

Homework:

- Determine that constellation that is associated with your birthday.
- Describe what it looks like and the brief story behind it.

<http://www.enchantedlearning.com/subjects/astronomy/stars/constellations.shtml>



Starting with the sun, can you list the planets?

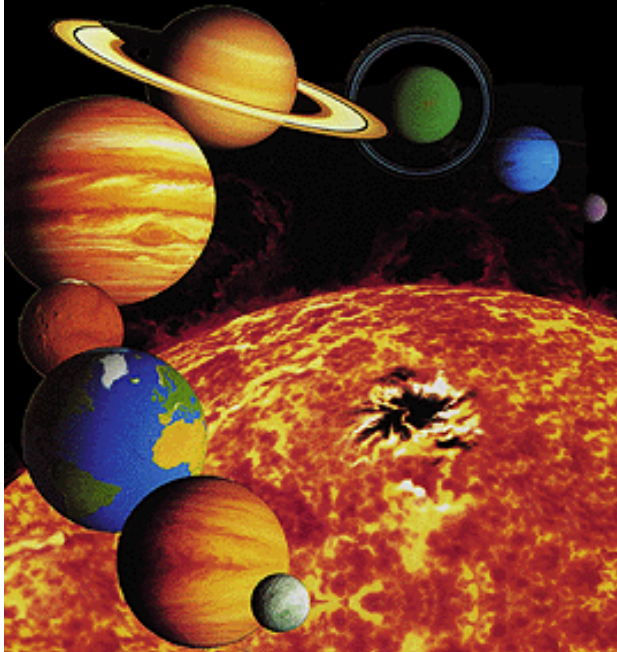


My
Very
Excited
Mother
Just
Served
Us
Nachos



Sun
Mercury
Venus
Earth
Mars
Jupiter
Saturn
Uranus
Neptune

Our solar system consists of the sun and everything that travels around it.



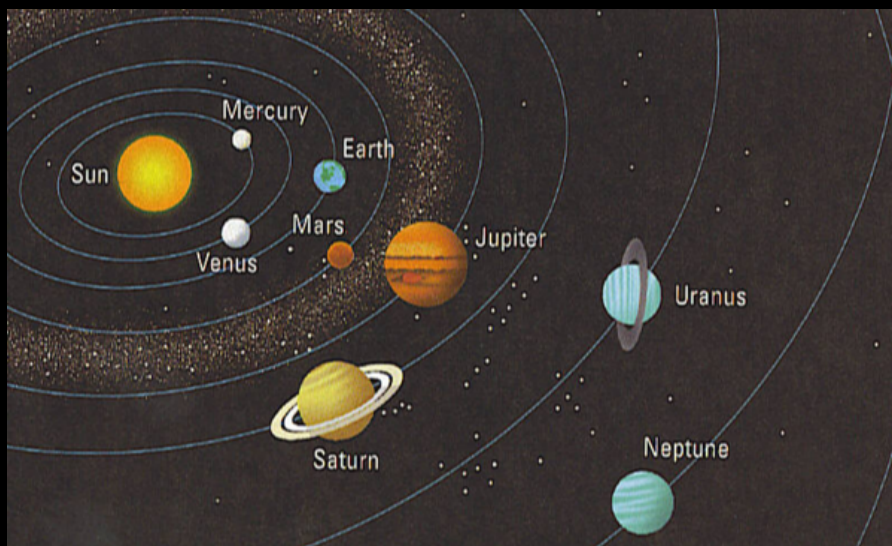
Planets and moons do not emit their own light. They are nonluminous. We can see them because light from the sun reflects off them.

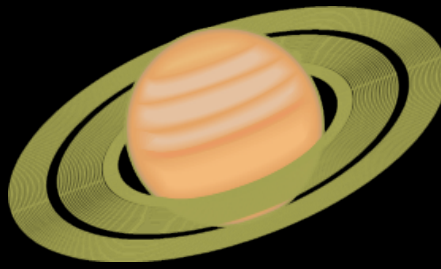
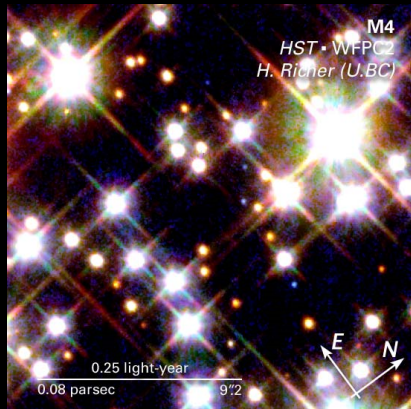
FUN NOTE:
Everything in the solar system is much closer to earth than the stars.

How come we can't see all the planets

The sun is very bright, so objects close to it get hidden in the daytime glare.

So when Mercury comes close to the sun it becomes difficult to see from Earth.





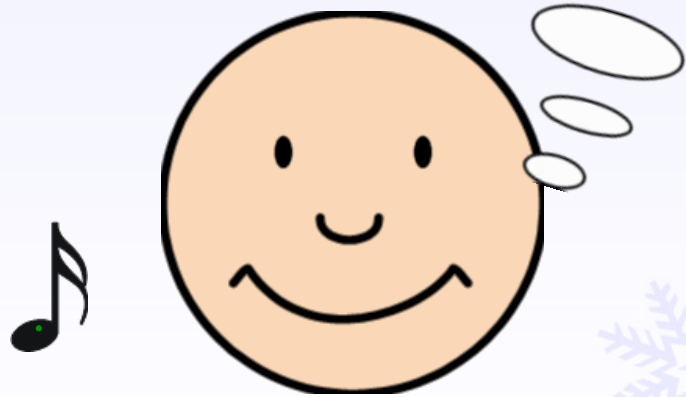
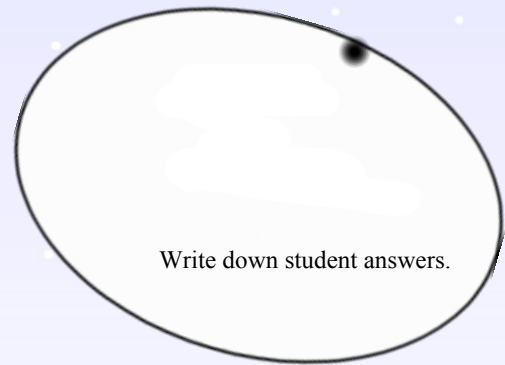
A star is matter that emits huge amounts of energy.

A planet is matter that revolves around a star.

Table 1 Comparing Planets and Stars

Feature	Planet	Star
location	in the solar system	far beyond the solar system
distance from Earth	fairly near	very far
real size	smaller than most stars	usually larger than planets
reason we see object	reflects light from the Sun	emits its own light
surface temperature	usually cool or very cold	very hot
what object is made of	usually rocks or gases	gases under high pressure and temperature
observable feature	does not appear to twinkle	appears to twinkle
long-term observable feature	very slowly wanders through constellations	appears to move through sky as part of a constellation

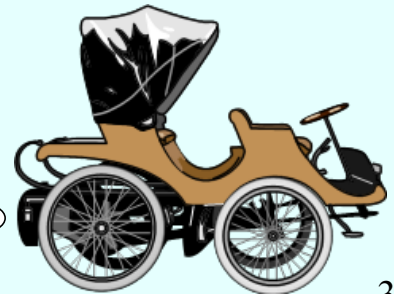
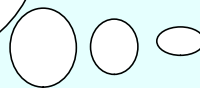
I want you to think about this question. What ways are you moving right now?

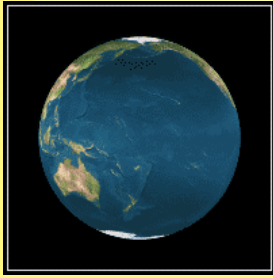


We live on the planet Earth, and the Earth is moving two different ways.

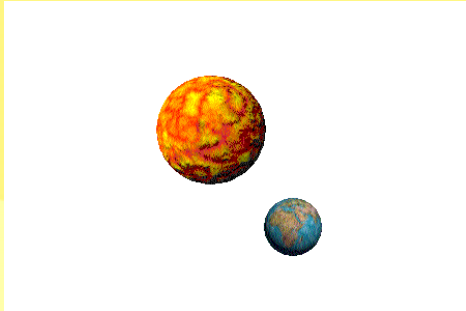


Let's see the two types of Earth's motions.





The Earth is spinning.



The Earth travels around the Sun.

Let's start with the Earth Spinning.⁴

Vertical Axis

SKATER

EARTH

Axis
23.5° Angle

To the Sun
Ecliptic

LOG

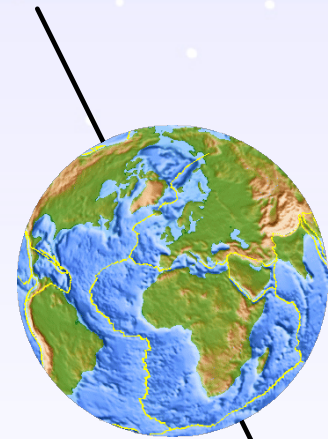
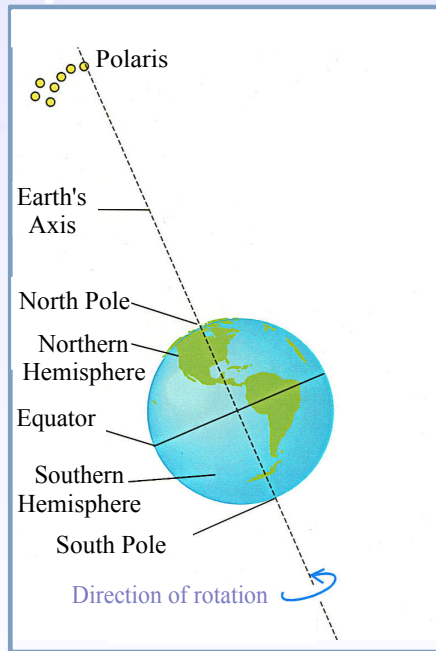
Horizontal Axis

Look!!! The Earth is tilted on its axis

Axis- An imaginary line from the north pole to the south pole.

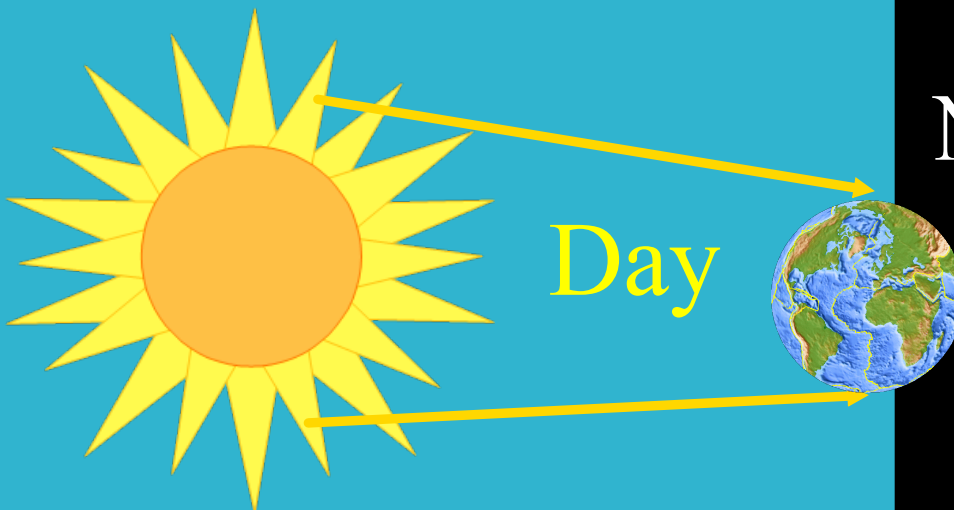
5

Rotation- The movement of an object around its axis.



What about the other planets?
[Click Here](#)

As the Earth rotates on its axis, the part of the Earth facing the Sun is experiencing day, and the part away from the Sun is experiencing night. **One rotation of Earth takes 24 hours.**



Night



Use the Spotlight to again show day and night. By placing the spotlight on the line, we can see how the Earth experiences day and night.



★
Put Here

8

That means that there are 24 time zones on the Earth.

If I try to phone my friend in China at six o'clock at night here, it is six in the morning for him.



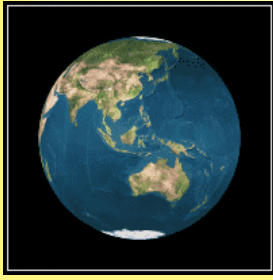
9

Miramichi

Japan

Philadelphia
set 11 hours ahead

set one hour behind



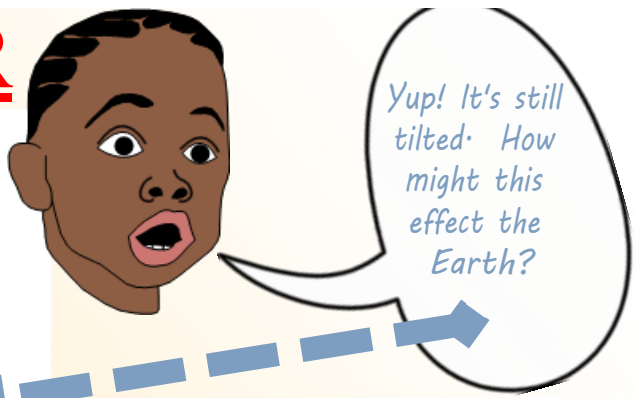
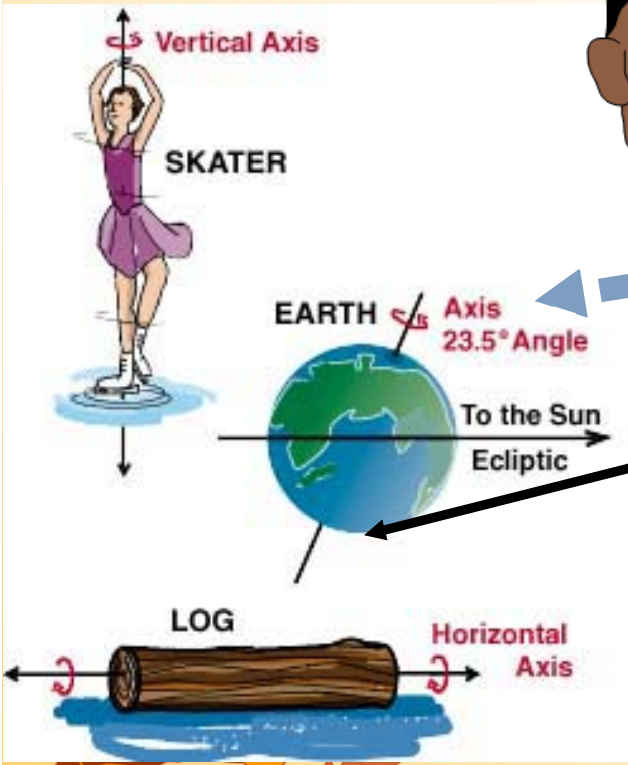
The Earth is spinning.



The Earth travels around the Sun.

Now let's try the Earth going around the Sun.

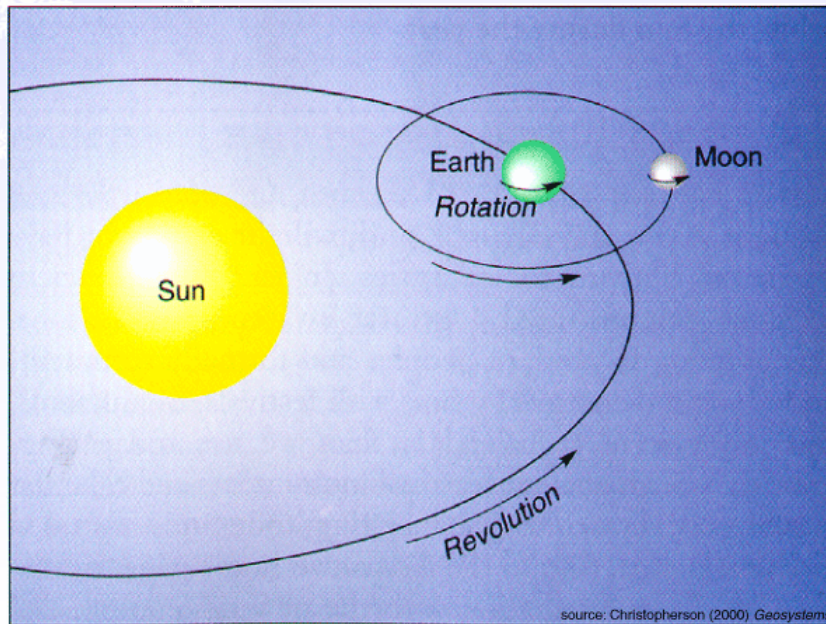
REMEMBER



Axis- An imaginary line from the north pole to the south pole.



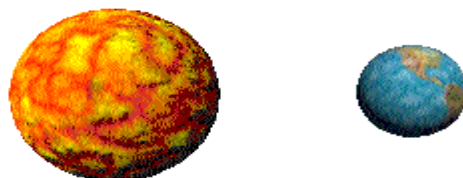
Revolution-The movement of an object around another.

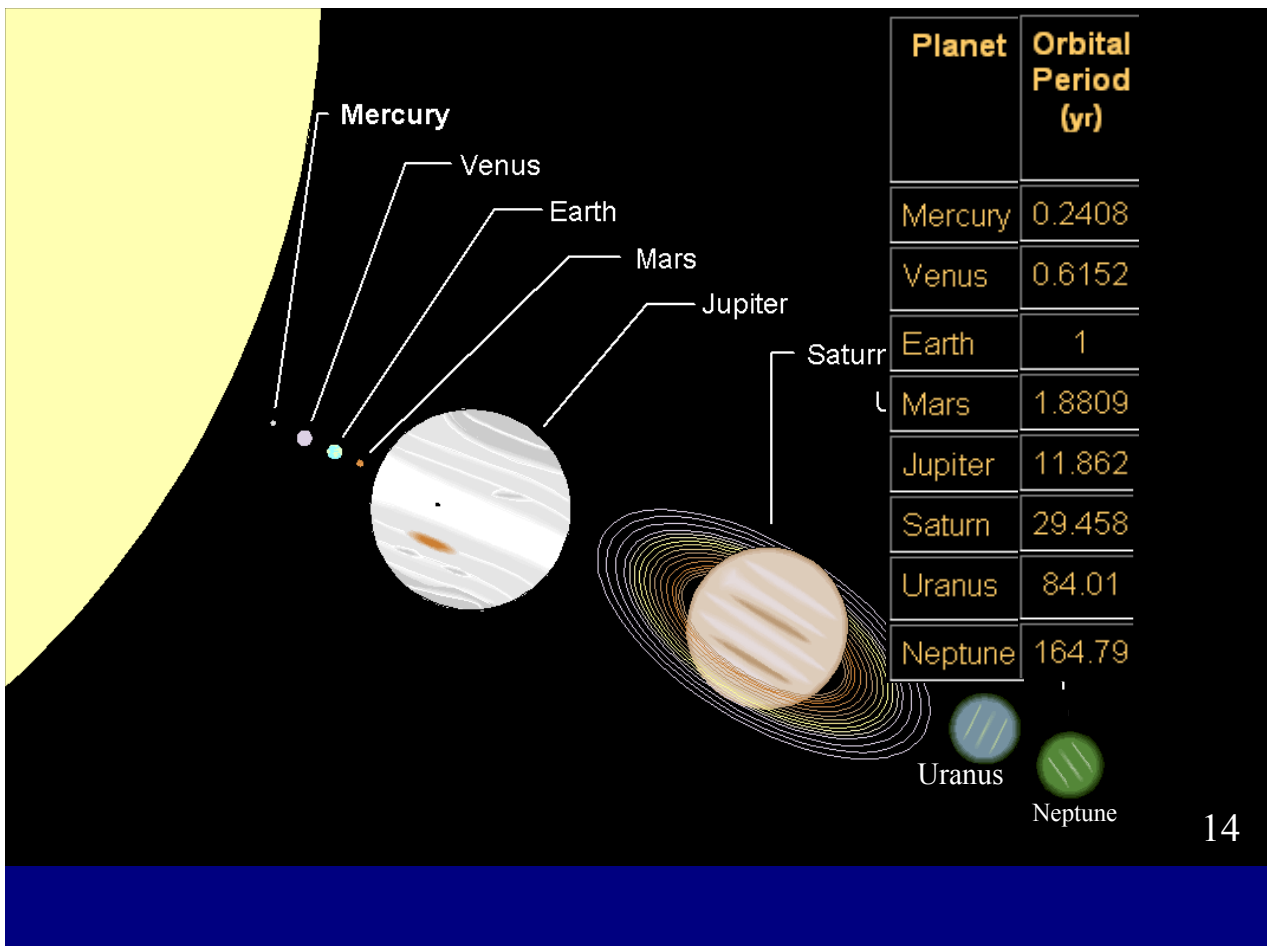
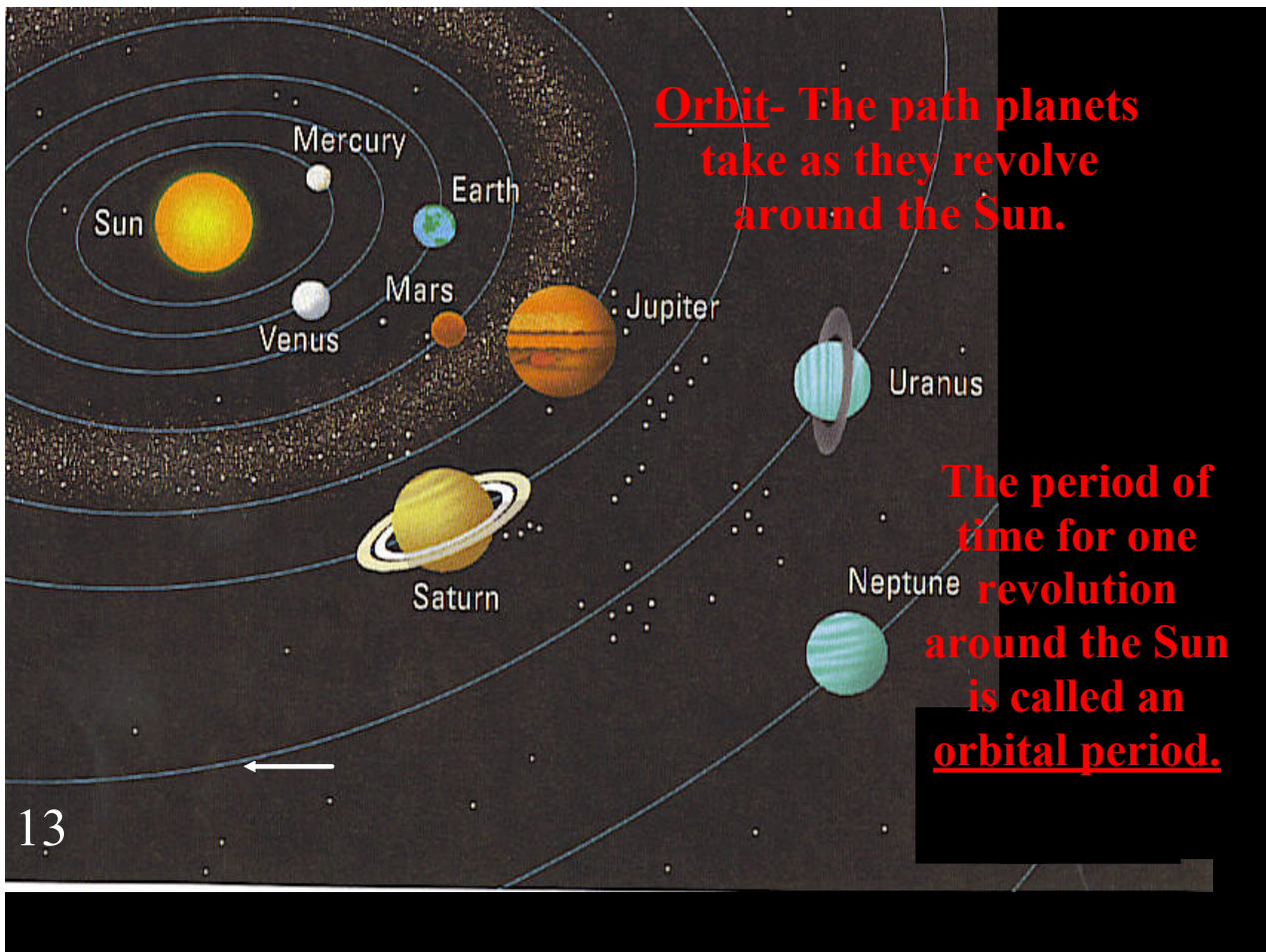


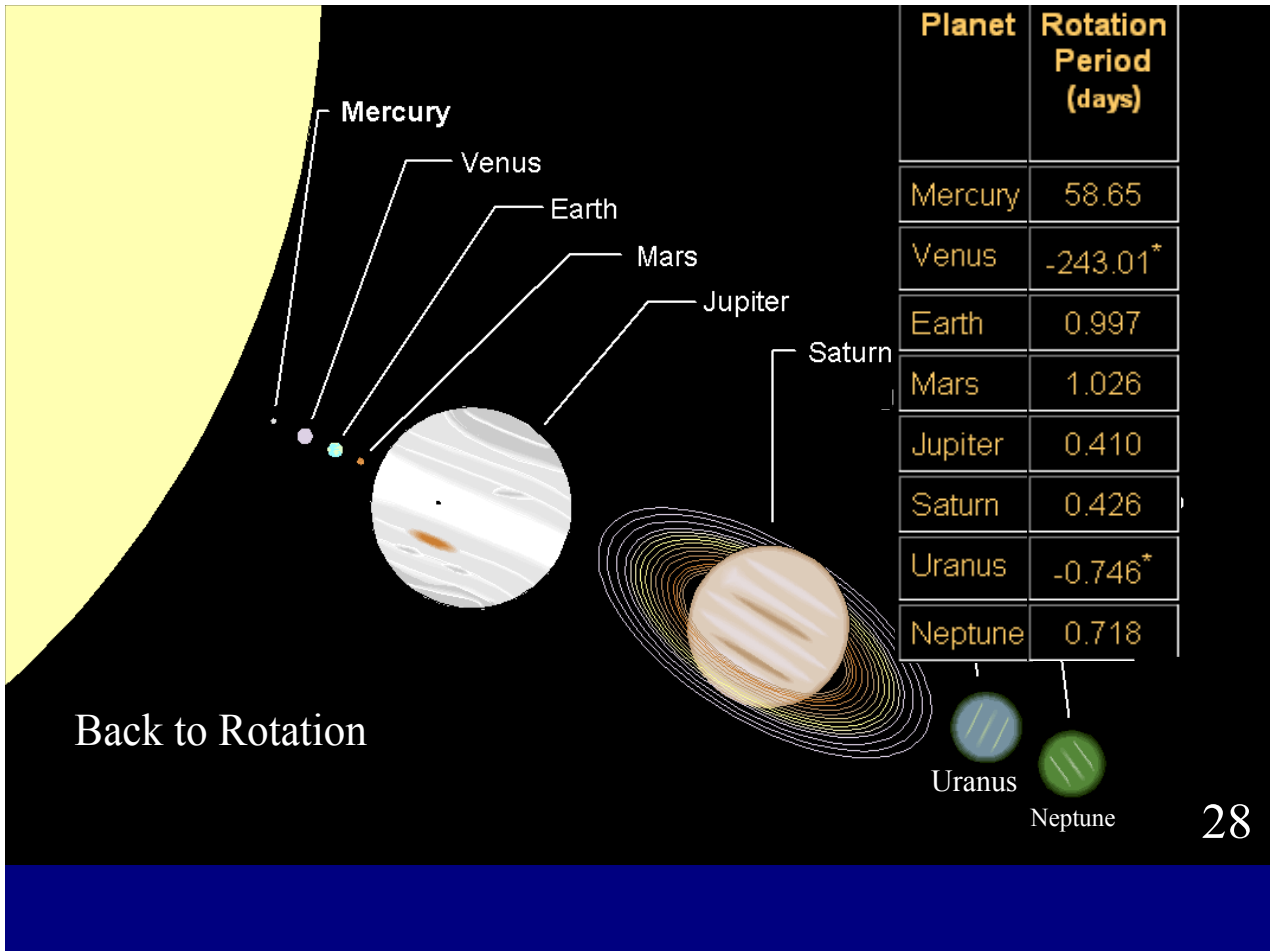
12

<http://www.youtube.com/watch?v=87yq372R4Ts>

The Earth and the other planets revolve around the Sun. It takes the earth 1 year to revolve around the sun.



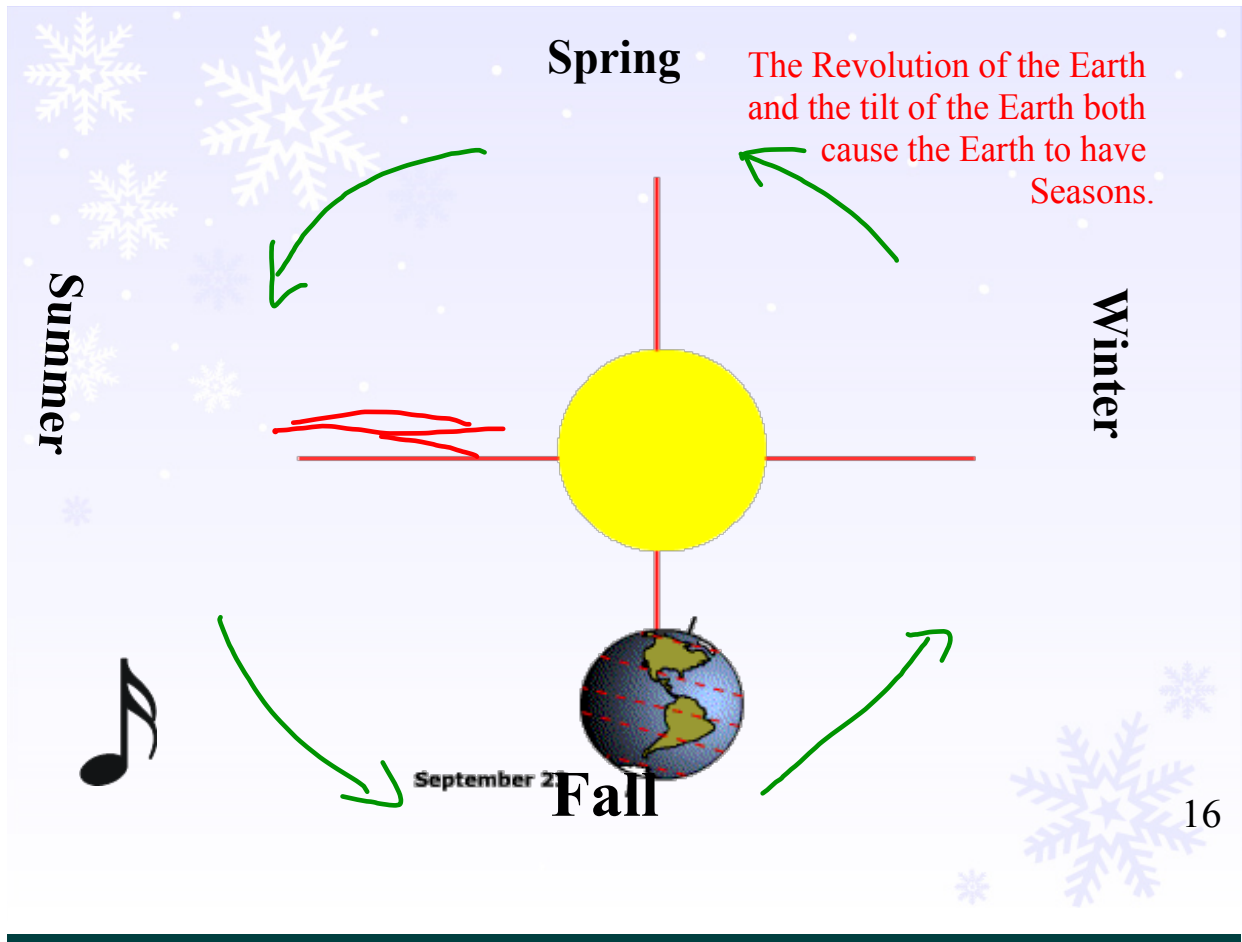
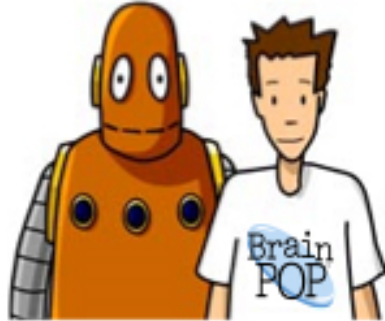




Before we move on, let's answer this question.

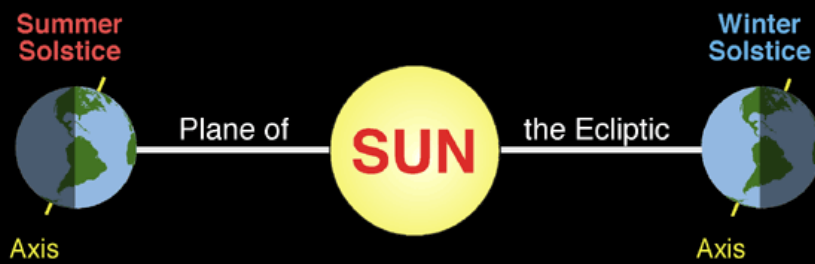
What are the reasons, for the seasons?

Press Tim and Moby to see their Season's video.



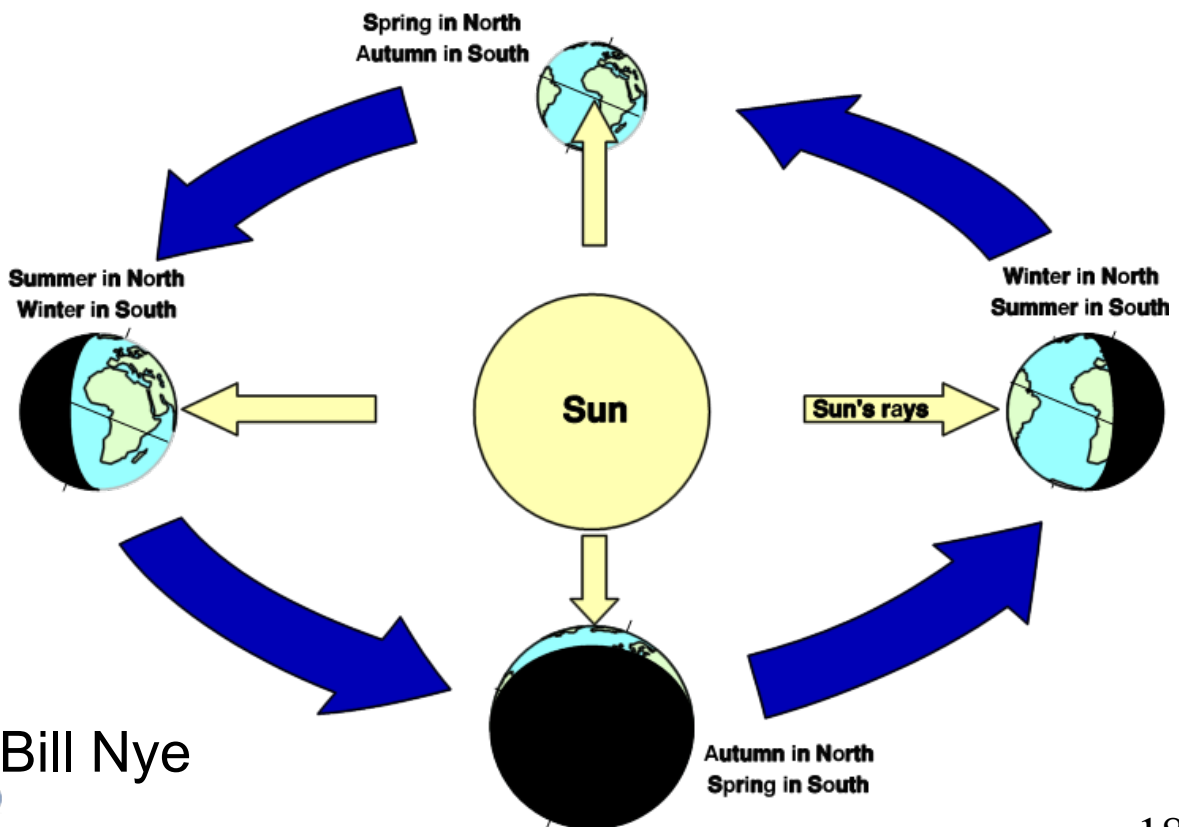
During the Summer, we receive the Sun's energy directly. The sun shines more on the northern hemisphere.

During the Winter, we receive the Sun's energy at an angle. The sun shines more on the southern hemisphere



17

While it's Summer in the Northern Hemisphere, it's Winter in the Southern Hemisphere.



Bill Nye

18

Solstice represents the shortest and longest periods of daylight

Winter solstice - shortest period of daylight (Northern hemisphere - Dec. 21)

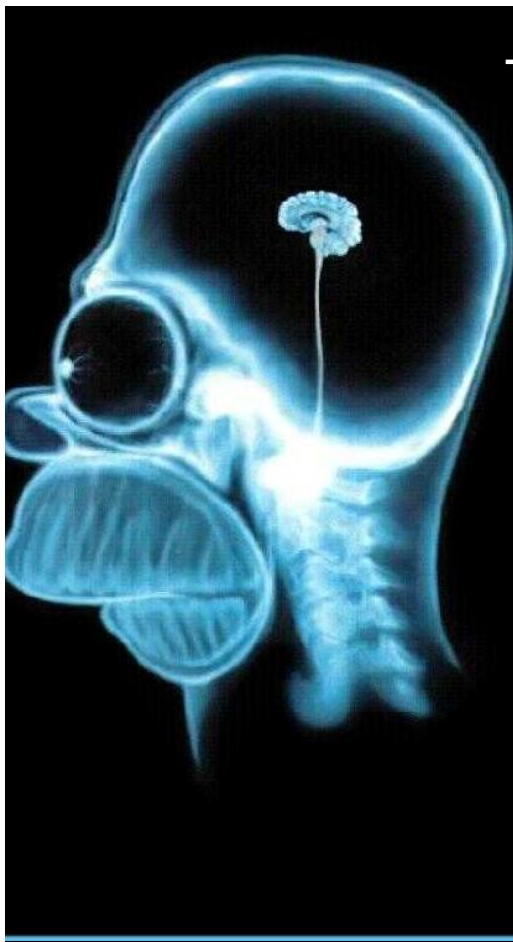
Summer solstice – longest period of daylight (Northern hemisphere - June 21)



Do you think
you are a
master, let's try
a few
problems.



20



The Earth's seasons are caused by?

- A) The Earth's tilt
- B) The Earth's Rotation
- C) Proximity to the Sun
- D) The Earth's Revolution

Click Best Answer

21

It takes the Earth how long to make one Revolution?

Click Best Answer

- A) One day
- B) One Week
- C) One Month
- D) One Year



22



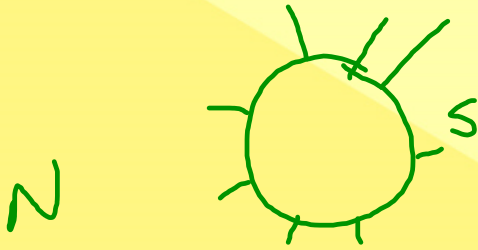
If it's winter in New Brunswick, then it would be Summer in which continent?

- 1) North America
- 2) Europe
- 3) Australia
- 4) Whoville

Click Best Answer

23

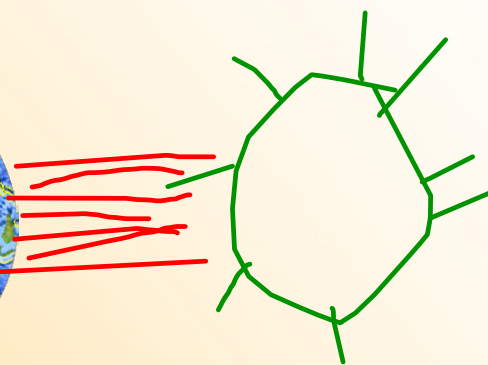
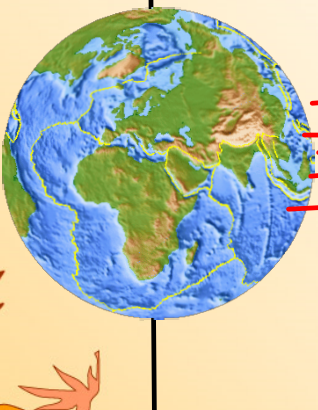
Uranus, as you see here has a horizontal tilt. What effect would this have on its seasons?



Press for a Student Response



What if the Earth was not tilted, but still had a vertical axis. How would this effect our seasons?



Press for a Student Response

Assignment for Today

Read section 13.10 on pages 418-419.

Questions from Understanding concepts 1, 2(omit 2c), 4,5.

Complete the challenge - which planet would be suitable for possible colonization? Give reasons for your choice. How will the planet conditions need to be considered in the design of your space colony? What would need to be done to make life sustainable on this planet?

Page 419

1) a) Scientist believe that Mercury has no atmosphere.

b) Mercury being the closest planet to the sun may not contain an atmosphere because of this reason. The sun's heat would destroy and gases that existed.

2) a) Venus and Mars seems to be two planets that share some similarities with Earth. If you compare size Venus and Earth are approximately the same size. If you look at Mars its rotational period is 24 hr 39 min and Earth's is 24 hrs. All three planets have nitrogen in it atmosphere.

b) The planets that are the least similar to Earth are Jupiter, Saturn, Uranus and Neptune. Each of these four planets are extremely large compared to earth, their orbital periods take years and their temperatures are extremely cold.

c) Pluto is no longer considered a planet and is now known as a dwarf planet

4) The atmosphere on the four larger planets would not support lif because living organism need oxygen and nitrogen to survive.

Today, we took time to investigate two movements of the Earth, its revolution and rotation. With this knowledge, we can understand why we have day and night, and why we have seasons.



Attachments

student response no tilt.avi

seasons.avi

Uranus student response(4).avi