

Patty Paper Worksheet 6

Spherical Geometry

1. Explain in your own words what a geodesic is.

2. Complete each of the following two sentences:

Geodesics in the plane look like:

Geodesics on the sphere look like:

3. Answer each of the following:

How many geodesic paths are
between two points in a plane?

How many geodesic paths are
between the 'north pole' & 'south
pole' on a sphere?

4. Two geodesics on the plane can be made perpendicular on the plane (using a 90° corner from a patty paper). Is it possible to use this same technique to make two geodesics on the sphere that are perpendicular?

5. Two geodesics on the plane can be made parallel on the plane (using your process from Patty Wks 2). Is it possible to use this same technique to make two geodesics on the sphere that are parallel?

6. Answer each of the following:

How many times do two perpendicular geodesics intersect in the plane?

How many times do two perpendicular geodesics intersect on the sphere?

If two geodesics are perpendicular on a plane, how many 90° angles are made?

If two geodesics are perpendicular on a sphere, how many 90° angles are made?

7. Can you make a right triangle on the sphere? If so, explain how, and if not, explain why you can't.

8. Can you make a right triangle on the sphere with more than one 90° angle? If so, draw a picture of it.

9. Can you make a rectangle on the sphere? If so, explain how, and if not, explain why you can't