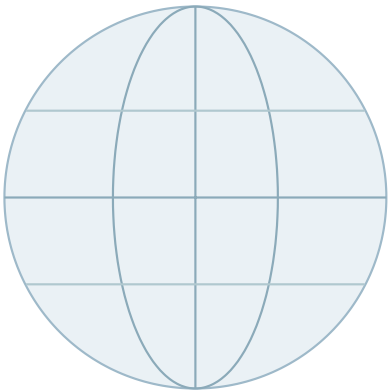


Latitude, longitude and local time

Link Earth’s grid of parallels and meridians to solar time

- Earth’s coordinates and time



Schematic globe

Longitude and the difference in local time

$360^{\circ} \div 24 \text{ hours} = 15^{\circ}/\text{hour}$

$1^{\circ} \text{ longitude} = 4 \text{ minutes}$



East → local time ahead

West → local time behind

- Latitude: north and south

- Measure angular distance north or south of the Equator (0°) up to the poles (90°).
- Tropic of Cancer ($23\frac{1}{2}^{\circ}$ N) and Tropic of Capricorn ($23\frac{1}{2}^{\circ}$ S) bound the torrid zone.
- Parallels run east–west; their circumference decreases towards the poles.

- Important parallels

- Africa is the only continent crossed by the Equator and both Tropics.
- South America is crossed by the Equator and Tropic of Capricorn.
- Asia and North America are crossed by the Tropic of Cancer and Arctic Circle.

- Longitude and rotation

- Meridians run pole to pole, measuring longitude east or west of Greenwich (0°).
- Earth rotates 360° in 24 hours: 15° equals 1 hour, and 1° equals 4 minutes.
- For equal reference instants, local mean solar time is ahead to the east and behind to the west.

- Local and standard time

- At 90° E, local mean solar time is $90 \div 15 = 6$ hours ahead of Greenwich.
- Civil time uses chosen time zones rather than a different clock for every meridian.
- India’s standard meridian $82\frac{1}{2}^{\circ}$ E gives IST = UTC + 5 hours 30 minutes ($82.5 \times 4 \text{ min}$).

REMEMBER 15° longitude = 1 hour; east adds and west subtracts. Standard time is an adopted civil convention.