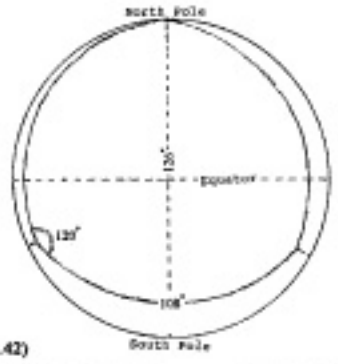
geometry of regular polyhedra	sphero-geometry of insphered polyhedra	geographic perspective and measurements with reference to the earth

Tetrahedron



The angle a side supports at the centre is 108°
The angle an apex and the mid-point of the opposite side support at the centre is 126°
Angle of apex is 60°
Superficial area 184,053,061.6 sq. kms. (1 face 46,013,265.42)

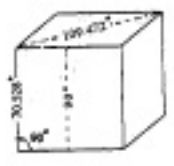
The arc-angle of a side is 108°. The arc-angle joining an apex to the midpoint of the opposite side is 126°. The distance of a side is **between 12002.4 and 12022.55 kms. in an oblate spheroid earth**

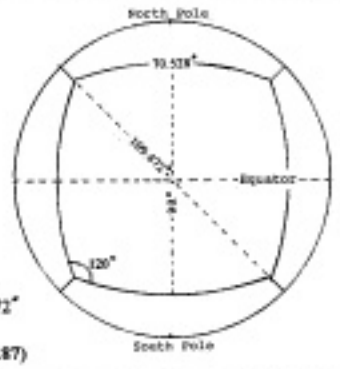
The area of an arced triangular face is about 127,517,380.70 sq. kms. (a quarter of the superficial area).

If a vertex is at the north pole, then the south pole would be at the centre of the triangular face diametrically opposite it. A polar circumference could go through one or two vertices, and the equator would be trisected by the sides. The tetrahedron is not a true antipodal polyhedron as none of its faces, sides and vertices has a corresponding antipodal counterpart.

An apex of an arced face is 120°

Hexahedron





The angle a side supports at the centre is 70.528°
The angle the mid-points of opposite sides support at the centre is 90°
The angle opposite apices support at the centre is 109.472°
Angle of apex is 90°
Superficial area 324,714,371.2 sq.kms. (1 face 54,119,061.87)

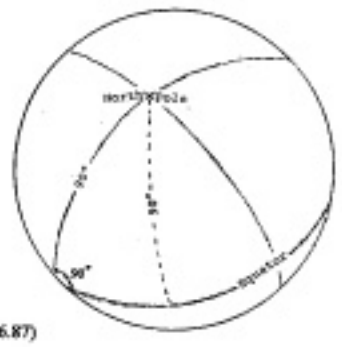
The arc-angle of a side is 70.528°. The arc-angle joining the midpoints of opposite sides is 90°. The arc-angle joining opposite apices is 109.472°. The distance of a side is **between 7838.01 and 7851.17 kms.**

The area of an arced square face is about 85,011,587.13 sq. kms. (a sixth of the superficial area)

If squares are at the poles, then their centres could be the north and south poles. A polar circumference could go through four vertices, and the equator would bisect the sides of the squares it goes through, while it itself would be quartered by the same sides. The hexahedron is a true antipodal polyhedron as all its faces, sides and vertices have their corresponding antipodal counterparts.

An apex of an arced face is 120°

Octahedron



The angle a side supports at the centre is 90°
The angle an apex and the mid-point of the opposite side support at the centre is 90°
Angle of apex is 60°
Superficial area 281,208,055.0 sq. kms. (1 face 35,151,006.87)

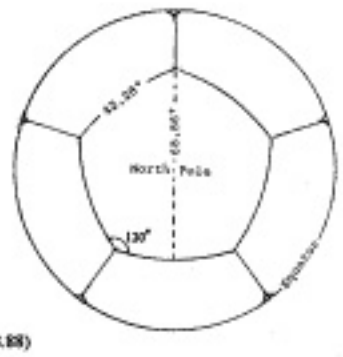
The arc-angle of a side is 90°. The arc-angle joining an apex to the midpoint of the opposite is also 90°. The distance of a side is **between 10002 and 10018.79 kms. – about a quarter of the circumference.**

The area of a arced triangular face is about 63,758,690.35 sq. kms. (an eight of the superficial area)

If a vertex is at the north pole, then the vertex diametrically opposite it is at the south pole. A polar circumference could go through two or four vertices, and the equator could go through four vertices along the centre. The octahedron is a true antipodal polyhedron as all its faces, sides and vertices have their corresponding antipodal counterparts.

An apex of an arced face is 90°

Dodecahedron



The angle a side supports at the centre is 42.28°
The angle an apex and the mid-point of the opposite side support at the centre is 68.86°
Angle of apex is 108°
Superficial area 435,869,746.5 sq.kms. (1 face 36,322,478.88)

The arc-angle of a side is 42.28°. The arc-angle joining an apex to the midpoint of the opposite side is 68.86°
The distance of a side is between 4698.71 and 4706.6 kms.

The area of an arced pentagonal face is about 42,505,793.55 sq. kms. (a twelfth of the superficial area).

If a pentagon is at the north pole, then a pentagon diametrically opposite is at the south pole and their centres could be at the poles. A polar circumference could go through four vertices, and the equator would bisect the sides of the ten pentagons it goes through, while it itself is divided into ten equal parts by the same sides. The dodecahedron is a true antipodal polyhedron as all its faces, sides and vertices have their corresponding antipodal counterparts.

An apex of an arced face is 120°

Icosahedron

The angle a side supports at the centre is 63.42°
The angle an apex and the mid-point of the opposite side support at the centre is 58.29°
Angle of apex is 60°
Superficial area 388,455,926.9 sq. kms. (1 face 19,422,796.35)

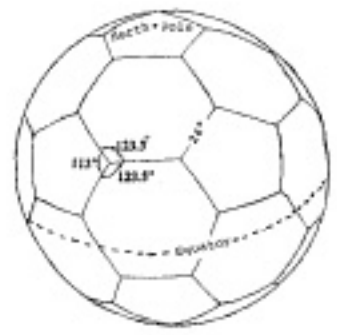
The arc-angle of a side is 63.42°. The arc-angle joining an apex to the midpoint of the opposite side is 58.29°
The distance of a side is between 7048.07 and 7059.9 kms.

The area of an arced triangular face is about 25,503,476.14 sq. kms. (a twentieth of the superficial area)

If a vertex is at the north pole, then the diametrically opposite vertex is at the south pole. A polar circumference could go through two or four vertices, and the equator would bisect the sides of the ten triangles it goes through. while it itself is divided into ten equal parts by the same sides. The icosahedron is a true antipodal polyhedron as all its faces, sides and vertices have their corresponding antipodal counterparts.

An apex of an arced face is 72°

(Composite polyhedron) Hexpenhedron



The angle a side supports at the centre is 24°
The angle of apex (pentagon) is 108°, (hexagon) is 120°
Superficial area 509,535,339.1 sq. kms. (1 pentagon 12,071,636.13, 1 hexagon 18,233,785.28)

The arc-angle of a side is 24° and its distance is between 2667.2 and 2671.67 kms. – about a fifteenth of the circumference.

The area of an arced pentagonal face is about 12,084,291.72 sq kms.
" " " " " hexagonal " " " 18,252,901.09 " "

The hexpenhedron is a true composite antipodal polyhedron as all its faces, sides and vertices have their corresponding antipodal counterparts. For more details refer to the map of the insphered hexpenhedron (mapped out football).

An apex of an arced pentagon is 113°
" " " " " hexagon " 123.5°