Sphero-geometry is the inherent geometry of polyhedra that is projected onto the sphere in the insphered state. Consequently the qualities of a polyhedron are transferred onto the sphere in an arced manner. All the arced sides are aligned along great circles of the sphere. Geographic analogy is used as it is a convenient means of elaborating on the sphero-geometry of the insphered polyhedra. The essential characteristics of the various polyhedra, regular and insphered are given below. Note their similarities which are elaborated in the diagrams in the opposite page.

Characteristics of polyhedra, regular and insphered (projected onto a sphere)

regular tetrahedron		insphered tetrahedron (projected onto a sphere)
(flat equilateral triangles) 4	faces	4 (arced equilateral triangles)
(straight) 6	sides	6 (arced)
(pointed) 4	vertices	4 (arced)
114.65°	angle a side supports at the centre	114.65°
60°	angle of apex	120°

regular hexahedron		insphered hexahedron (projected onto a sphere)
(flat squares) 6	faces	6 (arced squares)
(straight) 12	sides	12 (arced)
(pointed) 8	vertices	8 (arced)
74.69°	angle a side supports at the centre	74.69°
90°	angle of apex	120°

regular octahedron		insphered octahedron (projected onto a sphere)
(flat equilateral triangles) 8	faces	8 (arced equilateral triangles)
(straight) 12	sides	12 (arced)
(pointed) 6	vertices	6 (arced)
90°	angle a side supports at the centre	90°
60°	angle of apex	90°

regular dodecahedron		insphered dodecahedron (projected onto a sphere)
(flat pentagons) 12	faces	12 (arced pentagons)
(straight) 30	sides	30 (arced)
(pointed) 20	vertices	20 (arced)
42.28°	angle a side supports at the centre	42.28°
108°	angle of apex	120°

regular icosahedron		insphered icosahedron (projected onto a sphere)
(flat equilateral triangles) 20	faces	20 (arced equilateral triangles)
(straight) 30	sides	30 (arced)
(pointed) 12	vertices	12 (arced)
63.42°	angle a side supports at the centre	63.42°
60°	angle of apex	72°

composite polyhedron (hexpenhedron)		insphered hexpenhedron (projected onto a sphere
(flat hexagons) 20		20 (arced hexagons)
(flat pentagons) 12		12 (arced pentagons)
32	total number of faces	32
(straight) 90	sides	90 (arced)
(pointed) 60	vertices	60 (arced)
24°	angle a side supports at the centre	24°
120°	angle of apex (hexagon)	123.5°
108°	" " " (pentagon)	113°

Using the insphered polyhedra to measure distances and areas on the earth

In order to use the data from the various insphered polyhedra to measure the earth, the earth is perceived to be a perfect sphere having the following measurements.

diameter	12742.06847 kms.
circumference	40030.35 kms.
superficial area	510,069,522.8 sq. kms.

The distance of an arced side is calculated using its arc-angle value and the circumference. But since the earth is an oblate-spheroid the distance is given with a range, in brackets, to encompass the polar and equatorial differences. The area of an arced face is calculated in a proportional manner for each insphered polyhedron with reference to the superficial area. The values are approximate due to the earth's shape.

In the paired diagrams of the regular and insphered polyhedra in the opposite page it is easy to imagine the regular polyhedron, magnified and insphered, within the "football" sphere representing the earth, with its vertices just touching the arced vertices of the insphered polyhedron (earth). A few extra pertinent arc-angle values are given. Note that all the angular values pertaining to a regular polyhedron are reflected as arc-angle values on the corresponding insphered polyhedron. The superficial area of a regular polyhedron that is imagined to be insphered within the spherical earth is given below each diagram, with the area of a single face in brackets. Note that the area of an arced face of an insphered polyhedron is greater than the area of a flat face of a regular polyhedron. The geographic facts relating to each of the insphered polyhedra are given in the mapped out version of each, which are described in a following article.