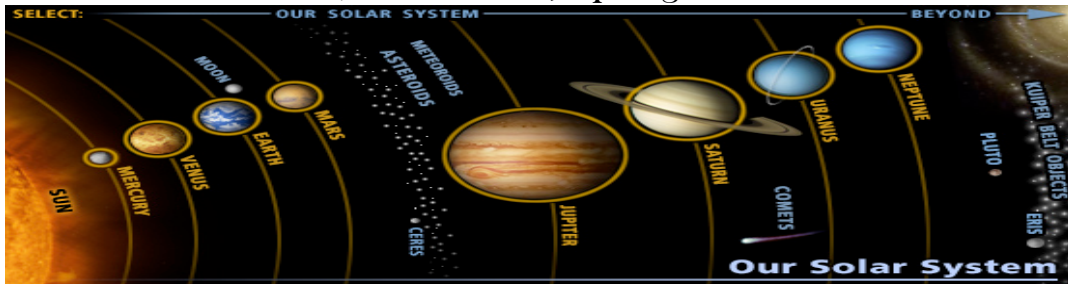


Name _____

Date _____

How to Make Our Planets From Scratch: A Recipe Book 9th/10th Science, Spring 2010



Goals

- *Understand how basic theories of physics apply to the organization of our solar system*
- *Understand the organization of our solar system including the position of the planets as well their propensity to sustain life.*
- *Understand how the effect of gravitational pull changes with a change in density.*

You may have heard that our solar system consists of a medium sized star, the sun, and eight planets (nine depending on how you feel about Pluto). Along with planets, we have asteroid belts, comets and moons orbiting the sun in some form or fashion. But WHY??

YOUR CHALLENGE: Prove beyond a reasonable doubt that your planet is in an appropriate place within the solar system and develop a recipe for how it was created.

Ingredients and cooking instructions should include the following:

- How your planet was made using the specific ingredients left over from the creation of our sun (See Planetary Starter Recipe Example)
- Description of your planet including diameter, mass and distance from the sun (in km)
- Geology: What elements are found on your planet what role do they play in defining your planet? (i.e.: Iron is a common element on this

planet with a density of 7.874 g/cm^3 thus contributing to the density of [name of your planet]_____)

- Orbit: Speed, shape, size, length of year and what keeps your planet in its orbit?
 - HINT: Address the density of the planet, the speed and shape of its orbit, and the gravitational pull toward the sun. Refer to and use **KEY TERMS**.
- Rotation: How long is one day?
- Climate: Temperature, humidity, wind, rainfall, etc.
- Atmosphere: Does your planet have an atmosphere? What does the atmosphere of your planet consist of?

Guiding Questions

1. How does the gravity you experience on Earth differ from the gravitational pull of the Earth to the sun or the moon to the Earth?
2. Does the density of an object affect how gravity acts on that object?
3. Do the orbit and rotation of your planet affect its position within the solar system? Meaning, *what* keeps your planet in place and *how*?

KEY TERMS

nebular hypothesis, gravity, gravitational pull, electromagnetic force, nuclear energy, density, elements, orbit, rotation, atmosphere, terrestrial, gas giant
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Possible References

Planet Descriptions: <http://solarsystem.jpl.nasa.gov/planets/index.cfm>

Photographic Periodic Table: <http://www.periodictable.com/index.html>

What is an orbit?: <http://www.qrg.northwestern.edu/projects/vss/docs/space-environment/1-what-causes-an-orbit.html>

Bill Arnett's Nine Planets: <http://www.nineplanets.org/nineplanets.html>