Extending the scope of the Pythagoras's theorem to include the superficial areas of spheres

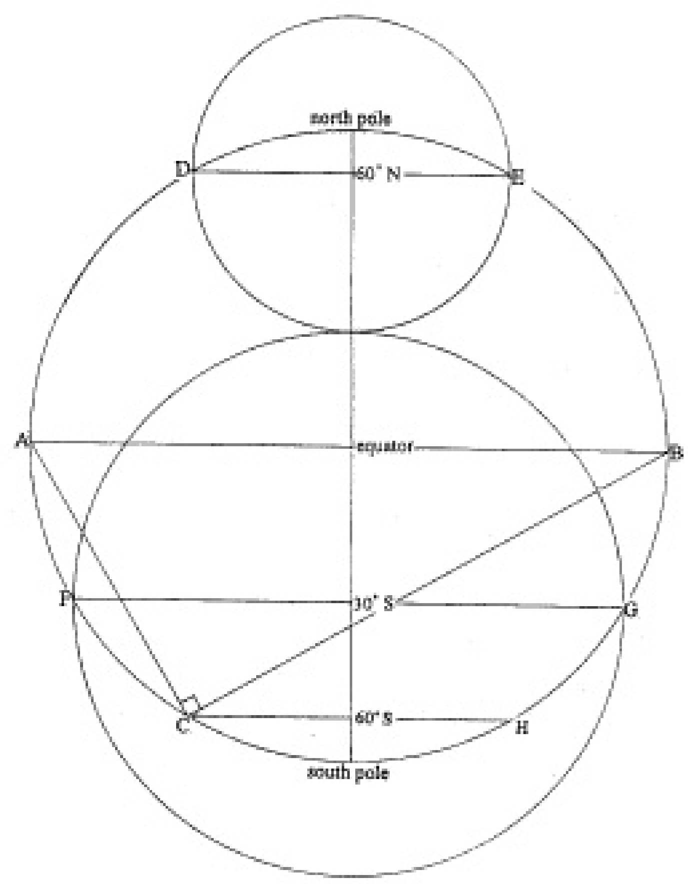
The general perception of the Pythagoras's theorem is restricted to the areas of squares along the sides of right triangles. In my introduction I have extended it to include corollaries relating to the areas of regular polygons and circles too. However all these measurements refer to areas of flat surfaces only. But the theorem can also apply to the areas of spheres. I have endeavoured to prove this, in an occult manner, by using geographic/geometric analogy with the help of the diagram shown below. The diagram shows a cross-section of a perfectly spherical earth with a cross-section of a sphere having the same diameter as latitude 60° N, and of another sphere having the same diameter as latitude 30° S. I have worked out the areas of latitudinal circles and the superficial areas of latitudinal spheres in the table giving the data of a few latitudes of a spherical earth, in order to prove the applicability of the Pythagoras's theorem to the areas of circles and the superficial areas of spheres.

Comparing the dimensions of an imaginary spherical earth with that of the actual oblate-spheroid earth

	oblate-spheroid earth	spherical earth	variation
polar diameter	12713.54 kms.	12742.06847 kms.	(+) 28.53 kms.
equatorial diameter	12756.32 kms.	12742.06847 kms.	(-) 14.25 kms.
polar circumference	40008.00 kms.	40030.35 kms.	(+) 22.35 kms.
equatorial circumference	40075.16 kms.	40030.35 kms.	(-) 44.81 kms.
superficial area	510,069,522.6 sq. kms.	510,069,522.8 sq.kms.	(almost nil)

Using geographic/geometric analogy to prove that the surface area of a sphere that is aligned diametrically along the hypotenuse of a right-triangle is equal to the sum of the areas of the other two spheres that are aligned diametrically along the other two sides of the right triangle.

ABC is a right triangle
Therefore the Pythagoras's theorem applies to it in a direct manner
DE = AC = CH (geographic geometry)
And FG = BC (geographic geometry)
Thus in triangle ABC, DE and FG can be substituted for AC and BC respectively.
Hence the Pythagoras's theorem can apply to AB, DE and FG in an occult manner as the right triangle is invisible and only implied in a comparative geographical sense (60° + 30° = 90°).
From the table it can be proved that the sum of the superficial areas of complementary latitudinal spheres (eg. 60°N and 30°S) is equal to the superficial area of the earth.



The table shown giving the data of a few latitudes of a spherical earth validates the applicability of the Pythagoras's theorem to the areas of any two complementary latitudinal circles (latitudes that add up to 90°), and the superficial areas of any two latitudinal spheres (spheres having the diameters of latitudes that add up to 90°). In the Pythagorean context, as proved by using the diagram above, the areas of any two complementary latitudinal circles add up to the area of the equatorial circle, and the superficial areas of any two complementary latitudinal spheres add up to the superficial area of the earth. The applicability of the Pythagoras's theorem to the areas of latitudinal circles and spheres is hereby proved by geographic/geometric analogy as given in the table. But they are not applicable to the oblate-spheroid earth.

In conclusion the scope of the Pythagoras's theorem can be extended to include the following corollary:
The surface area of a sphere that is aligned diametrically along the hypotenuse of a right-triangle is equal to the sum of the surface areas of the other two spheres that are aligned diametrically along the other two sides of the right-triangle.