Earth Science 11
Unit 1 – Earth and its Solar System
Day 1 – Solar Nebula Hypothesis

Name: Schaub

Date: _____

Block: _____

Earth and the other planets have a common origin that is described by Solar nebula hypothesis.

The Solar Nebula Hypothesis: states that the sun, the planets, and other objects orbiting the sun originated at the same time from the same source through the collapse and condensation of a planetary nebula and have evolved in varius ways since that time.

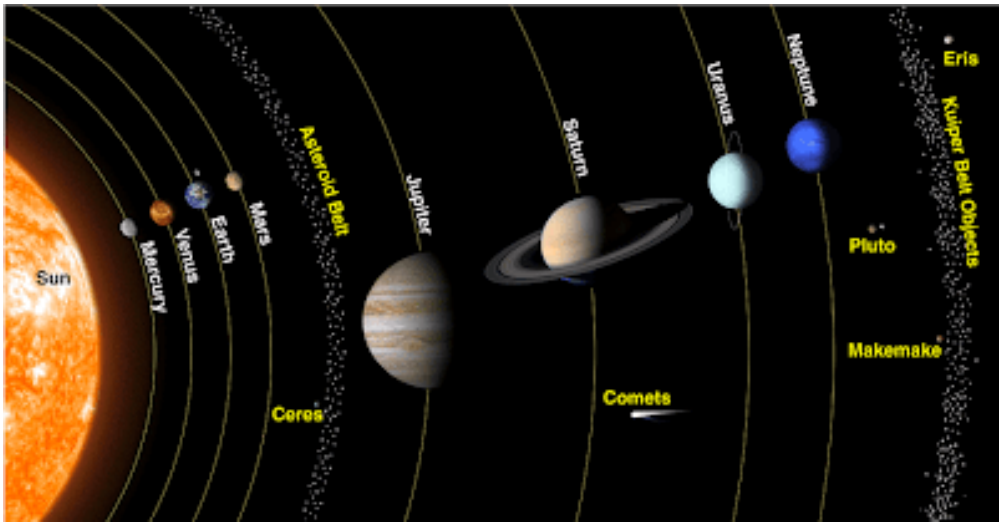
Planetary Nebula: a great cloud of gas made by an exploding star

Evidence: the planets orbit on nearly the same plane, and in the same direction around a common focus. The Sun. Differences are due to events (ex: collisions) that have happened since the their origin.

Our Solar System is made up of these objects:

- The sun
- Classical planets .... Mercury, venus, Earth, Mars, Jupiter, Saturn, Uranus, & Neptune
- Dwarf planets .... Pluto, Ceres, Haumea, Makemake, and Eris
- Asteroids, comets, objects in the Kuiper Belt, scattered disk and Oort cloud
- 240 KNOWN satellites (moons), 162 of which orbit the classical planets
- countless particles and interplanetary space

Our Sun: Located in the center of the solar system. It is large... if the sun was a basketball... Earth would be the size of the head of a pin. Our sun is in the top 10% of stars by mass. The median size of the stars in our galaxy are about half the size of our sun. The sun contains 99% of the mass in our solar system.



Facts:

- classical planets lie on a single plane
- plane is called the ecliptic
- all planets rotate on their axis in same diection except venus spins opposite (collision tipped it upside down?)
- Uranus is steeply tilted (collision?)

classical planets orbit in same direction.

The Solar Nebula Hypothesis in detail:

When:__5 billion years ago_____

What: a cloud of intersteller gas and dust began to collapse inward under the pull of gravity

this may have been initiated by the explosion of a nearby star or some other distubance

As volume of cloud decreased its density and rate of rotation increased (like a figure skater pulling in their arms)

as spinning accelerated the clud flattened and developed a hot core giving birth to an infant star (our sun)

100 000 years later the hot core became a "protostar"

centrifugal force prevented some gas and dust from reaching the core... these formed planets

the formation of planets is called "planetesimal accretion"