A Buckyball is a polyhedron that has only pentagon and hexagon faces and has all vertices of degree three. It is well-known, and fun to prove, that all Buckyballs have exactly 12 pentagon faces. We say that a Buckyball is \(d\)-spherical if the 12 pentagons are evenly spread out on the polyhedron’s surface so that all neighboring pentagons are distance \(d\) away from each other, where this distance is measured by the edge length of a shortest path between two pentagons. We prove that the the number \(B(d)\) of different \(d\)-spherical Buckyballs is 1 if \(d\) is even and \(k\) if \(d = 2k - 1\). We also develop algorithms for 3-edge-coloring spherical Buckyballs. (Received September 28, 2005)