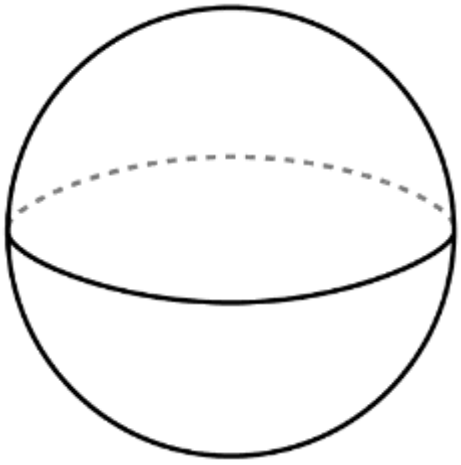
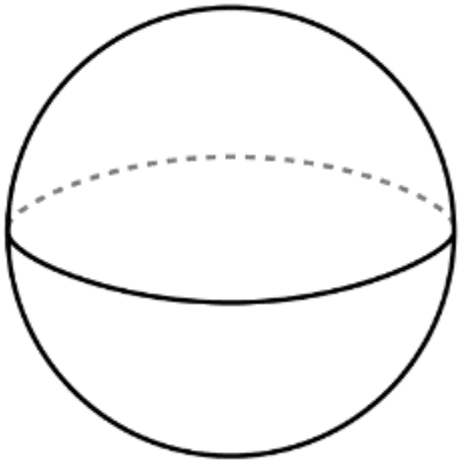
What is a straight line on the sphere? What isn't?

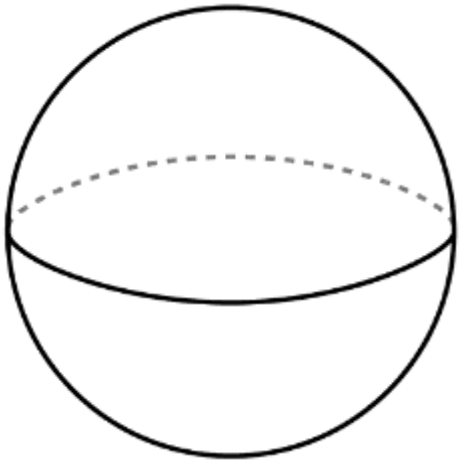


How many "great circles" can you find between a pair of points on the sphere?

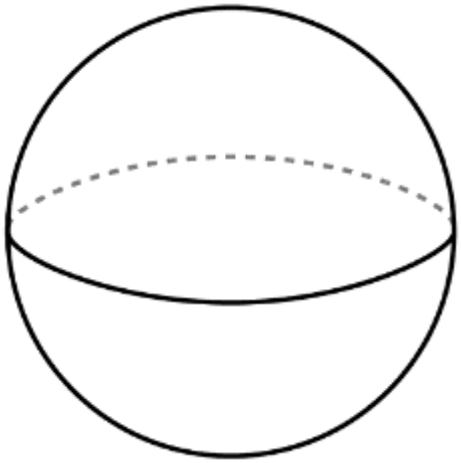


Suppose we call the great circles on a sphere "lines". What are some similarities and differences between these lines and the lines we typically use in Euclidean Geometry? Some properties to think about:

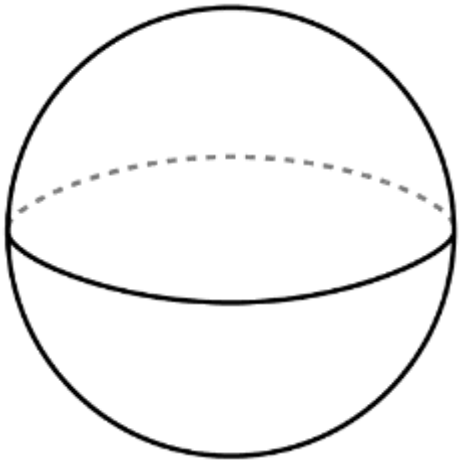
a. parallel
b. perpendicular
c. number of intersections
d. shortest distance
e. lengths



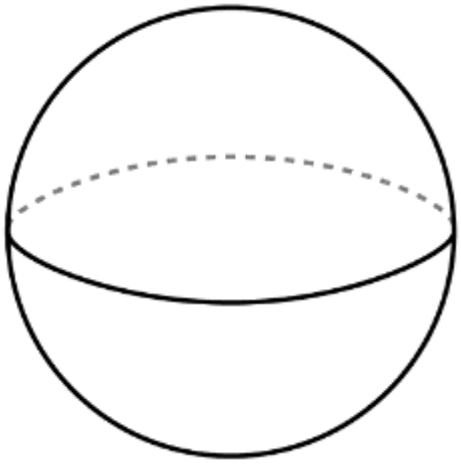
Is it possible to have a two-sided polygon on a sphere? Why or why not?



What is a triangle on a sphere? Draw one.

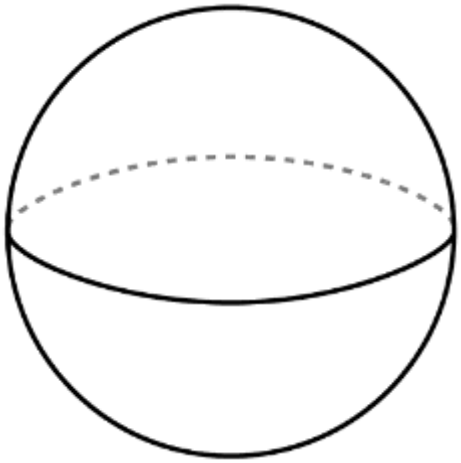


What shapes can be formed by three great circles on a sphere?

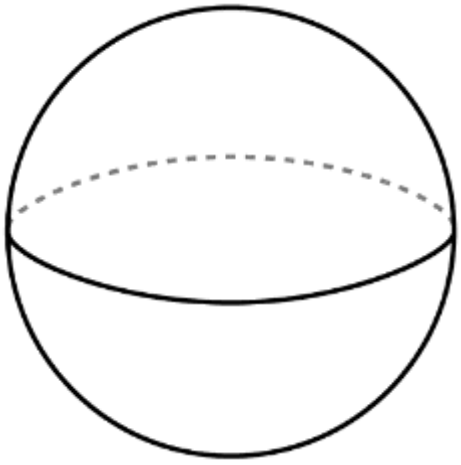


The surface area of a sphere is $4\,\pi\,r^2$. Use this to find the area of

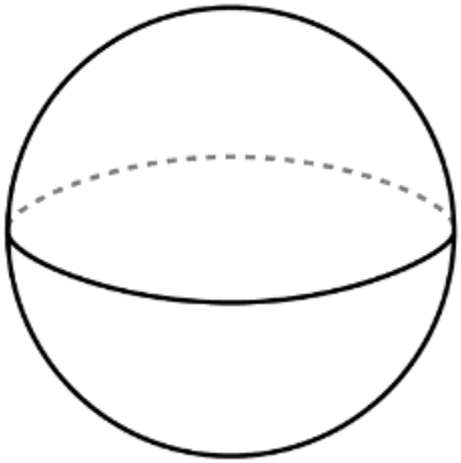
a. a region between two great circles (a *biangle* or *lune*)
b. a region between three (*triangle*)
c. Look for patterns in your calculations.



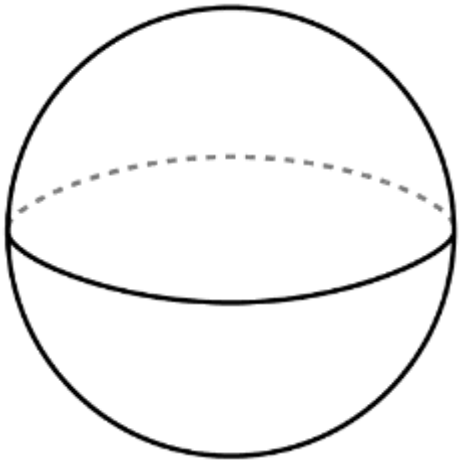
Measure the angles of various triangles on a sphere.
What relationship(s) can you see among the angles and the areas of the triangles?



Find a formula for the area of a triangle on a sphere by thinking about the 6 "lunes" created by three intersecting lines?



Is it possible to draw a square on a sphere? Why or Why Not?



A bear leaves home, walks 200 miles south, then 200 miles west, then walks north. To her surprise, she finds that she is back home again. Where's the bear's house?