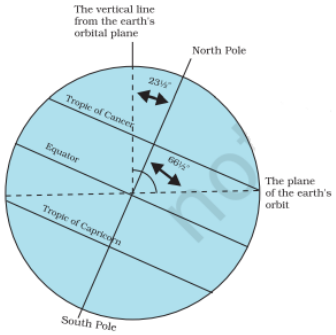
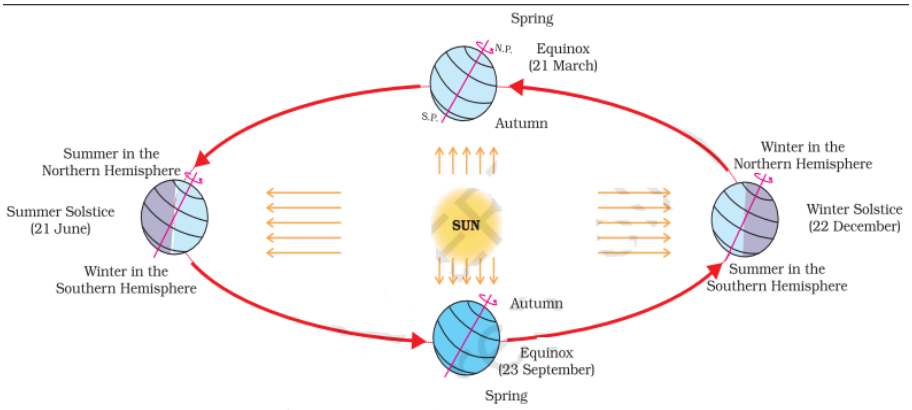
Chapter – 3: Motions of the Earth

- Earth – 2 motions – **rotation** – spinning on axis – **revolution** – around sun in orbit
- Axis – imaginary line – $66\frac{1}{2}^0$ with **orbital plane** – plane formed by orbit



- Earth – spherical shape – only half – gets sunlight
- Portion facing sun – day – portion facing away from sun – night
- Circle – divides day and night – **circle of illumination** – imaginary
- Earth – 24 hours – complete rotation – *earthday* – daily motion
- Earth – not rotate – portion facing sun – always day – too hot – portion facing away from sun – always night – too cold
- One **revolution** – 365¼ days – year – 365 days – ignore 6 hours
- 6 hours – saved every year – added – make one day (24 hours) – every 4 years – added to February
- Every 4th year – February – 29 days instead of 28 days – year – 366 days – leap year
- Earth – going around sun – **elliptical orbit**



- Throughout orbit – earth inclined – same direction
- Year – divided into seasons – summer, winter, spring and autumn – change with position of earth
- **Summer Solstice**
  - 21st June – Northern Hemisphere – towards sun
  - Sunrays – directly on Tropic of Cancer – more heat
  - North pole – towards sun
  - Arctic Circle – continuous daylight – 6 months
  - Northern hemisphere – summer season
  - Longest day – shortest night – 21st June
  - Southern hemisphere – winter season – conditions reversed
- **Winter Solstice**
  - 22nd December – Southern Hemisphere – towards sun
  - Sunrays – directly on Tropic of Capricorn – more heat
  - South pole – towards sun

  - Antarctic Circle – continuous daylight – 6 months
  - Southern hemisphere – summer season
  - Longest day – shortest night – 22nd December
  - Northern hemisphere – winter season – conditions reversed
- **Equinox**
  - 21st march and 23rd September – sunrays – directly on equator
  - Poles – not tilted toward sun
  - Equal days – equal nights
- 23rd September – Northern hemisphere – autumn season – Southern hemisphere – spring season
- 21st March – Southern hemisphere – autumn season – Northern hemisphere – spring season