The Seasons

Questions

Why does it get dark every day?

Why do we have hot and cold seasons?
The Sun and Seasons

Two Motions

Rotation – The spinning of a body around its axis (one day).

Revolution – The orbital motion of a body around another due to Gravity (one year).

Effects Due to Rotation

Gives us Night and Day.

Causes the Sun and Stars to rise in the East and set in the West.

If there was no Revolution, then each night sky would be the same.
**Effects Due to Revolution**

Gives us the **Year**.

Has a role in producing the **Seasons**, which are not due to a change in distance.

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**Path of the Sun**

Sun’s Path is the **Ecliptic**.

The Earth’s tilt (obliquity) of 23.5° is what causes the Sun’s path not to be on the Celestial Equator.
Yearly Solar Motion
Effective Heating

When the Sun is high in the sky, the **Effective Heating** is greater (a smaller area is heated by the same amount of light).

When the Sun is low in the sky, the **Effective Heating** is weaker (a larger area is illuminated by the same amount of light).

Why Are There Seasons?

The Earth’s rotation axis is tilted $23.5^\circ$ with respect to its orbital plane.

Because of the tilt, the Sun’s yearly motion in the sky goes from a highest point to a lowest point and back to a highest point.

Because **Effective Heating** is greatest when the Sun is high in the sky, Summer occurs. Effective Heating is least when the Sun is low, giving us Winter. Spring and Autumn are transition seasons.