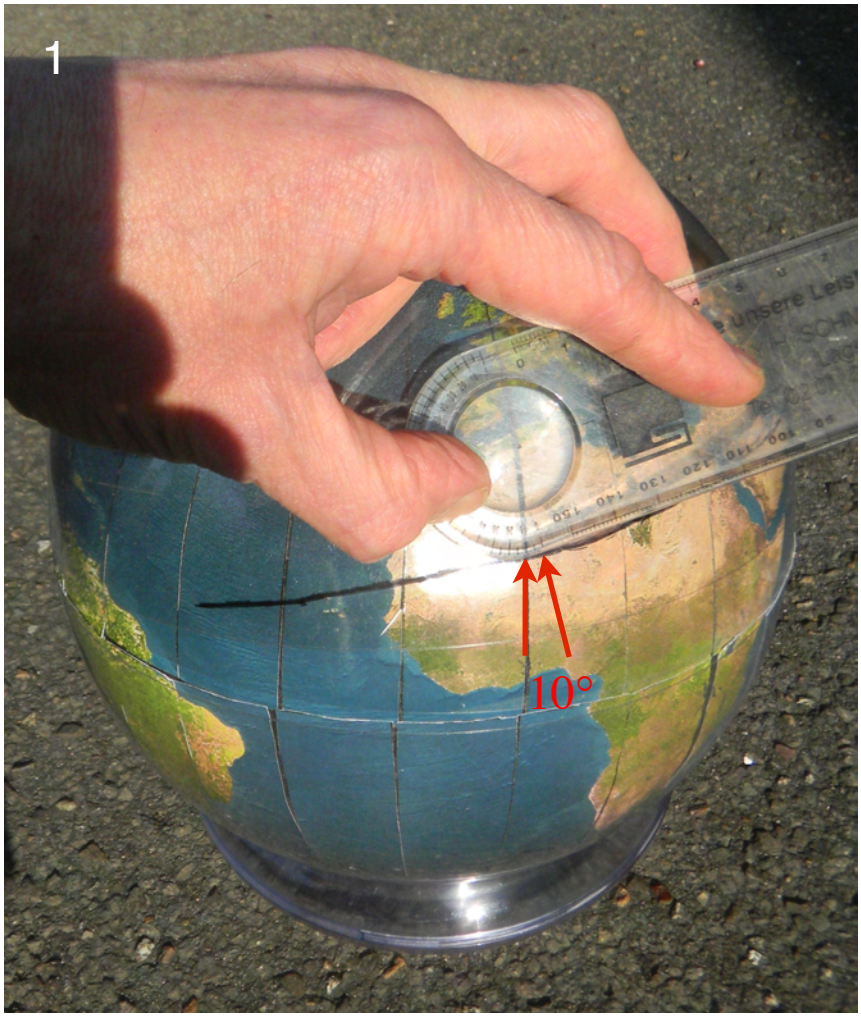
www.magicmathworks.org/geomlab23

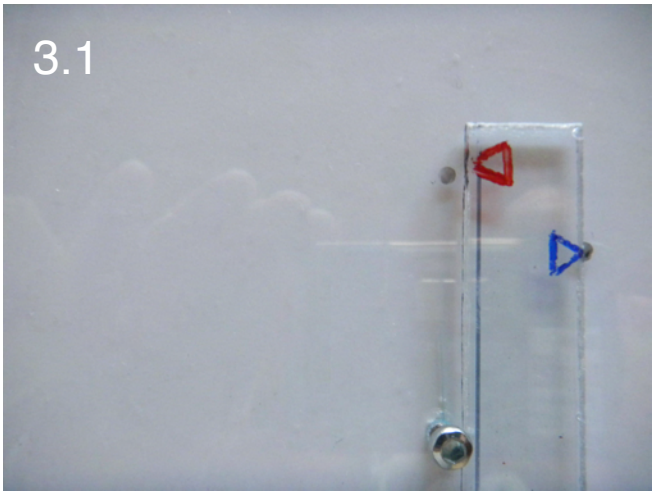


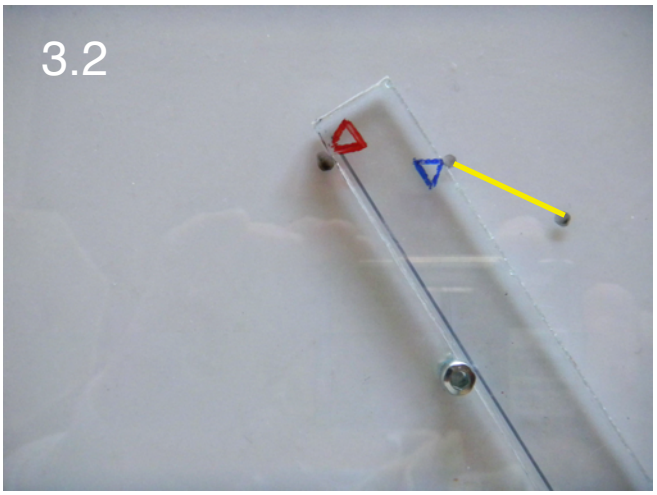
1. Study the picture. It shows that the space curve drawn on the clear hemisphere winds from Pole to Pole maintaining the same bearing (080° in this case). Such a curve is a rhumb line or loxodrome.

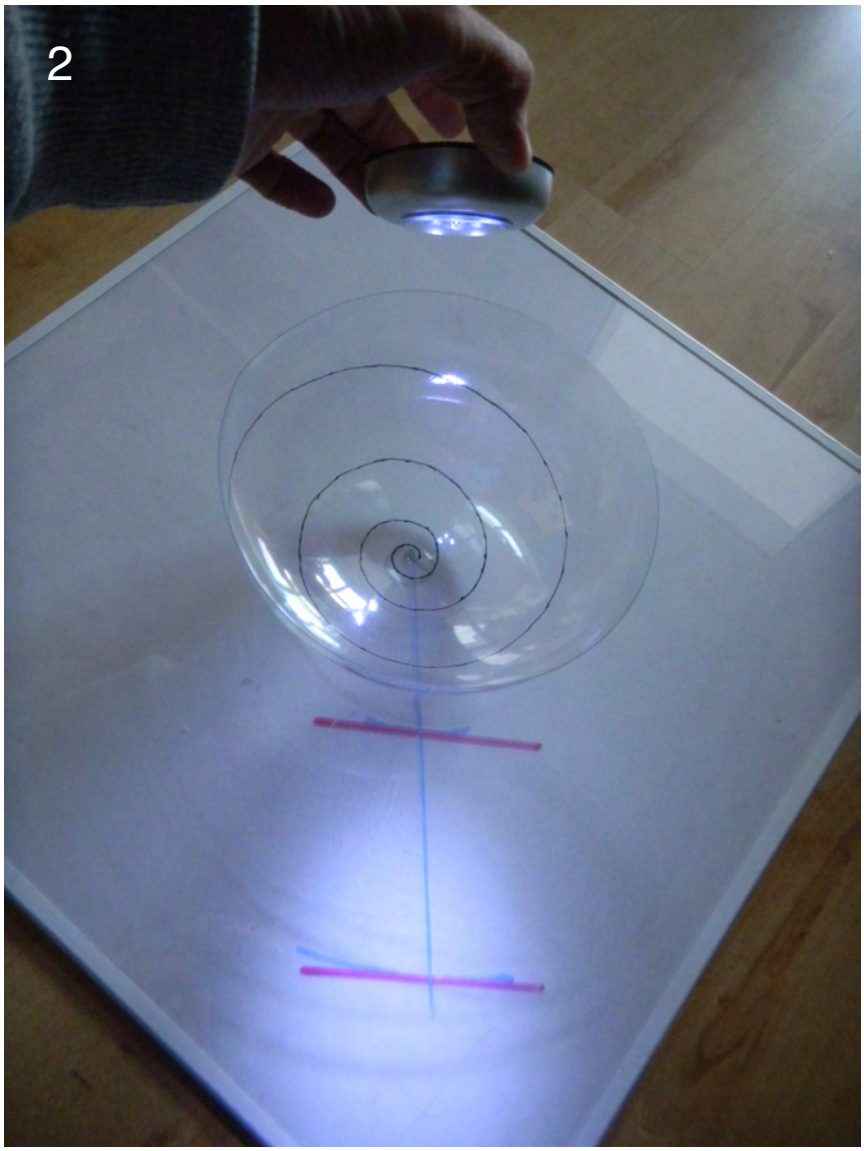
2. Study the picture. Rule a radius from the centre of the board and sit the hemisphere there. Shine the lamp from the North Pole. This produces on the plane a stereographic projection of the curve. Such projections preserve angle and are therefore important in crystallography.Trace parts of the two whorls whose shadows fall on the board, rule tangents and check that the angles they make with the radius are also 80°. The shadow traces an equiangular spiral.

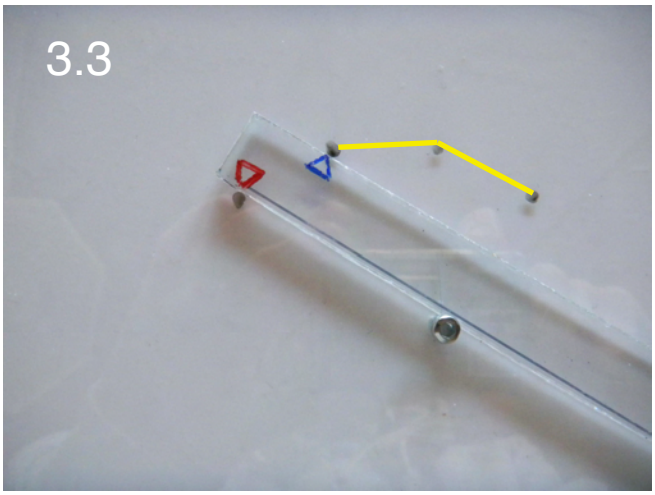
3. Remove the hemisphere, clean the board, and screw the small bolt in the centre with the help of the Allen key. Study the pictures. Take the perspex stick with the offset red and blue arrows. Lay it along the bolt and mark a point at each arrow head. Move the stick till the blue arrow points to the 'red' point. Mark a new 'red' point. Move the stick till the blue arrow points to the new 'red' point. Continue in this way. Join the dots to produce an equiangular spiral.


1
10°


3.1


3.2


2


3.3