Chapter 1J

Earth, Sun & Moon

Astronomy

- 1.1J

Earth in Space

Astronomy

- Astronomy: the study of the moon, stars, and other objects in space.

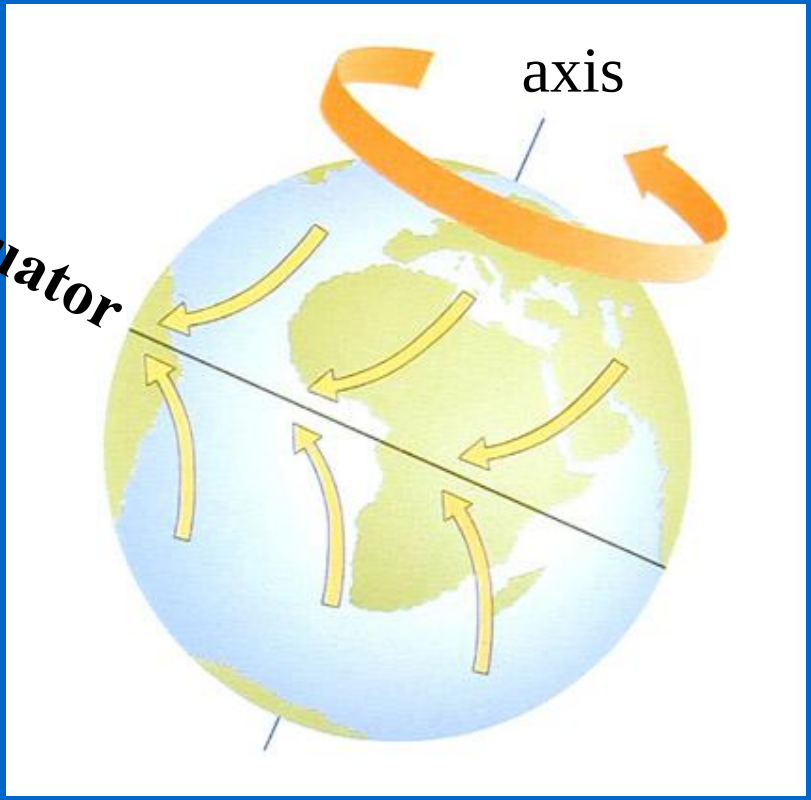
How Earth Moves

HOW EARTH MOVES

- Earth moves through space in *two* major ways:
  - Rotation
  - Revolution

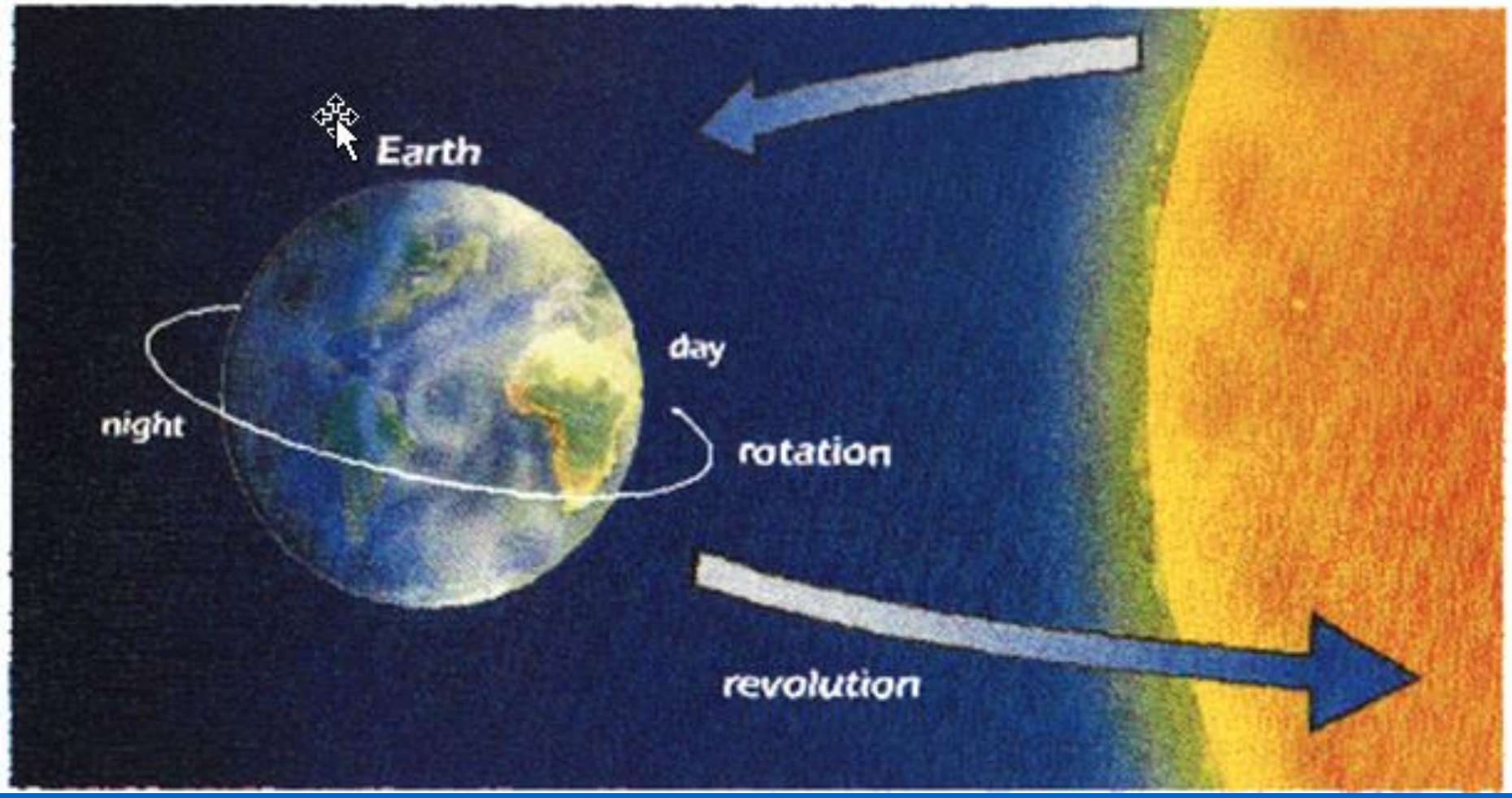
Rotation:

- the spinning of the Earth on its axis: imaginary line through Earth's center from the North to South Pole.



Rotation will:

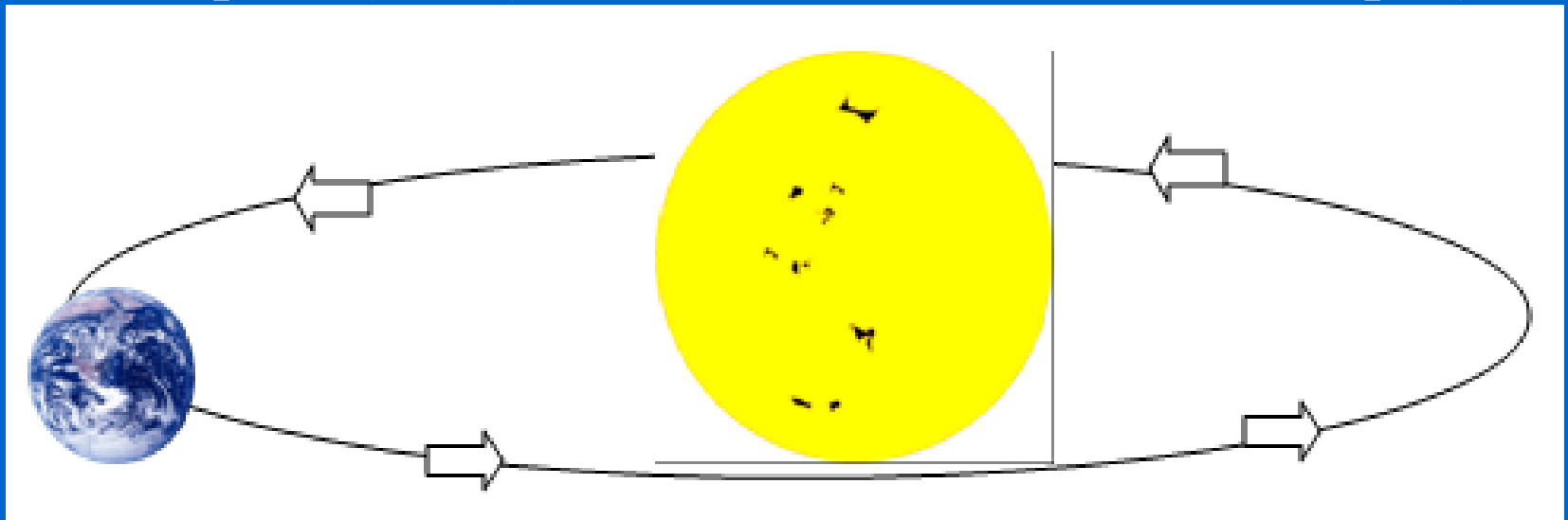
- cause day and night which takes about 24 hours called a day.
- cause the sun to appear to move westward across sky b/c the Earth rotates Eastward.

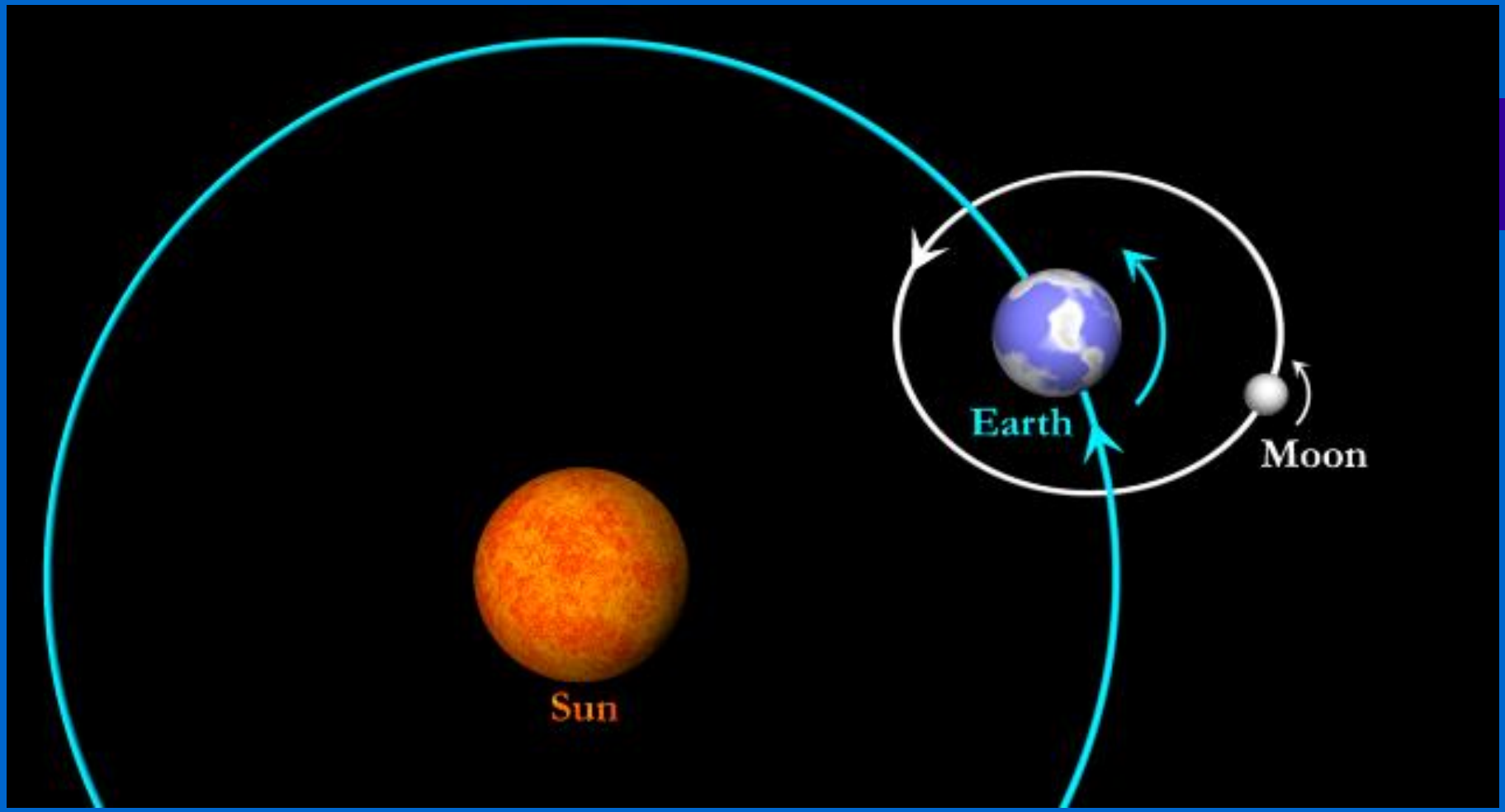


The Earth rotates on its axis as it revolves around the sun.

Revolution:

- the movement of an object around another. Earth's revolution takes 365 ¼ days or one year to travel around the sun. Earth's orbit is an ellipse. (the shape of the path (orbit) the Earth travels in, is an ellipse)

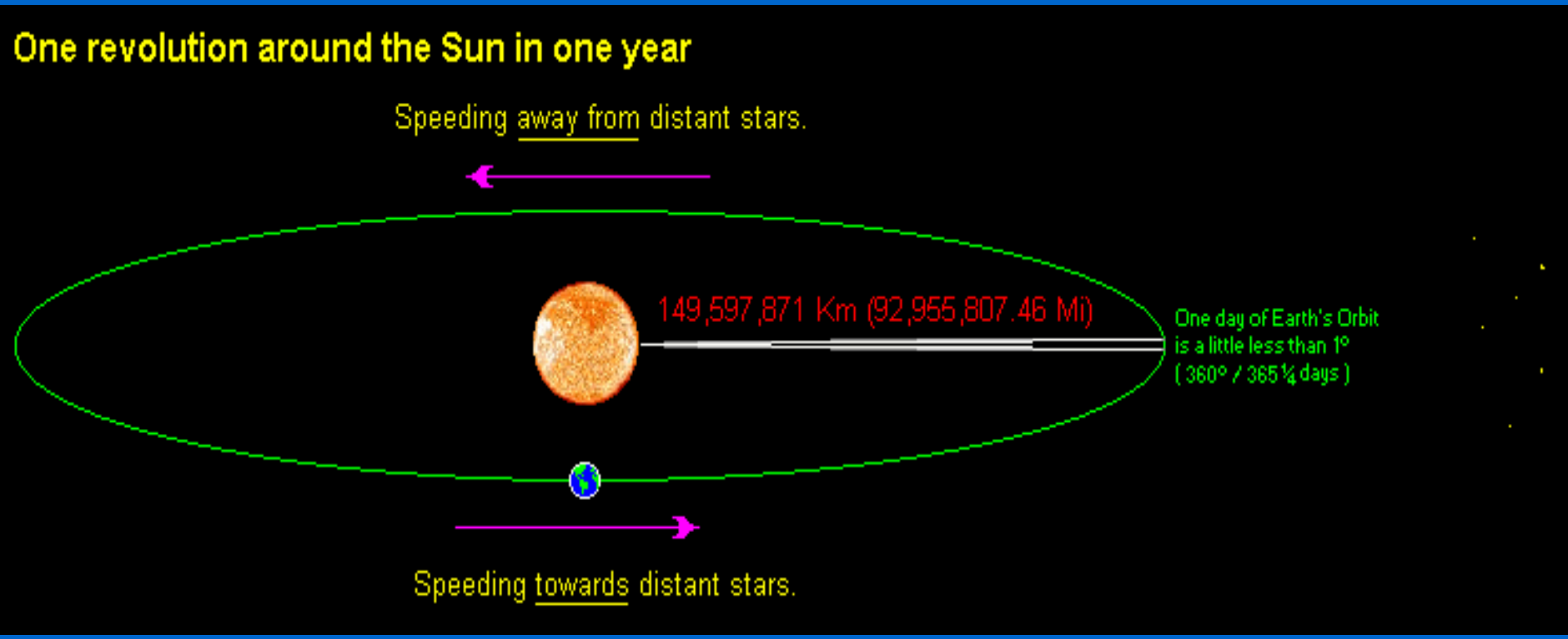




Rotation—the spinning of Earth on its axis

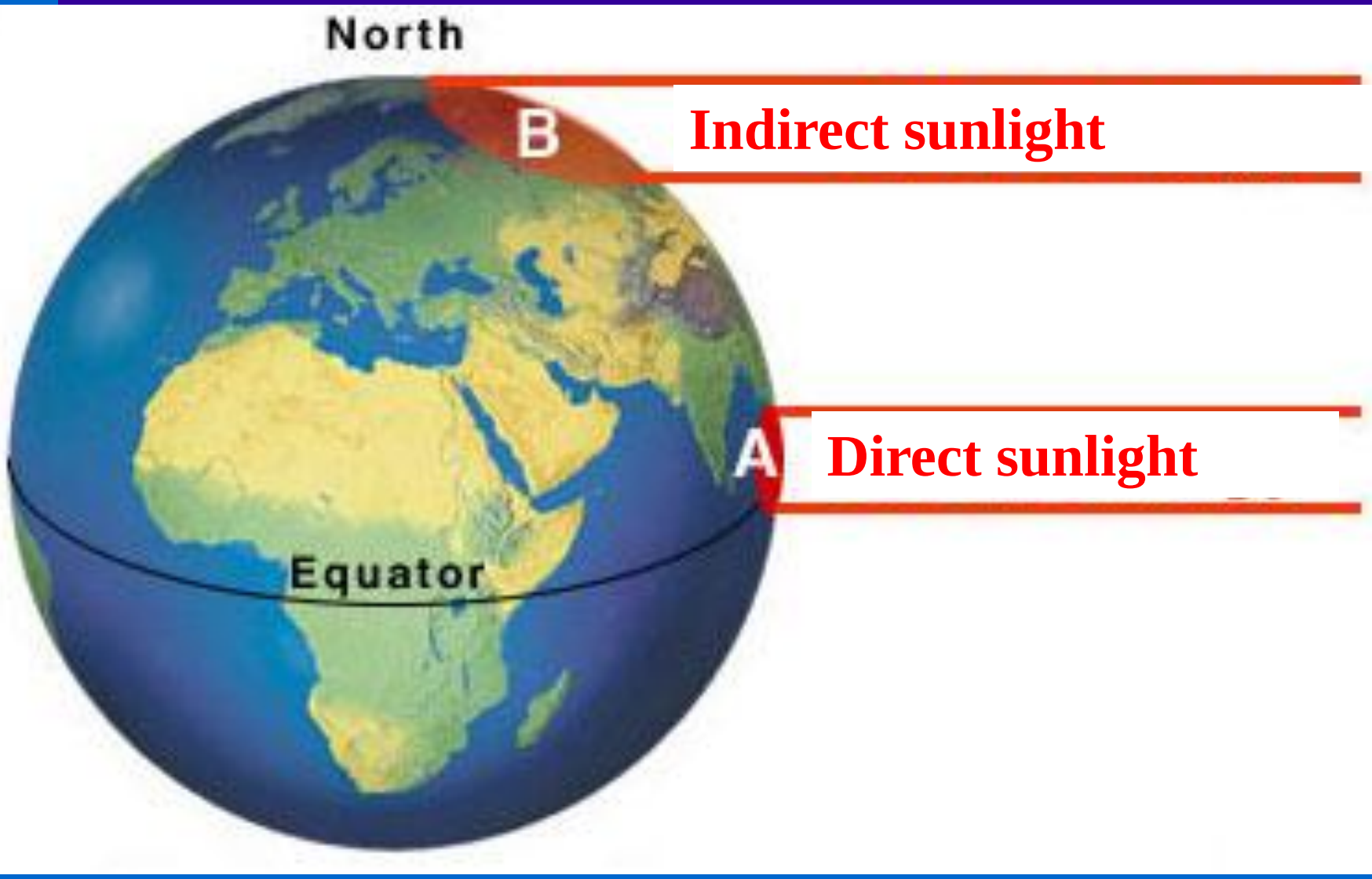
Revolution—the movement of one object around another

Revolution


One revolution around the Sun in one year
Speeding away from distant stars.
149,597,871 Km (92,955,807.46 Mi)
One day of Earth's Orbit
is a little less than 1°
(360° / 365¼ days)
Speeding towards distant stars.

How Sunlight Hits the Earth

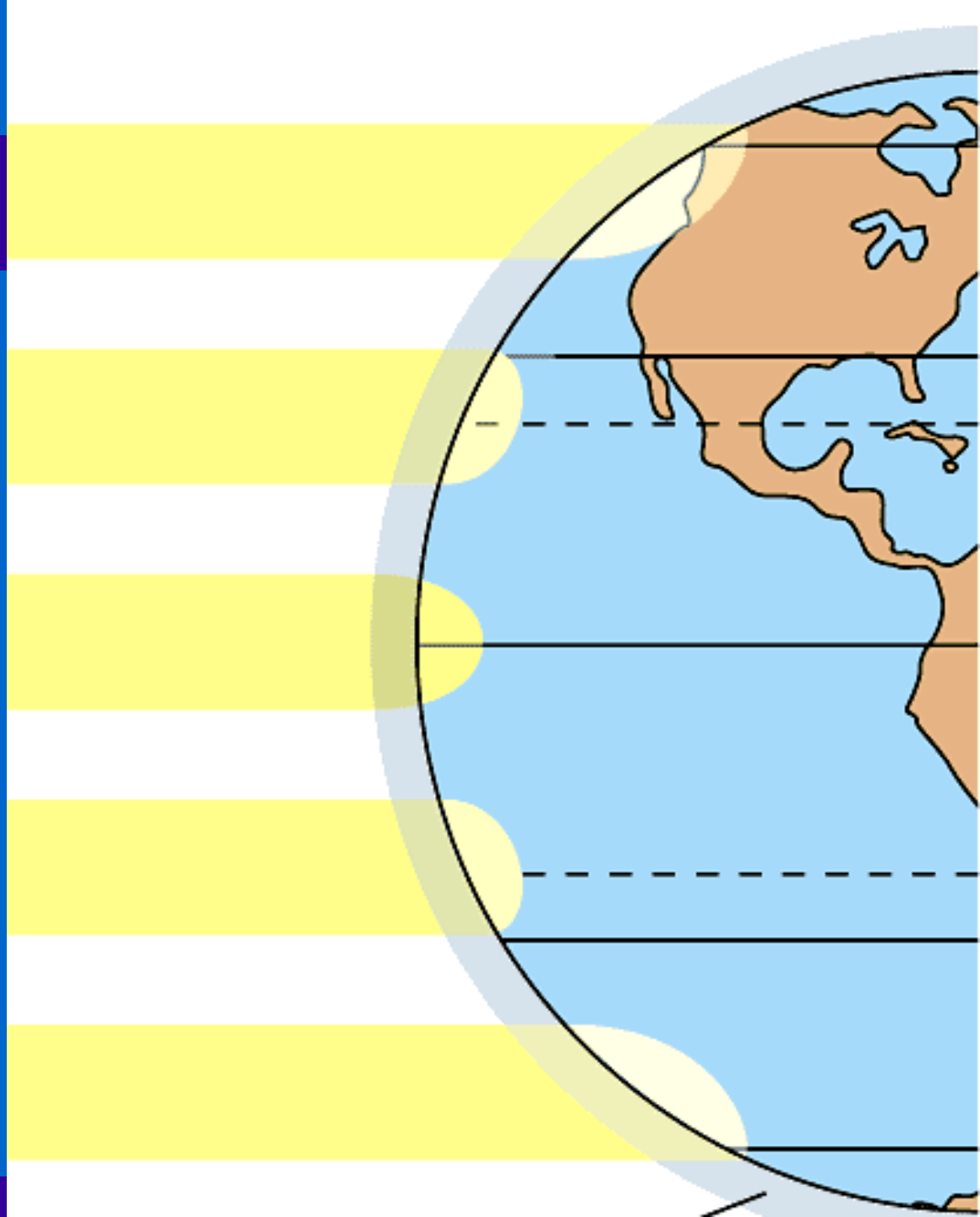
- Sunlight hits Earth's surface most directly near the equator: direct sunlight
- Sunlight arrives at an angle near the poles: indirect sunlight
- Therefore, temperatures are warmer near the equator year round.

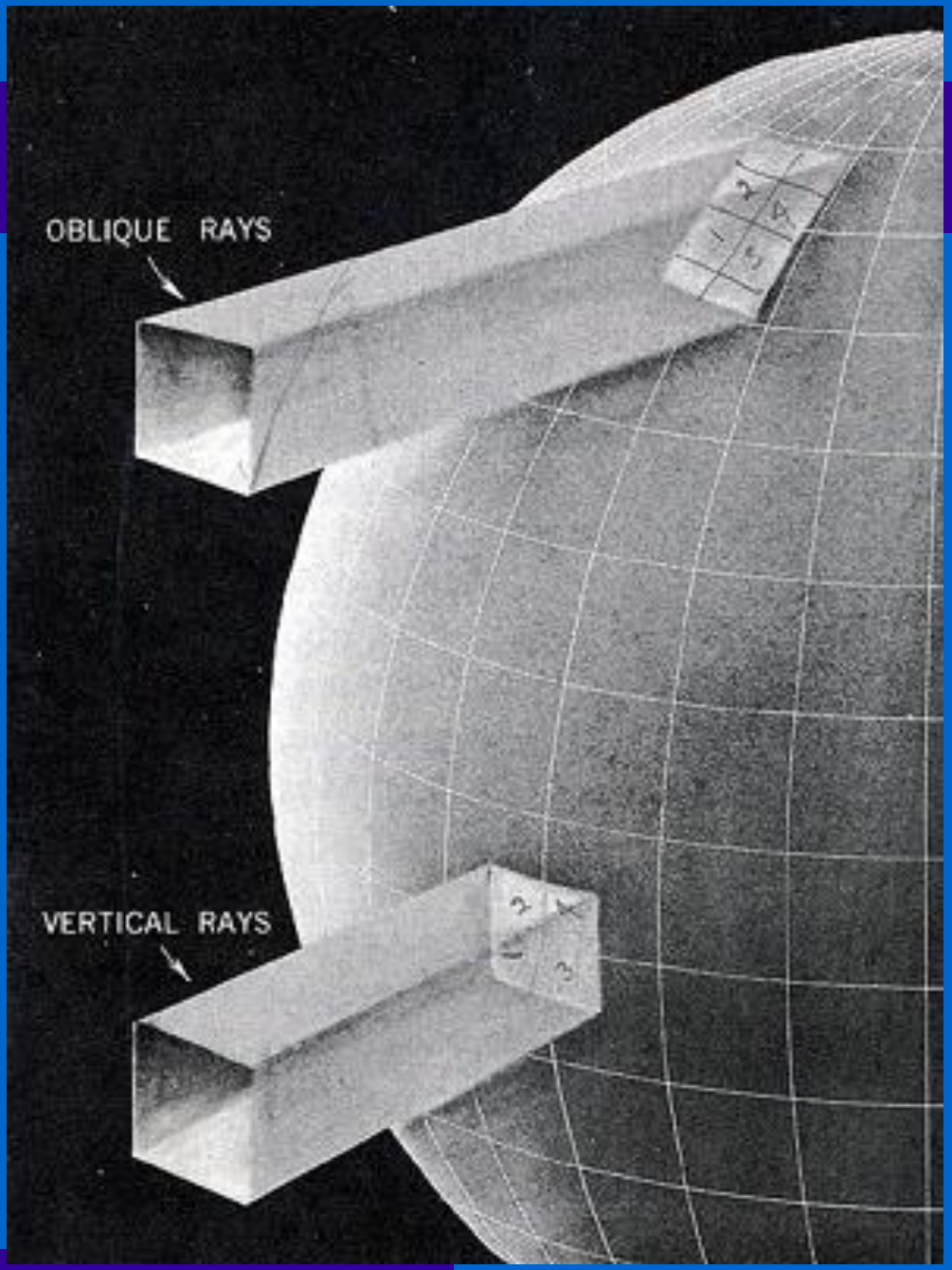

North
B
Indirect sunlight
A
Direct sunlight
Equator

Less direct sunlight

Most direct sunlight

Less direct sunlight




OBLIQUE RAYS
VERTICAL RAYS

Solstice:

- Occurs twice a year when the sun is farthest north or south of the equator.

Northern Hemisphere:

Summer solstice: **June 21**, the north pole of Earth is tilted **towards** the sun (**summer** in Northern Hemisphere and **winter** in the Southern Hemisphere)

Winter solstice: **December 21**, the **south pole** of Earth is tilted toward the **sun** (winter in **Northern Hemisphere** and summer in the **Southern Hemisphere**)

Equinox:

- the noon sun is directly overhead at the equator
- During an equinox, day and night are **equal** (12 hours long) everywhere on Earth

Northern Hemisphere:

- Vernal/Spring Equinox: March 21
- Autumn/Fall Equinox: Sept. 22

  Earth is **not** tilted on its axis **towards** the sun (both hemispheres receive the **same amount of energy**)