### Decimal expression of fractions

**ARITHMETICS**

22

**Measuring the length of the terrestrial meridian**

On June 25, 1792, Pierre Méchain and Jean-Baptiste Delambre began work to determine the length of the meridian passing through Paris.

The commission came from the Academy of Sciences of Paris, which proposed the adoption of a pattern of length from nature: the meter, defined as the ten-millionth part of the quadrant of a terrestrial meridian.

Given the impossibility of measuring an entire quarter of a meridian from the North Pole to Ecuador, the solution adopted was to measure a part and calculate mathematically the value of the total.

The meridian arc chosen in the proposal of the academy was the one between Dunkirk (latitude N 51o 2 '9.20 ") and Barcelona (latitude N 41o 21' 44.95").

The French astronomers and geodesists intended to determine, by means of triangulation techniques, the length of the arc comprised between these two cities, located on said meridian.

Dunkerque

Barcelona

What result do you think they should have obtained, approximately?

**1**

 Note: Consider that the Earth is a spherical planet of radius R = 6,370 km and that the arc length of

A circumference is, $L=2πR\frac{n}{360^{o}} $where R is the radius of the circumference and n the arc expressed in

sexagesimal degrees.

 Compare the result you have obtained with the one obtained from Google Maps.

**2**

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