# Earth and Space Science
# Tuesday
# 1/3/2016

**Today we are going to use your textbook to finish up your biome accordion books.**

**Tomorrow, you will be having a notebook check.**

**The last day of your semester is next Friday...so your notebooks will also be due next Friday.**

# Earth and Space Science
# Wednesday
# 1/4/2016

**You have a few minutes to tidy up your notebook and to make sure that your table of contents is up to date and that your pages are numbered.**

**I will be calling you up one by one to check your notebooks.**

# Earth and Space Science
# Thursday
# 1/5/2016

Today we will start our Unit on Space!

So as usual, lets start at the beginning...

Disclaimer: We will be looking at the history of Earth from a scientific standpoint...that is, from the perspective of what scientists have been able to discover using tests and evidence. I will be presenting from that standpoint.

This in no way challenges religious beliefs or ideals. Those are yours, and personal to you.

You probably already know this...but Scientists believe that the Universe started with the Big Bang.

Scientists don't know a whole lot about our universe or if there are other ones out there, but within the universe, there are many galaxies.  Ours is the Milky Way Galaxy.

http://www.pbslearningmedia.org/resource/ess05.sci.ess.eiu.microwave/evidence-for-the-big-bang-theory/

https://www.tes.com/teaching-resource/teachers-tv-our-universe-and-the-big-bang-6085040

**The Big Bang!**

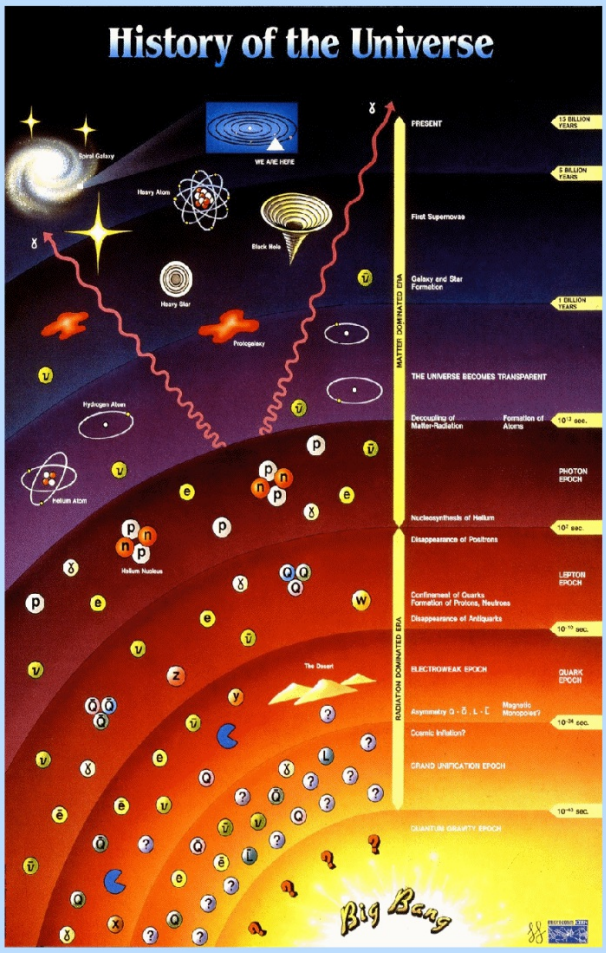
**Before the Big Bang there was nothing**
**No time and no space**

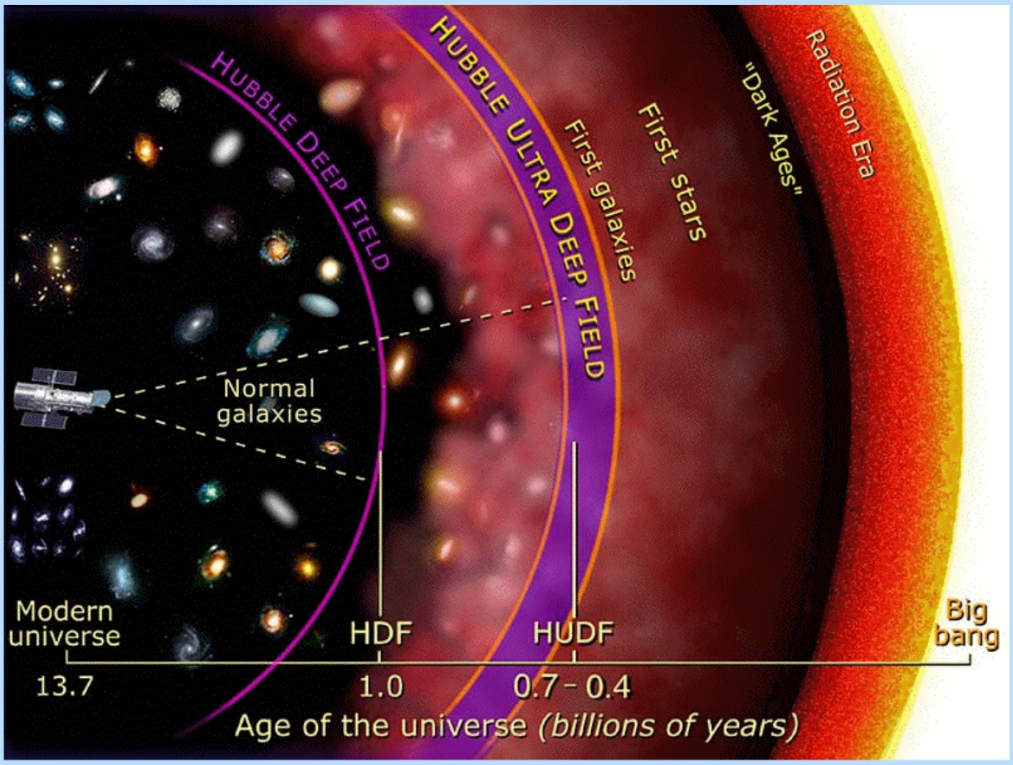
**Somewhere between 13 and 15 Billion years ago the universe was only a few mm across.**
**(Latest data says 13.7 Billion years ago)**

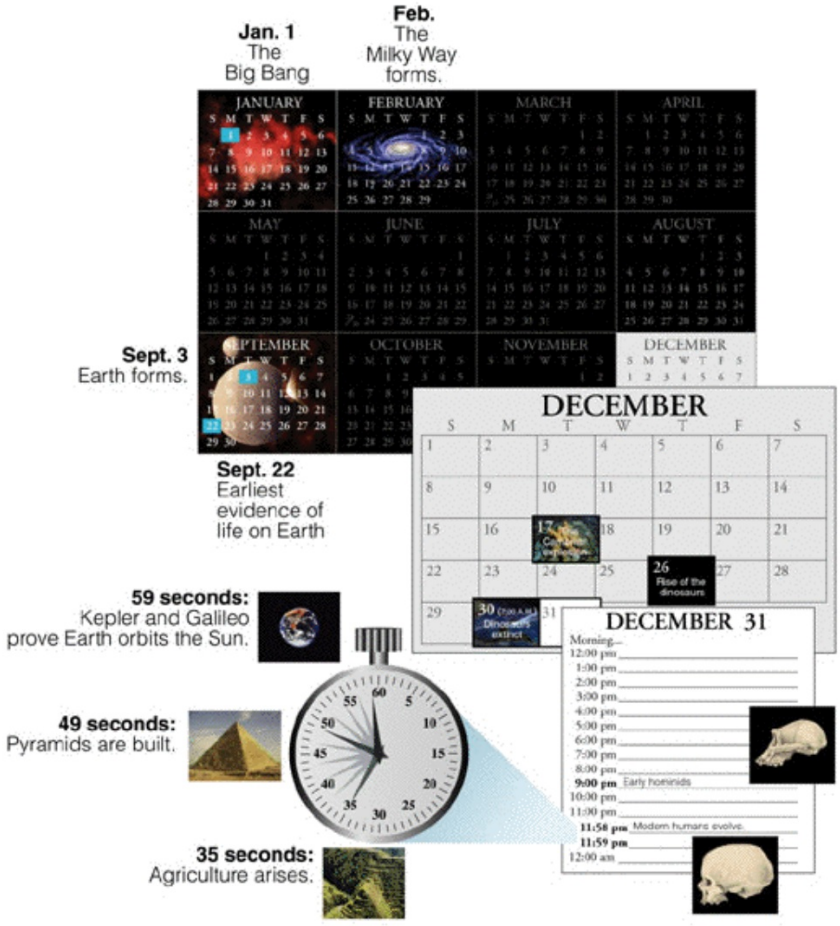
**The "explosion" created and expanded space.**

**In the first trillionth of a second, the universe expanded to a huge size.**

**It was so hot it took 1 billion years before the first atoms of hydrogen were created.**


History of the Universe
Spiral Galaxy
WE ARE HERE
Heavy Atom
Black Hole
Heavy Star
Protogalaxy
Hydrogen Atom
Helium Atom
Helium Nucleus
The Desert
PRESENT
13 BILLION YEARS
8 BILLION YEARS
First Supernovae
Galaxy and Star Formation
3 BILLION YEARS
THE UNIVERSE BECOMES TRANSPARENT
Decoupling of Matter-Radiation
Formation of Atoms
PHOTON EPOCH
Nucleosynthesis of Helium
Disappearance of Positrons
LEPTON EPOCH
Confinement of Quarks Formation of Protons, Neutrons
Disappearance of Antiquarks
ELECTROWEAK EPOCH
QUARK EPOCH
Asymmetry Q - B, L - L
Magnetic Monopoles?
Cosmic Inflation?
GRAND UNIFICATION EPOCH
QUANTUM GRAVITY EPOCH
MATTER DOMINATED ERA
RADIATION DOMINATED ERA
Big Bang

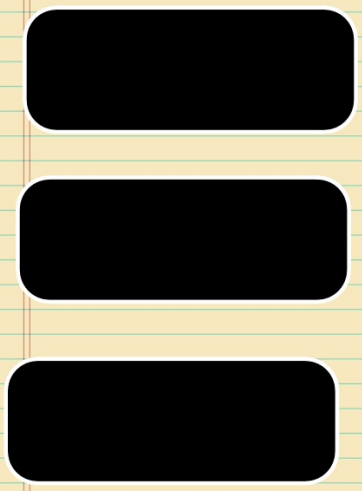

Hubble Deep Field
Hubble Ultra Deep Field
First galaxies
First stars
"Dark Ages"
Radiation Era
Normal galaxies
Modern universe
HDF
HUDF
Big bang
13.7
1.0
0.7 - 0.4
Age of the universe (billions of years)




http://channel.nationalgeographic.com/cosmos-a-spacetime-odyssey/episodes/standing-up-in-the-milky-way/

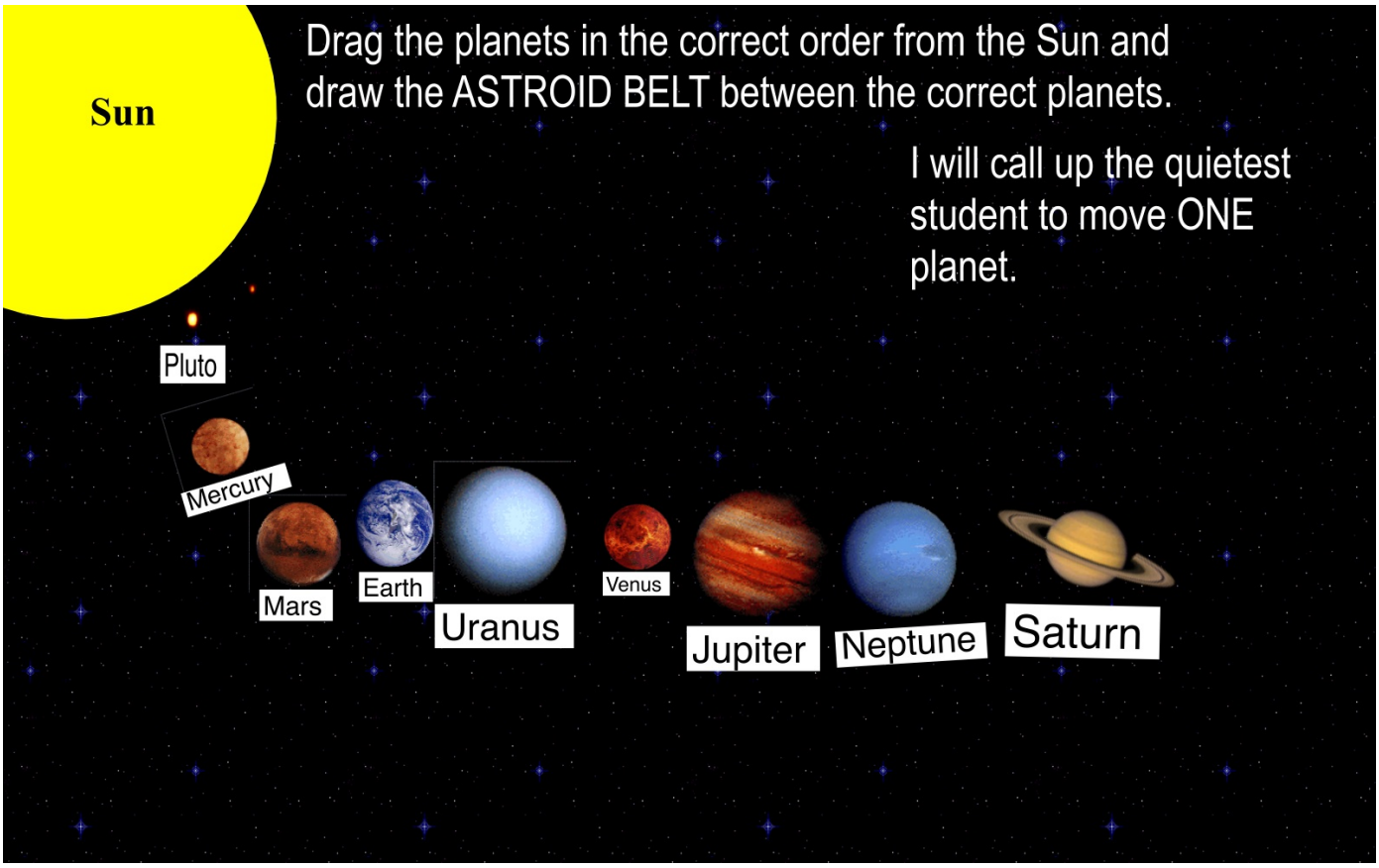
Now that you have a better idea of how the Universe got started, lets talk about our Galaxy.

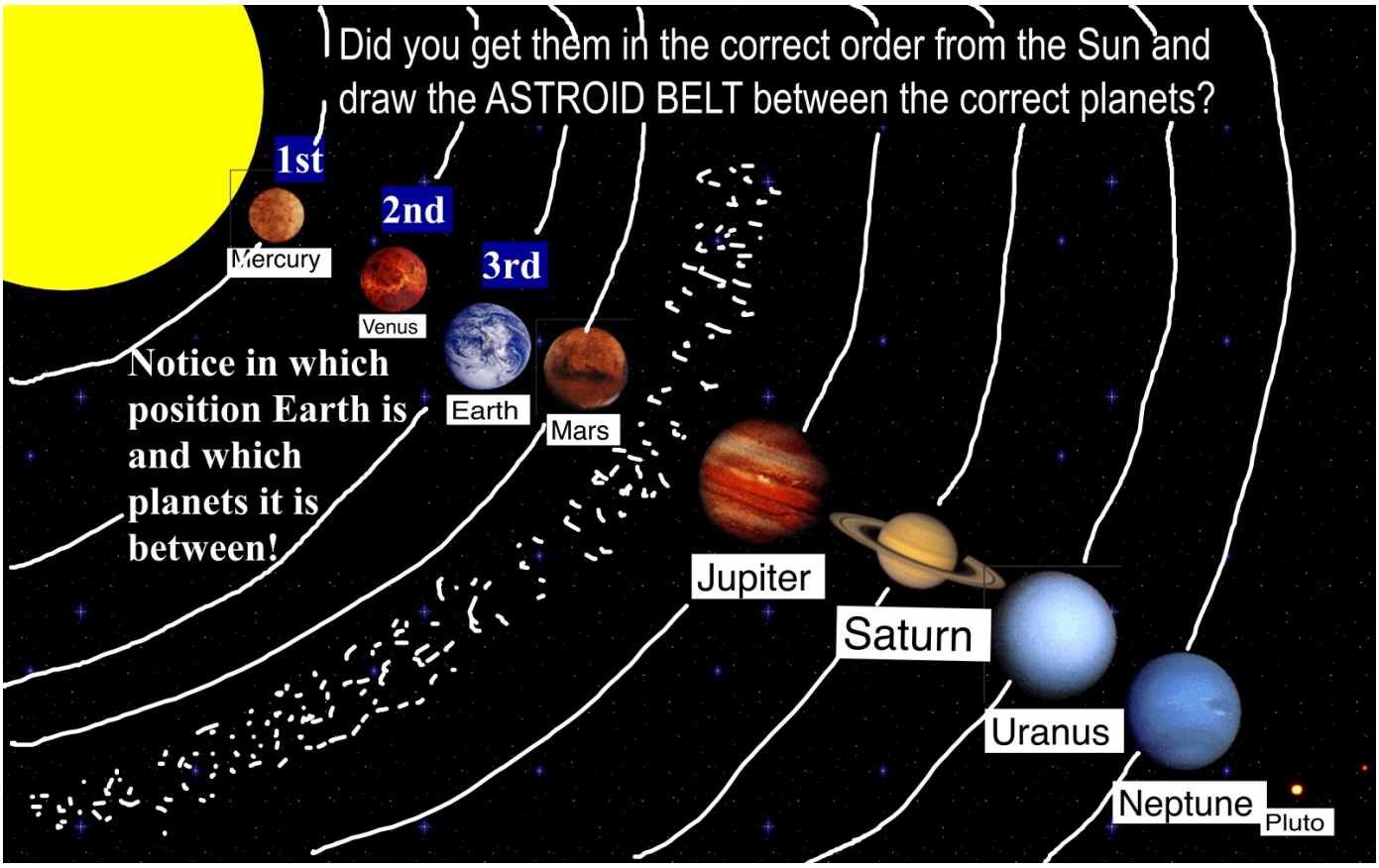
There are 3 things that we are most familiar with and that we see almost every day....



| | Sun – *star* | Earth – *the water planet* | Moon |
|---|---|---|---|
| |  |  |  |
| Surface | | | |
| Water | | | |
| Atmosphere | | | |
| Location | | | |

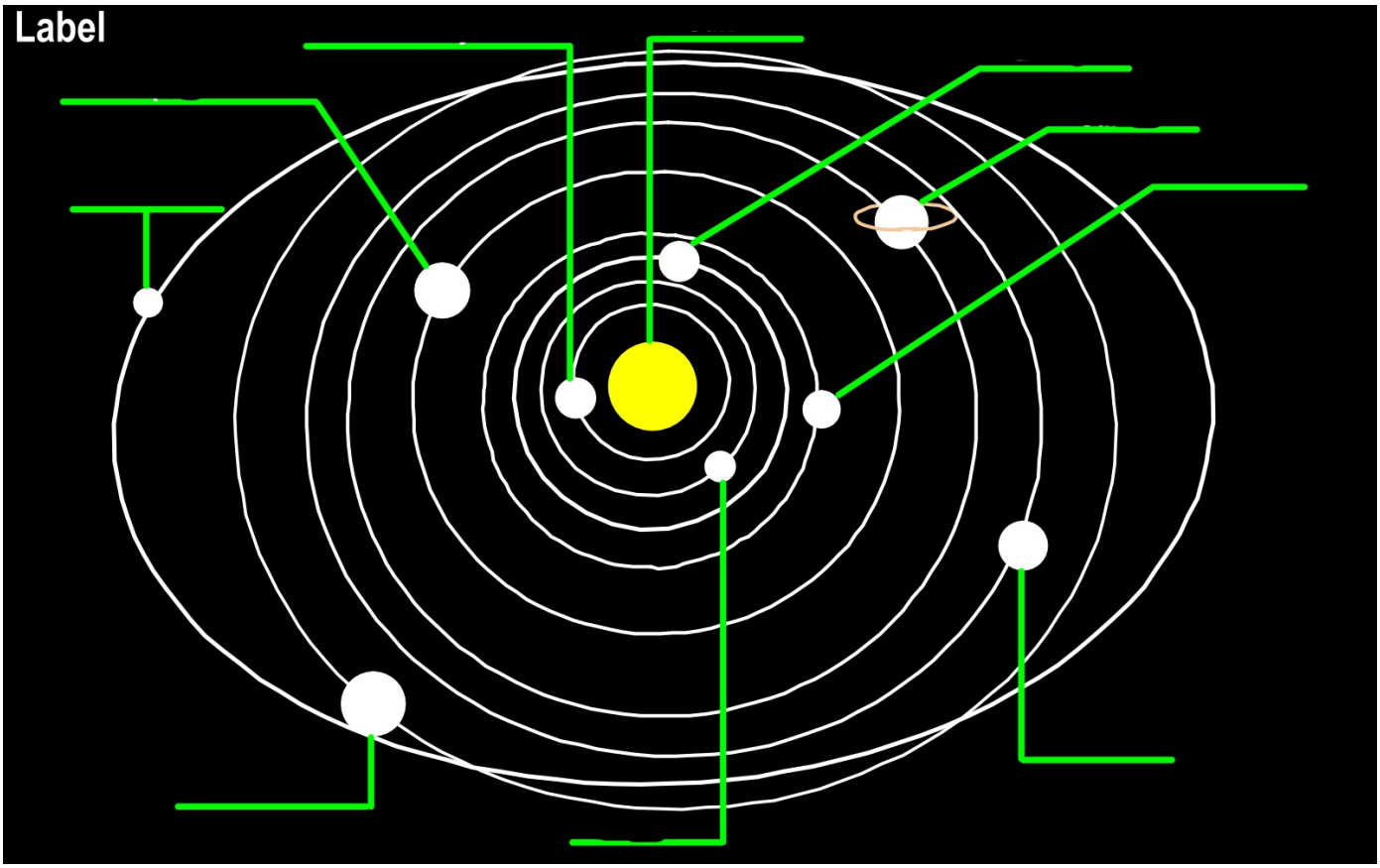
# Earth and Space Science
# Friday
# 1/6/2016

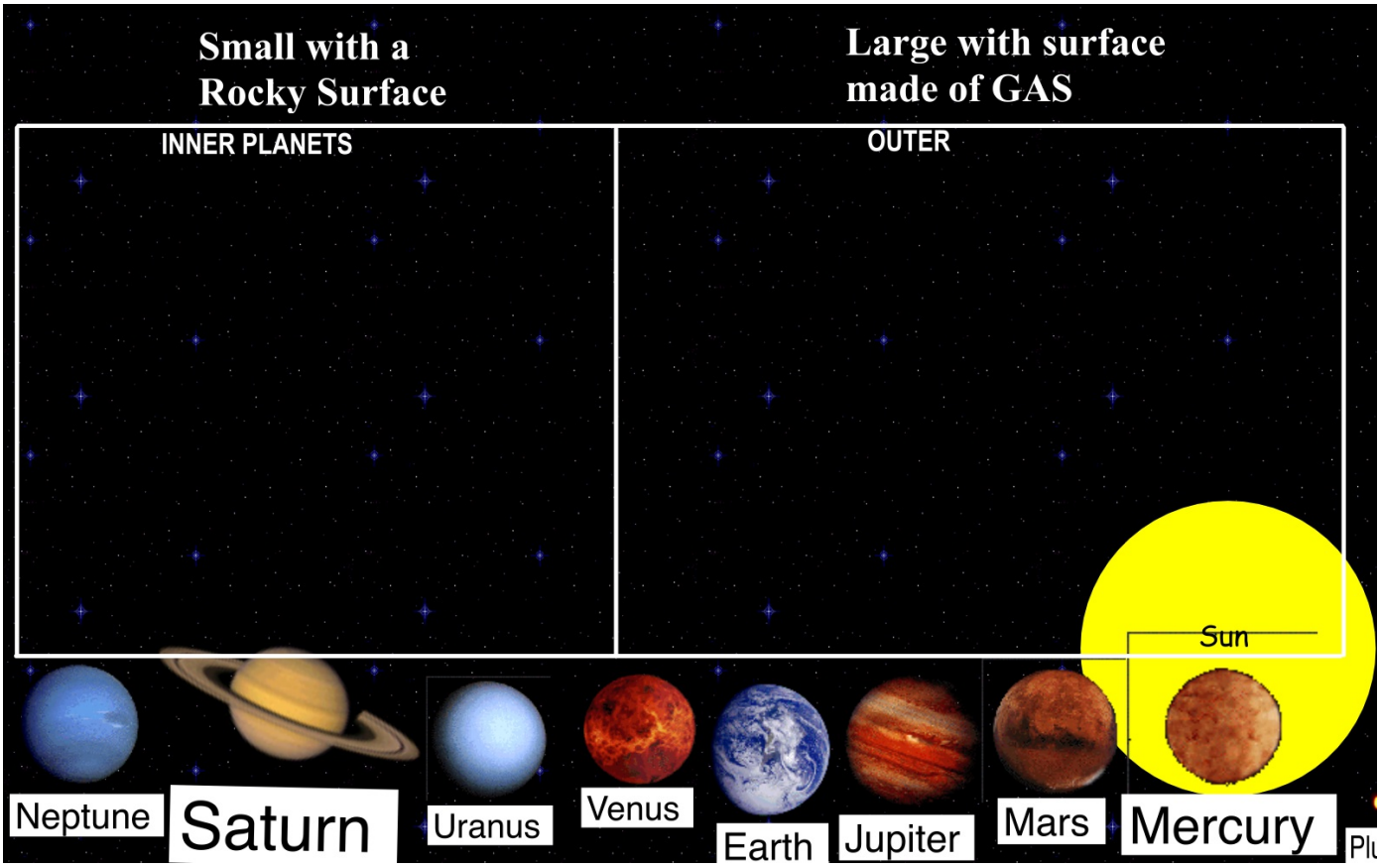

Sun
Drag the planets in the correct order from the Sun and draw the ASTROID BELT between the correct planets.
I will call up the quietest student to move ONE planet.
Pluto
Mercury
Mars
Earth
Uranus
Venus
Jupiter
Neptune
Saturn

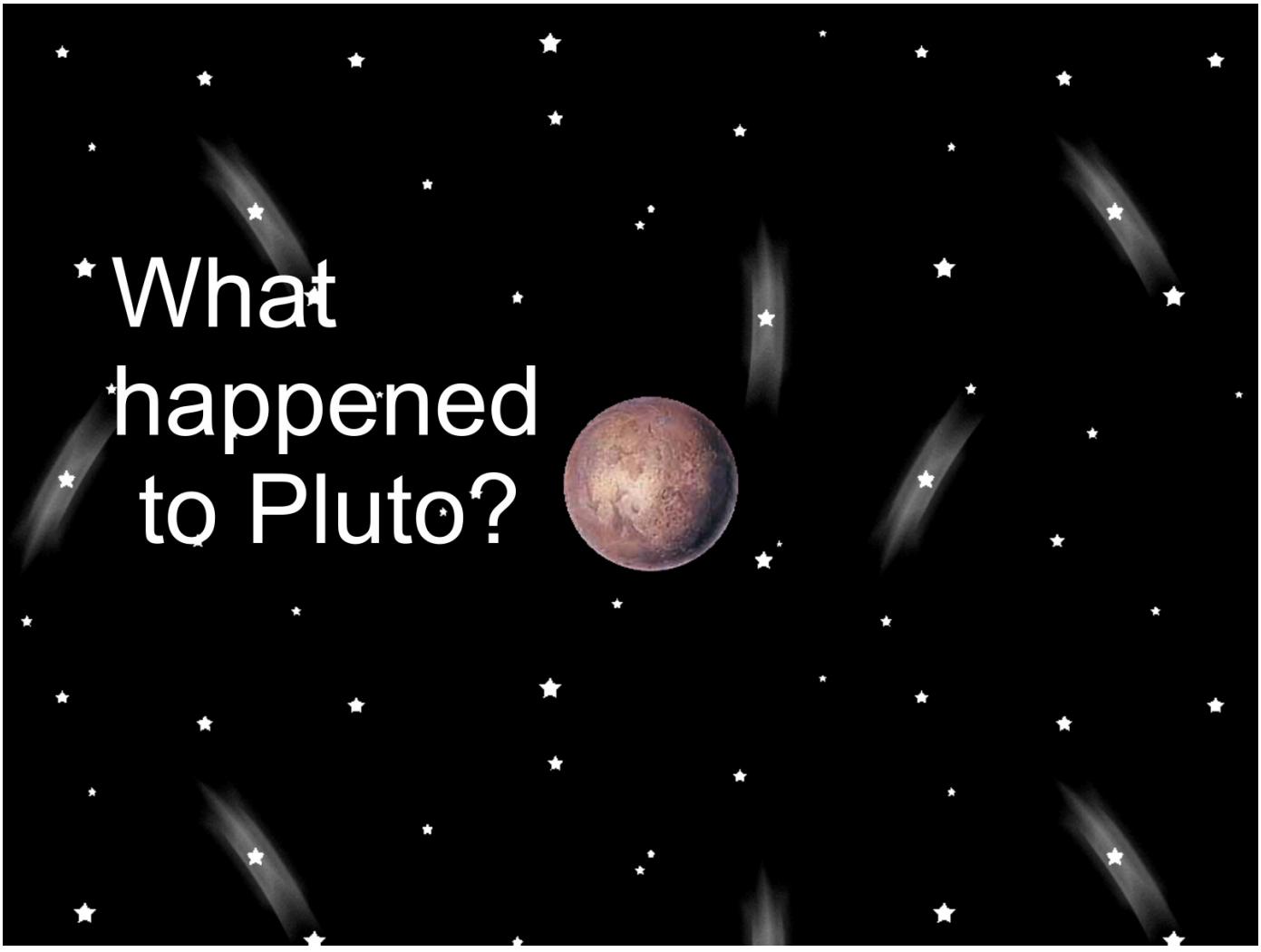

Did you get them in the correct order from the Sun and draw the ASTROID BELT between the correct planets?
1st
2nd
3rd
Mercury
Venus
Earth
Mars
Notice in which position Earth is and which planets it is between!
Jupiter
Saturn
Uranus
Neptune
Pluto

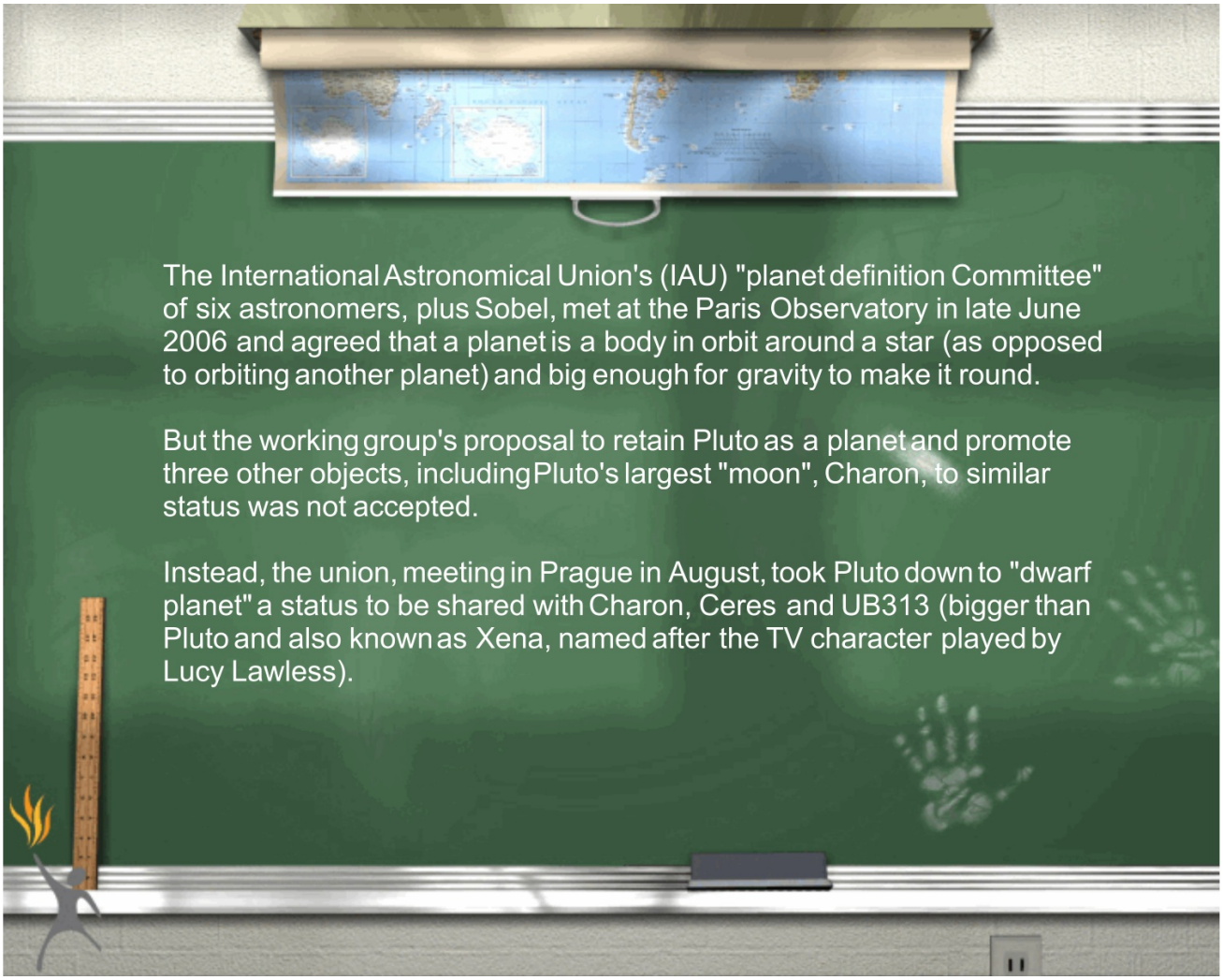
Now that you know the correct order of the planets in the Universe, lets create a mnemonic to help us remember the order.

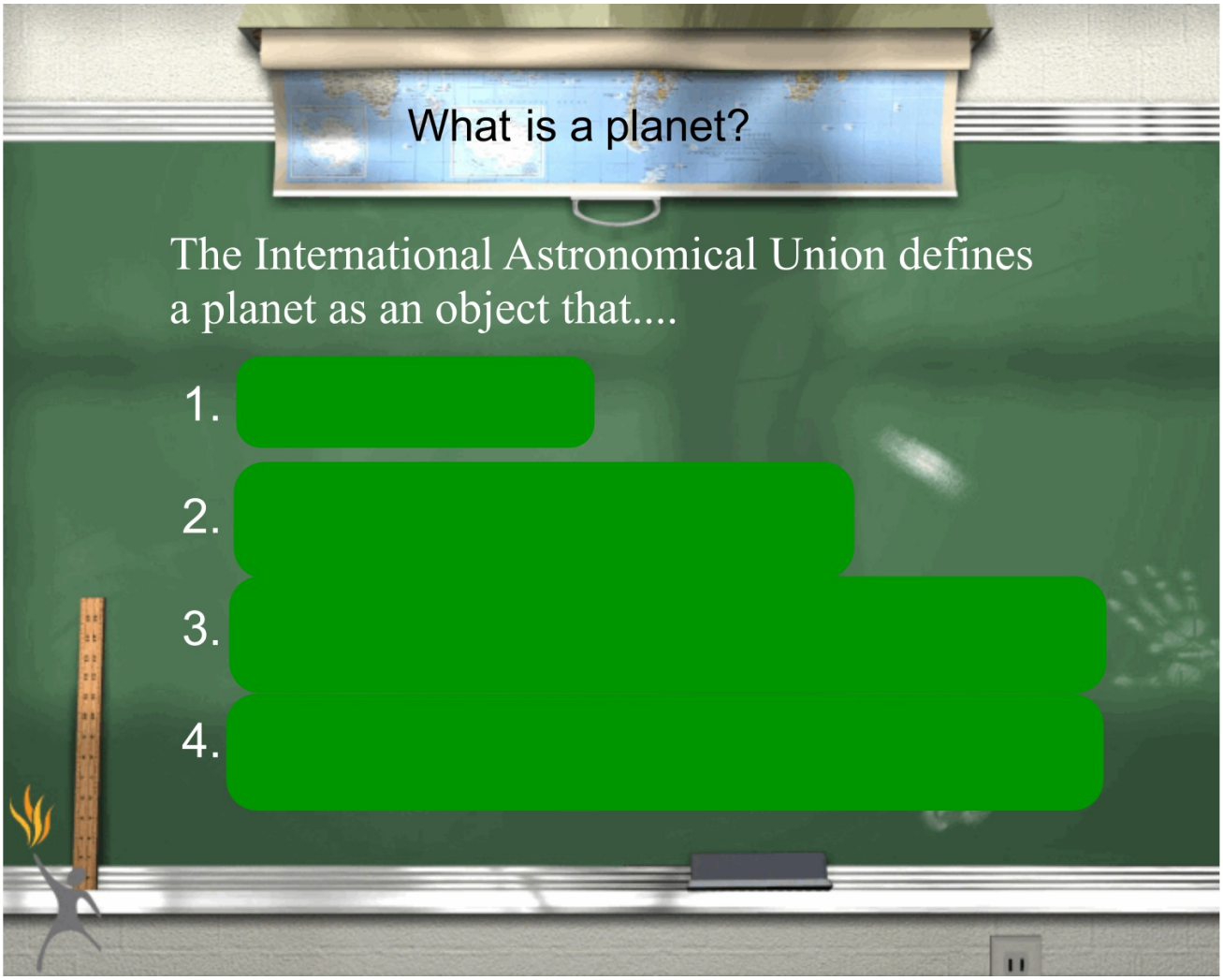
Mars, Venus, Earth, Mercury, Jupiter, Saturn, Uranus, Neptune and (pluto)


Label


Small with a
Rocky Surface
Large with surface
made of GAS
INNER PLANETS
OUTER
Sun
Neptune
Saturn
Uranus
Venus
Earth
Jupiter
Mars
Mercury


What happened to Pluto?


The International Astronomical Union's (IAU) "planet definition Committee" of six astronomers, plus Sobel, met at the Paris Observatory in late June 2006 and agreed that a planet is a body in orbit around a star (as opposed to orbiting another planet) and big enough for gravity to make it round.
But the working group's proposal to retain Pluto as a planet and promote three other objects, including Pluto's largest "moon", Charon, to similar status was not accepted.
Instead, the union, meeting in Prague in August, took Pluto down to "dwarf planet" a status to be shared with Charon, Ceres and UB313 (bigger than Pluto and also known as Xena, named after the TV character played by Lucy Lawless).


What is a planet?
The International Astronomical Union defines a planet as an object that....
1.
2.
3.
4.


Why was Pluto taken off the "planet" list?
A
It is not round.
B
It has no moons.
C
It has a different type of orbit.
D
It exploded.
Link to solar system info
Link to air and space museum

*A scientific fact is a highly corroborated hypothesis that has been so repeatedly tested and for which so much reliable evidence exists, that it would be perverse or irrational to deny it.*

More to explore about the scientific method

# Earth and Space Science
# Monday
# 1/9/2016

Today we are going to make a scale model of the galaxy, with the intention of showing how far apart the planets really are.

For this demonstration, you will be measuring in milimeters. 1mm = 1 million miles.

In a moment, you'll receive a long strip of paper. You will need a ruler. If you do not have yours, you may need to share with your table mate.

Follow along with the directions....

1. 

2. 

3. 

4. 

5. Measuring from the Sun, make a line at 93 mm. Mark this "Earth"

6. Measuring from EARTH this time, make a line 137mm away from Earth...or 13.7cm. Label this line mars

7. Measuring from Mars, make a line at 447mm...or 44.7cm. Label this Jupiter.

8. Measuring from Jupiter, make a line 655mm away, or 65.5cm..or 25.8in on your yardstick. Label this Saturn.

9. Measuring from Saturn, make a line 1,911mm away...or 191.1cm away...or 75.2 inches. Label this Uranus.

10. Measuring from Uranus, make a line 1,011mm away...or 101.1cm away..or 39.8 inches on your yardstick. Label this Neptune.

11. Measuring from the SUN. Measure 3.9 yards. Label this Pluto.

# Earth and Space Science
# Tuesday
# 1/10/2016