The Equation of Time is defined as the difference between **Universal Mean Time** and **Local Apparent Time** at the Greenwich Meridian**.**

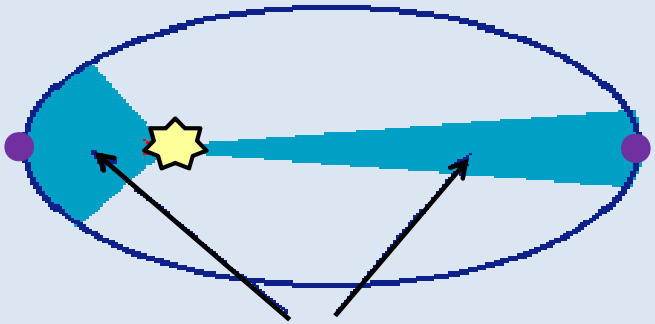
Local Apparent Time is based on the exact position of the Sun in the sky.
A Sundial for example indicates **Local Apparent Time**. Mean & Apparent Time are different because of two main reasons:

- The eccentricity of the Earth's orbit causes the Earth to speed up or slow down in different parts it's annual elliptical orbit around the Sun (**Kepler's Second Law*)**, so we get ahead of or behind where we would be if the Earth's orbit was a perfect circle.
- The Earth's axis is tilted to it's orbit, and so the Sun's apparent motion along the (tilted) Ecliptic has a varying effect when viewed along the Equatorial plane (which clocks use).

The rate of change in the value of **The Equation of Time** varies throughout the year from a maximum of around 30 seconds per day to a minimum of less than 1 second per day.

*** Kepler's Second Law: A line joining the Earth to the Sun sweeps out equal areas in equal times as the Earth moves in it's elliptical orbit.**

Perihelion ≈ January 3rd
147,098,335 km†



Aphelion ≈ July 4th
152,094,094 km††

Equal Areas in Equal Times

†Calculated by "Nav Bodies" for 00:00:00 GMT on 3 January 2015

††Calculated by "Nav Bodies" for 12:00:00 GMT on 4 July 2015