

Question:

What makes the climate
and the seasons?

Answer:

The Earth does!

Note Copying...

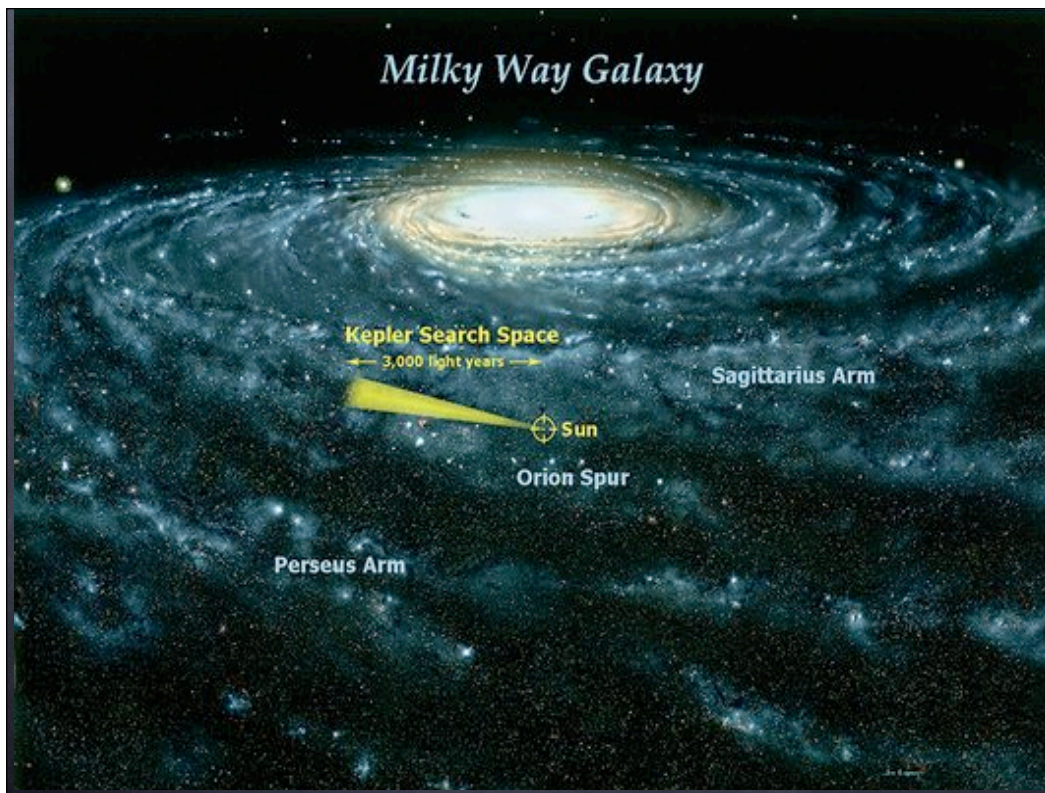
Galaxy – A galaxy is a collection of a large number of stars.

Milky Way Galaxy – Where we are located. The Milky Way is a part of a group of 10,000 galaxies called the Local Supercluster.

Speed of light is 186,000 miles per second = one light-year

Star – A glowing ball of gas held together by its own gravity and powered by nuclear fusion at its center.

Milky Way Galaxy



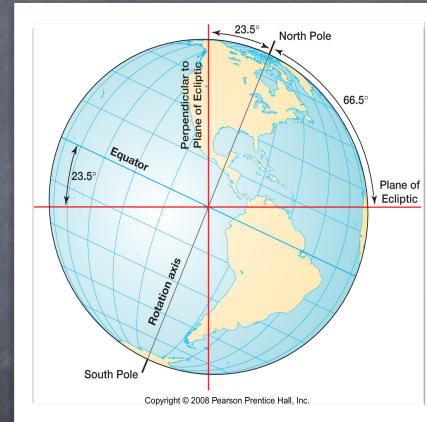
Did you know?

- It takes 8 minutes and 20 seconds for light from the sun to reach Earth.
- Earth receives only two-billionths (0.000000002) of the sun's total energy.

The Earth is tilted

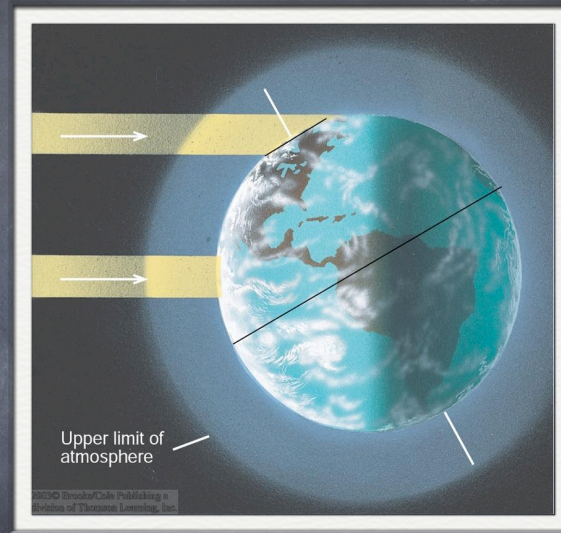
👁 This means one part of the Earth is closer to the sun and the opposite part is further away.

👁 The Earth's axis is tilted 23.5° from the plane of ecliptic.



The sun hits the Earth at different angles.

The areas that are closer to the sun have warmer climates.



Reasons for Seasons

"The Two Rs"

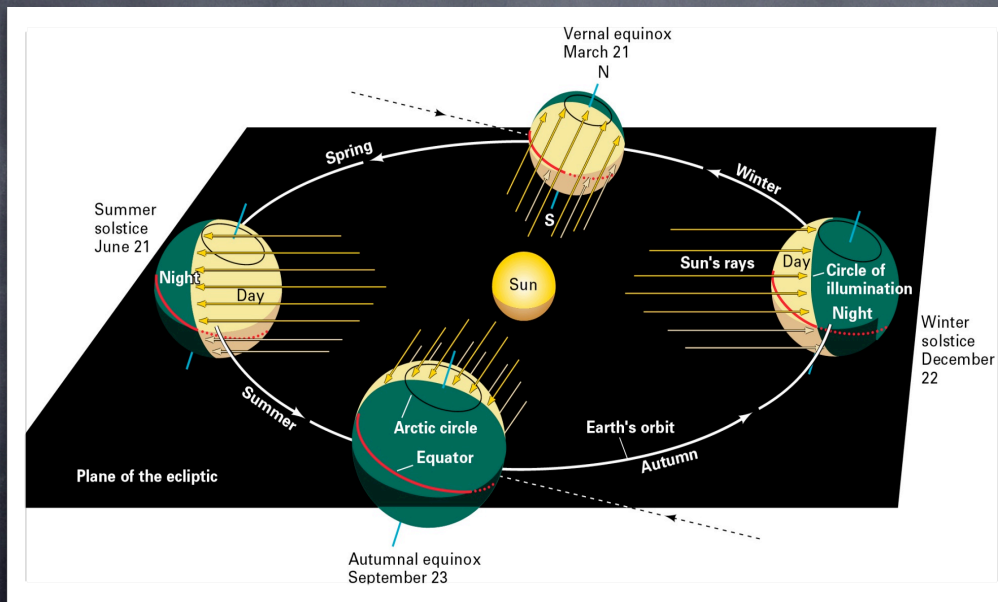
Revolution

- The Earth revolves around the sun.
- This voyage takes one year.
- Earth's speed is 107,280 km per hour
(66,660 mph)

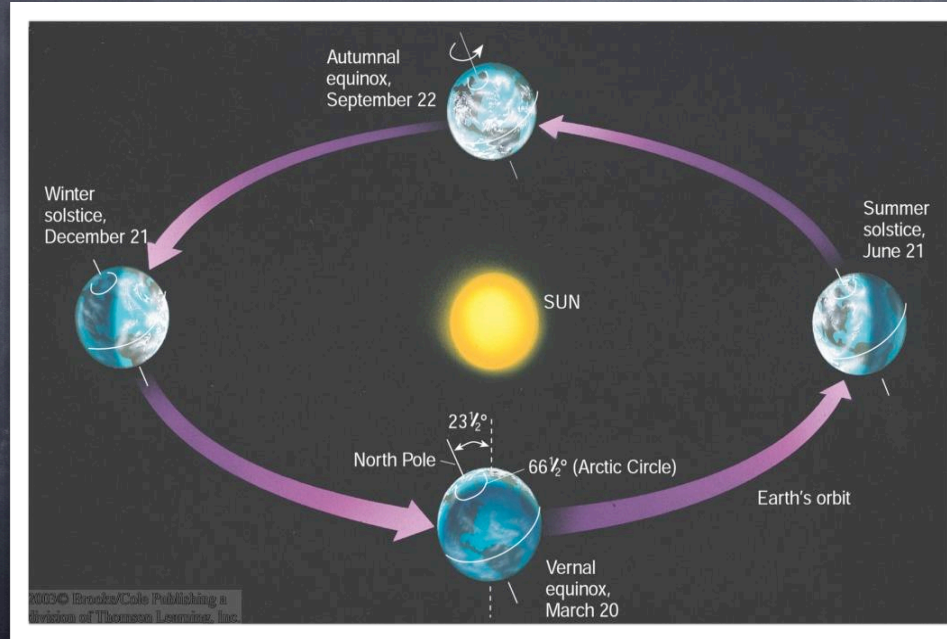
Rotation

- Earth rotates on its axis once every 24 hours

The Four Seasons



The Earth rotates around the sun



End of class

Summary

A place will be warmer if:

It is tilted toward the sun (summer seasons).

If it is located close to the equator.

Homework:

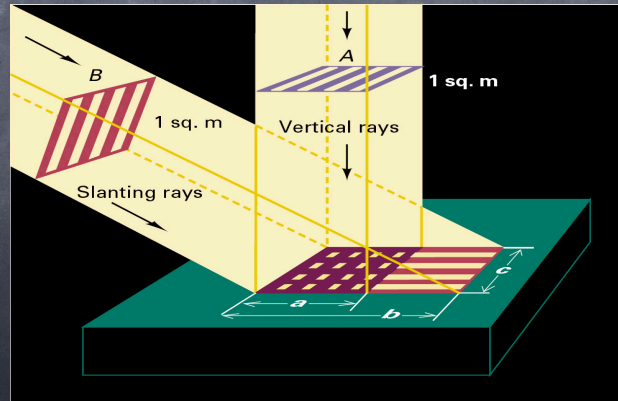
Draw a diagram of the four seasons.

Include: the four seasons, the plane of the ecliptic, the tilt of the Earth's axis, etc.

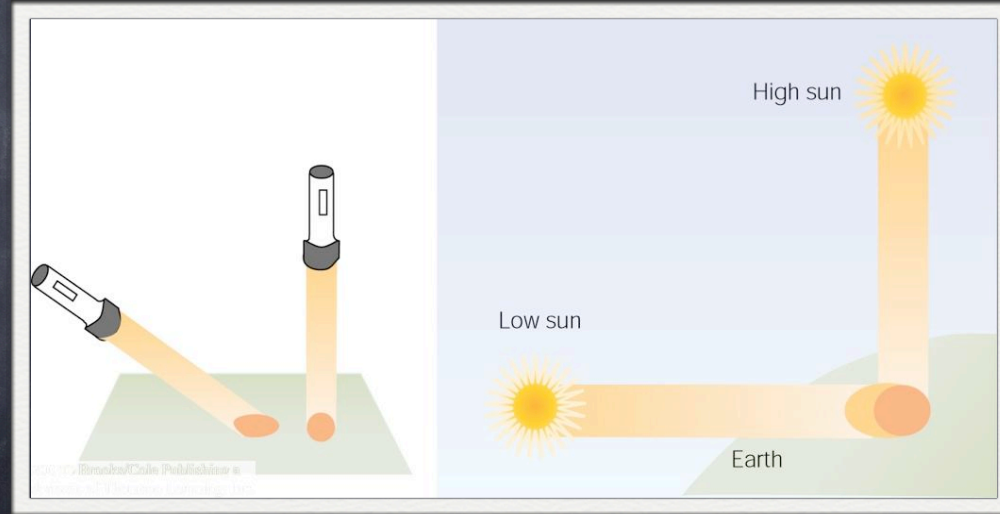
The Angle of the Sun

Solar Altitude – the angle of the Sun in the noon sky.

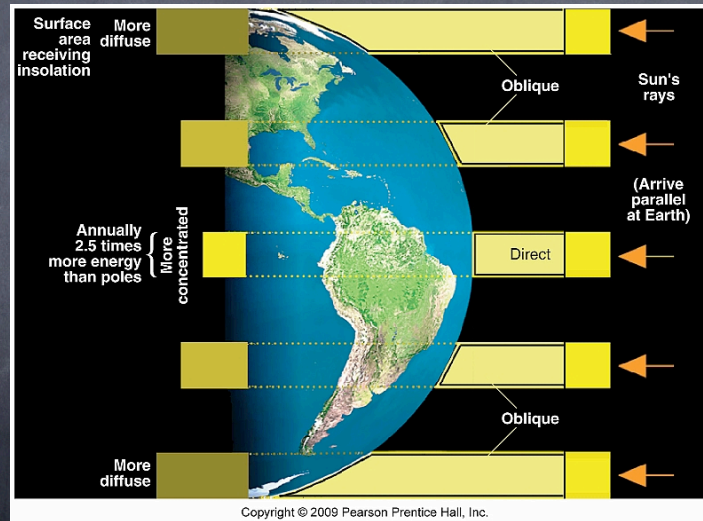
The closer the angle of the sun is to 90 degrees, the hotter the climate.



Angle of the Sun



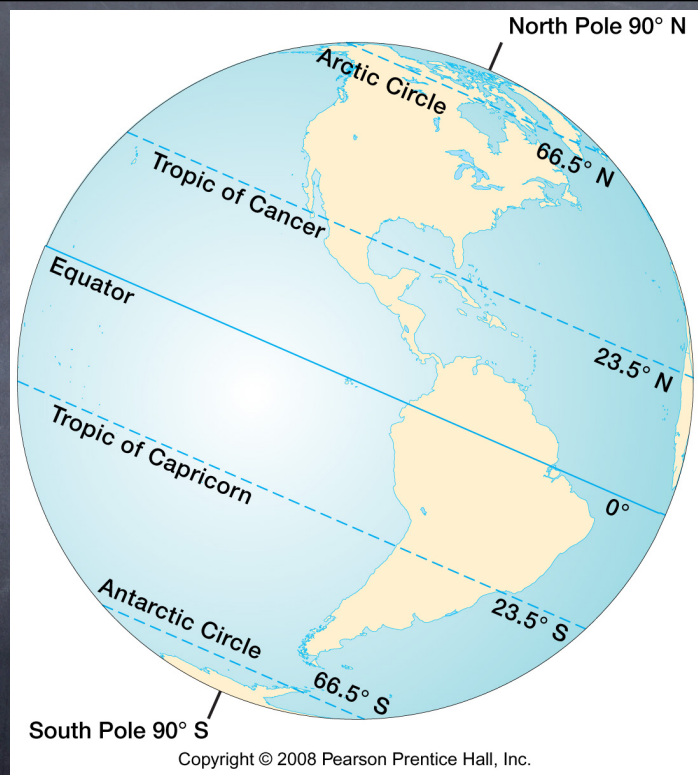
Why is the sun the strongest at the Equator?



The Tropics

Tropic of Cancer - 23.5° North latitude
The sun's rays are directly overhead.

Tropic of Capricorn - 23.5° South latitude
The sun's rays are directly overhead.





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Know any VAMPIRES?

Arctic Circle - 66.5° North latitude

Southern most point in the Northern Hemisphere to receive one day of darkness and one day of light

Antarctic Circle - 66.5° South latitude

Northern most point in the Southern Hemisphere to receive one day of darkness

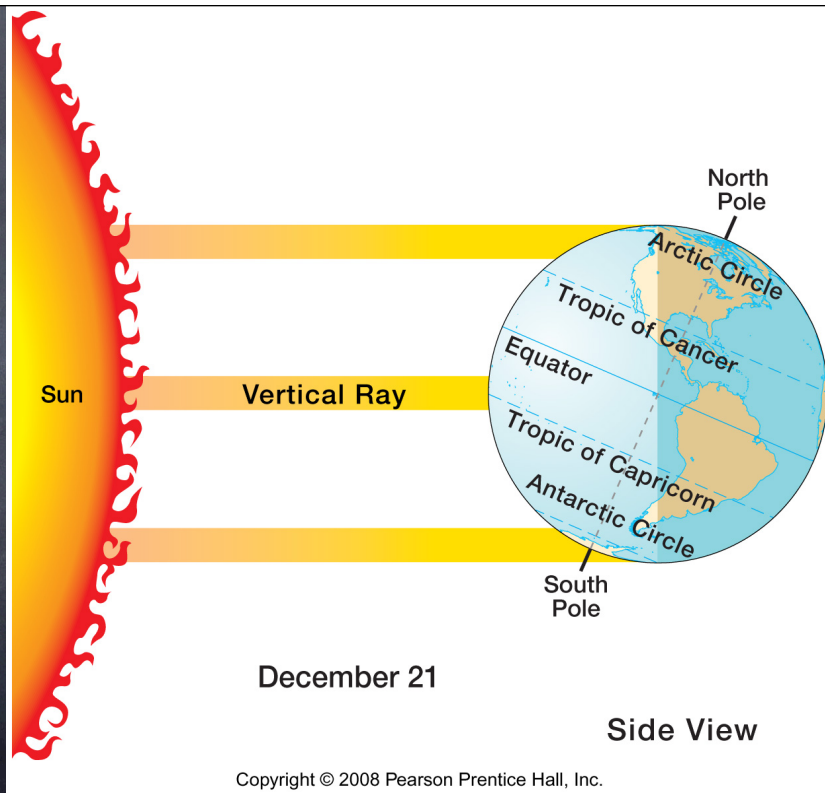
In other words, areas north of the Arctic Circle and areas south of the Antarctic Circle experiences periods of total darkness

June 21st at the Arctic Circle



December 21st at the Arctic Circle

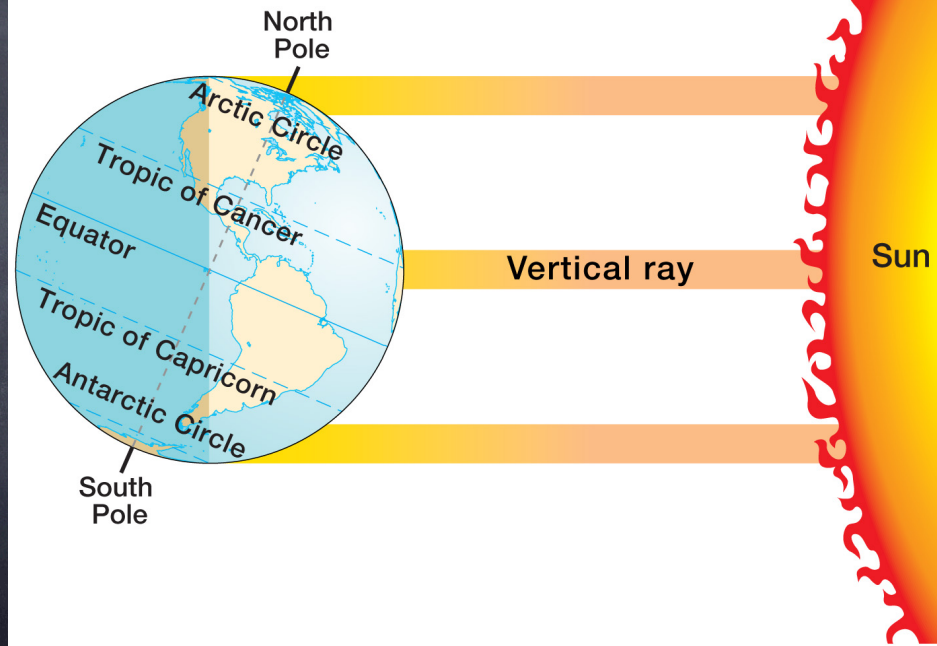




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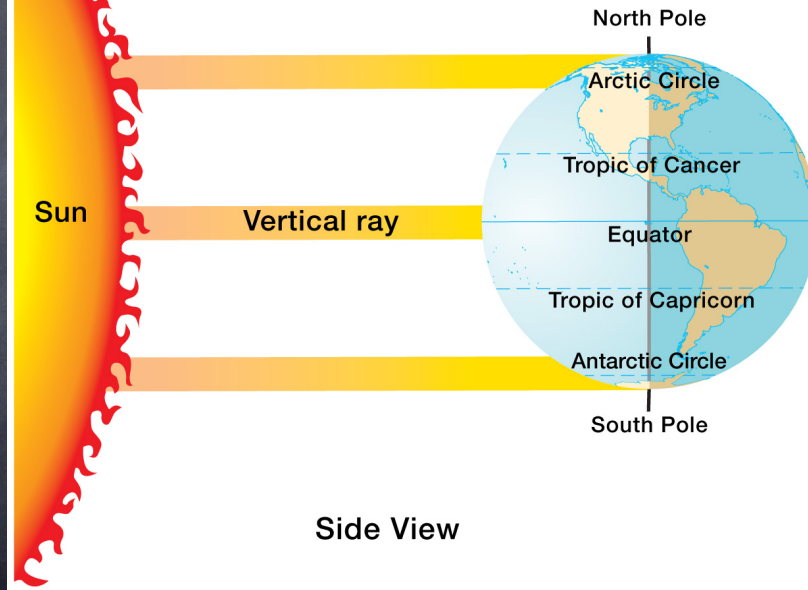
Side View

June 21



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March 20 and
September 22



Side View

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REASONS FOR SEASONS

- Create a Jing!
- Make your own slide show explaining why we have four seasons.

Points to mention:

- The Earth's tilt
- Rotation and Revolution
- The sun and direct sunlight
- The equator and the "Tropics"