Origin of the Galaxy and Solar System

Date:

SWBAT: Explain the origin and organization of the universe.

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| Term | Description |
| Geocentric | Definition: |
| Heliocentric | Definition: |
| Big Bang Theory | * States that the universe began from an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ which has \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ over billions of years to form the universe
* The universe we live in is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* We know because we see galaxies and groups of galaxies steadily \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* This expansion has been occurring since the universe was formed 14 billion years ago
 |
| Doppler Effect | * Stars moving away from an observer appear \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, while stars moving towards an observer appear \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Definition:* Moving towards the observer, wavelengths \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: appearing blue
* Moving away from the observer, wavelengths \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: appearing red
 |
| Nebular Theory | Definition: |
| 1. Nebulae:
 | 1. Nebulae begins rotating and collapsing due to gravity
 | 1. Centrifugal force compresses dust into objects (stars, moons, planets, etc)
 |
| Movement of the Galaxy | The Earth: | The Solar System: | Galaxies: |
| Hierarchy of the Universe |  |

Chemistry and the Sun

Date:

SWBAT: Explain how the sun produces energy through fusion and describe the transfer of radiation to the Earth.

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| Term | Description |
| Matter | Definition: |
| Solid: | Liquid: | Gas: | Plasma: |
| Element | Definition: | Example: Oxygen, Hydrogen, Chlorine, etc |
| Atom | Definition:Subatomic Particles |
| Electrons: | Protons: | Neutrons: | Label the Part of an Atom: |
| Nucleus: | Electron Cloud: |
| Fusion vs Fission | FUSION | FISSION |
| Sun | Made of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Average rotation: Surface temp:Interior temp: | The sun \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy into space.This energy is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Differentiated by:* The sun mostly emits ultraviolet, visible light, and infrared
 |
| Cosmic Rays | Definition:* Most deflected by Earth’s magnetic field!
 |
| Photosynthesis | Life on Earth relies on solar energy from the sun!* Plants transform solar energy into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to make food for themselves.
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Kepler’s Law of Planetary Motion

Date:

SWBAT: Explain planetary orbits especially that of Earth, using Kepler’s Laws.

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| Term | Description |
| Dead Astronomers and Mathematicians | * Tyco Brahe – Danish astronomer with an island observatory
* Johannes Kepler – Austrian mathematician came up with laws describing how the planets move around the sun
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| **KEPLER’S LAWS OF PLANETARY MOTION** |
| 1st Law of Planetary Motion | http://www.atnf.csiro.au/outreach/education/senior/cosmicengine/images/cosmoimg/keplerellipse.gifA planet’s orbit is an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with the \_\_\_\_\_\_\_\_\_\_\_\_\_ at one focus and nothing at the other focus.Ellipse – Circle –  |
| Perihelion: | Aphelion: |
| 2nd Law of Planetary Motion | http://www.school-for-champions.com/astronomy/images/keplers_laws_areas_swept.gifThe line joining the planets to the Sun sweeps out \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ as the planet travels around the ellipse* Planets travel faster when \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to the sun

**Shaded areas equal*** Planets travel slower when \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from the sun
 |
| 3rd Law of Planetary Motion | http://america.pink/images/2/4/1/7/7/6/1/en/2-kepler-laws-planetary-motion.jpgThe ratio of the square of the revolution time for two planets is equal to the ration of the cubes of their semi-major axesTT2=R3* T: the time it takes a planet to go completely around the sun (Years)

R* R: the average distance from the sun (AUs)
1. How far from the sun is a planet with a revolution of 5 years?
2. How long is the revolution of a planet with a distance of 4.5 AUs from the sun?
 |
| * If you know the distance from the sun, you can find the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of a planet.

OR* If you know the year, you can find the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for a planet.
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| Kepler’s Laws | * Kepler’s Laws apply to any \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ body orbiting any other \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
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Earth Motions and Tilt

Date:

SWBAT: Explain how Earth’s rotation and revolution affect its shape and is related to seasons.

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| Term | Description |
| Earth’s Circumference | Around the equator: | Around the poles: |
| Earth’s Shape | Oblate SpheroidSpherical:* As Earth rotates, the sphere is distorted by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
 |
| Axis | Definition:The earth \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on its axis and is tilted at \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Latitude | Definition:Nickname: |
| Longitude | Definition:Nickname: |
| Rotation | Definition: |
| Revolution | http://www.howitworksdaily.com/wp-content/uploads/2012/06/Seasons.jpgDefinition: |
| Seasons | Reason #1: Number of Daylight Hours* The amount of sunlight varies in the year
* In the summer you have \_\_\_\_\_\_\_\_\_\_\_\_\_ hours of sunlight and \_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the winter
 | Reason #2: Angle of Sunlight* The angle of the sun’s rays cause different \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* This is caused by the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
 |
| Vernal EquinoxDate:Light/Dark:Sun Overhead: | Summer SolsticeDate:Light/Dark:Sun Overhead: | Autumnal EquinoxDate:Light/Dark:Sun Overhead: | Winter SolsticeDate:Light/Dark:Sun Overhead: |

The Moon and Tides

Date:

SWBAT: Describe how the moon causes eclipses and affects tides.

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| Term | Description |
| Moon | “Satellite” – Gravitational Pull: 1/6 of Earth’s gravity. Too weak to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Temp in sunlight:Temp in darkness: |
| Movement | Type of orbit:Rotation: | The rotation of the moon is equal to its revolution. What does this mean? |
| Giant Impact Hypothesis | Definition: |
| Lunar Eclipse | Definition: | Illustration: |
| Solar Eclipse | Definition: | Illustration: |
| Phases | http://www.astro.umd.edu/resources/introastro/images/waxing.gif |
| Tides | Spring Tide | Neap Tide |
| Description: | Illustration: | Description: | Illustration: |

Planets and Movement

Date:

SWBAT: Differentiate between the types of planets and describe their movement in space.

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| Term | Description |
| Inner Planets | 1. | 2. | 3. | 4. |
| Closest to the sunNickname: | Traits: |
| Outer Planets | 5. | 6. | 7. | 8. |
| Farthest from the sunNickname: | Traits: |
| Rules to be a Planet | 1. | 2. | 3. |
| Barycenter | Definition:“The center of mass where two or more celestial bodies orbit each other.* The sun is not \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in our solar system, it moves as the planets tug on it, causing it to orbit the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

http://www.physast.uga.edu/~rls/1020/ch5/05-12.jpghttp://www.physast.uga.edu/~rls/1020/ch5/05-12.jpghttp://www.physast.uga.edu/~rls/1020/ch5/05-12.jpg |
| Precession | Definition:This changes the stars near the Pole, but does not affect the seasons.* Current “Northern Star”:
 | full-460px-Praezession.png |
| Nutation | Definition:Changes in the angle:* Occurs over an 18 yr period and is due to the Moon
* Slightly impacts seasonal effects
 |