3 Terms, definitions, symbols, and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

NOTE Symbols or abbreviations used as representations for the term are listed immediately following the term. After the definition, where necessary, an additional clarifying note may be provided. Terms defined in the body of this document are presented in italics at the point where they are defined. The Index provides a directory of those terms defined in the body of this International Standard.

3.1.1
Earth gravitational model
spherical harmonic expansion of the gravitational field potential

NOTE Rotational effects are not included in this model; gravity includes rotational effects.

3.1.2
ecliptic plane
plane defined by the orbit of a planet at a point in time

3.1.3
equatorial plane
plane through a designated centre of an object and normal to the rotational axis of the object

3.1.4
geodetic datum
datum describing the relationship of a coordinate system to the Earth
[ISO 19111]

NOTE In most cases, the geodetic datum includes an ellipsoid definition.

3.1.5
north pole
that pole of rotation that lies on the north side of the invariable plane of the solar system
[RIIC]

NOTE 1 Some planets have retrograde rotation with respect to this definition.

NOTE 2 Map north (see Clause 5) may be unrelated to this direction.

3.1.6
spatial object
physical or virtual object to which spatial information applies

3.1.7
spatial operation
mathematical function that re-expresses coordinates, directions, and/or distances expressed in one spatial reference frame in terms of a different spatial reference frame or a mathematical function for distance or other geometric quantities within a single spatial reference frame

3.2 Notation, symbols and abbreviated terms

Table 3.1 lists the mathematical notation conventions used in this document.

Table 3.1 — Mathematical notation

Style	Use	Examples
lower case, bold, italic	points, vectors	$\boldsymbol{x}$, $\boldsymbol{p}$
lower case, italic	variables, scalars, scalar-valued functions, axes of a linear coordinate system	a, b, f, x-axis
upper case, bold, italic	vector-valued functions, matrices	$\boldsymbol{F}$, $\boldsymbol{G}$, $\boldsymbol{M}$
upper case, italic	sets	S, T

Upper case italic letter symbols are also used for scalar-valued functions that are customarily capitalized.

EXAMPLE R_N in Table 5.6.

Table 3.2 lists the symbols used in this document.

Table 3.2 — Symbols

Symbol	Definition
a	major semi-axis length of an oblate ellipsoid
b	minor semi-axis length of an oblate ellipsoid
f	flattening (see Table 5.6)
h	ellipsoidal height
h_e	elevation
k_0	central scale
R_M	radius of curvature in the meridian (see Table 5.6)
R_N	radius of curvature in the prime vertical (see Table 5.6)
$\mathbf{R}^n$	vector space of n-tuples
$S(\varphi)$	meridional distance to equator (see Table 5.6)
α	azimuth
ε	(first) eccentricity (see Table 5.6)
ε'	second eccentricity (see Table 5.6)
φ	geodetic latitude
γ	convergence of the meridian
Λ_C	longitudinal centring (see Table 5.6)
λ	geodetic or planetodetic longitude