

Data of a few latitudes of a spherical earth

latitudes	distances (in kms.)		areas (in sq. kms.)	
	diameters	circumferences	latitudinal circles	latitudinal spheres
90° (poles)	0	0	0	0
85°	1110.544442 (0.88)	3488.875314	968,640.8553 (0.007)	3,874,551.088
80°	2212.63697 (0.17)	6951.198177	3,845,131.758 (0.03)	15,380,478.08
75°	3297.889994 (0.26)	10,360.61823	8,542,071.9852 (0.06)	34,168,179.18
70°	4358.044084 (0.34)	13,691.18771	14,916,747.36 (0.12)	59,666,799.62
65°	5385.030828 (0.42)	16,917.559	22,775,466.68 (0.18)	91,101,576.744
60°	6371.034235 (0.5)	20,015.17744	31,879,446.65 (0.25)	127,517,380.7
55°	7308.550224 (0.57)	22,960.47463	41,952,067.47 (0.33)	167,807,735.7
50°	8190.443734 (0.64)	25,731.01613	52,687,277.62 (0.41)	210,748,439.8
46.1	<i>8835.373573</i>			
45°	9010.0 (0.71)	28,305.7259	63,758,850.54 (0.5)	255,034,590.36
40°	9760.990745 (0.76)	30,665.03092	74,830,508.85 (0.58)	299,321,083.6
35°	10,437.69144 (0.82)	32,790.94705	85,565,719.2 (0.67)	342,261,787.34
30°	11,034.95499 (0.86)	34,667.30425	95,638,339.92 (0.75)	382,552,142.0
29.12	<i>11,131.30168</i>			
25°	11,548.23588 (0.9)	36,279.82236	104,742,320.0 (0.82)	418,967,946.28
20°	11,973.62771 (0.94)	37,616.22909	112,601,039.1 (0.88)	450,402,722.8
15°	12,307.89302 (0.96)	38,666.35363	118,975,714.7 (0.93)	475,901,343.98
10°	12,548.48782 (0.98)	39,422.20385	123,672,654.9 (0.97)	494,689,044.9
5°	12,693.58105 (0.99)	39,878.02729	126,549,145.7 (0.99)	506,194,971.53
0° (equator)	12,742.06847 (1)	40,030.35488	127,517,786.6 (1)	510,069,522.8

The bracketed number is the ratio of a latitudinal diameter or its circumference when compared to the earth's diameter or circumference respectively.

The bracketed number is the ratio of the area of a latitudinal circle or its superficial area when compared to the area of the equator or the earth's superficial area respectively.

**With reference to Pythagoras's theorem**

The sum of the squared areas of any two complementary latitudinal diameters equals the squared area of the equatorial diameter.

The sum of the areas of any two complementary latitudinal circles equals the area of the equatorial circle.

*The diameters in italics refer to my possible solution to Fermat's last theorem.*

510,069,522.8

Proving Pythagoras's theorem with reference to the superficial areas of spheres

## A few theorems relating to sphero-geometry

Based on the data of a few latitudes of a spherical earth given in the table I would like to propose a few theorems relating to sphero-geometry. They are all related to a sphere with the earth as an example with its latitude at 60° (north or south), which is envisaged as a circle or a sphere with reference to a theorem. I am using geographic/geometric analogy to elaborate on my theorems. They are as follows :

- 1 The diameter of a sphere (earth) is twice the diameter of its latitudinal circle at 60°.
- 2 The great circle circumference of a sphere (earth) is twice the great circle circumference of its latitudinal sphere at 60°.
- 3 The area of a great circle of a sphere (earth) is four times the area of its latitudinal circle at 60°.
- 4 The superficial area of a sphere (earth) is four times the superficial area of its latitudinal sphere at 60°.
- 5 The volume of a sphere (earth) is eight times the volume of its latitudinal sphere at 60°.

## Proof\* of the truth of the second theorem

I have chosen Oslo (59.91°N, 10.75°E) and Leningrad (59.91°N, 30.33°E) because they are closely aligned along latitude 60°N. The distance between the places which is 19.58° apart longitudinally is 1088.60 kms. along latitude 60°N. The equivalent distance between two places along the equator that is also 19.58° apart would be 2177.20 kms (1088.60 x 2) according to the theorem. Therefore the distance between two places that is half the longitudinal degrees apart, 9.79°, along the equator would be equal to the distance between Oslo and Leningrad along latitude 60°N. In this respect the distance between Kampala (0.33°N, 32.5°E) and Kismayu (0.58°N, 22.08°E), which is 10.3° apart longitudinally along the equator is slightly more than the distance between Oslo and Leningrad. The distance which is 1143.31 kms. is more by 56.7 kms. because of the slightly greater longitudinal degrees apart between the places. However the distance between Alexandria (31.21°N, 29.96°E) and Istanbul (41.0°N, 29.0°E) which is exactly 9.79° apart latitudinally along a polar circumference is actually 1088.60 kms., which is equal to the latitudinal distance between Oslo and Leningrad

**Re : Geodesic distance** It should be noted that the geodesic distance between Oslo and Leningrad along a great circle circumference would be slightly lesser than its latitudinal distance of 1088.60 kms.

**An interesting observation from the data relating to the superficial area of the earth with reference to latitude 60°N or 60°S.** The superficial area between latitude 60° and its nearest pole is  $\frac{1}{4}$  of the superficial area of a sphere (earth). This can be roughly figured out from the "hex-pen" grid superimposed onto the antipodes map. The superficial area between latitude 60° and the equator is therefore  $\frac{3}{4}$  of the superficial area of a sphere (earth).

\*The proof should be considered within the differentials mentioned earlier, because the measurements are based on a spherical earth and overlaid onto an oblate-spheroid earth. This applies to the observation relating to superficial areas too.