Lect1:	Birth	of a	Solar	Sy	ystem:	Chap17, Sec 1
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Strange Gravity

More than 2,000 years ago, early Greek philosophers formed new ideas by simply making assumptions. They didn't see any value in testing their ideas with experiments. This changed, however, in the early 1600s when the Italian scientist Galileo Galilei started performing clever experiments to try to figure out how the world worked. Galileo's experiments helped later scientists understand how gravity works. In this activity you will experiment with how different objects behave under the pull of Earth's gravity.

Procedure

- Select two pieces of identical notebook paper.
 Crumple one piece of paper into a ball.
- Place the flat piece of paper on top of a book and the paper ball on top of the flat piece of paper.
- Hold the book waist high, and then drop it to the floor.

Analysis

- 4. Which piece of paper reached the bottom first? Did either piece of paper fall slower than the book on which it rested? What does this mean about the way gravity pulls on objects of different mass? of equal mass? Record your observations in your ScienceLog.
- 5. Now hold the crumpled paper in one hand and the flat piece of paper in the other. Drop both pieces of paper at the same time. What do you observe? Does the result have anything to do with gravity? Why or why not? Record your observations in your ScienceLog, and share your ideas with your classmates.



Analysis	Quest4:
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Analysis Quest5:		

What is gravity?: Gravity is a _____between two objects. Gravity gets stronger as objects get bigger and closer together. The bigger the object, the more gravitational pull it will have on nearby objects. The Earth is so big, that it is able to pull the pieces of paper to its surface.

solar system ever came to be. We will talk about how the planets, including Earth, were formed. What is a solar system is composed of the (a star) and the other that travel around the other (a star) and the other (b star) around the other (b star) are the other (b star) around the other (b star) are the other (b star) around the other (b star) are the other (b star)	in how the
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that the other system is composed of the (a star) and the other that that the other	nd the sun.

It all starts with a Nebula: A what? A nebula is a _____ made up of ____ and ____ Nebulas are so big it takes many years to cross them. These nebulas are cold (10 degrees above absolute zero) and dark.

Gravity Pulls Matter Together: These nebulas
which consist of dust and gas have
and therefore have
However, the matter in a nebula is very spread out and because of this the attraction between the gas/dust particles is very small.

Pressure Pushes Matter Apart: As the molecules in a nebula are pulled together by gravity, they begin to hit each other and bounce back. These collisions create a push, or ______, within the nebula.

Together, gravity & pressure reach a balance in a nebula.

Because of gravity, the particles in a nebula are attracted to one another. 2 As the nebula's molecules get closer together, pressure increases and works in the opposite direction. 3 The inward force of gravity is finally balanced by the outward pressure, and the nebula becomes stable.

The Solar Nebula Forms:

The solar nebula changes

Once our solar nebula collapses, things happen quickly (on a cosmic scale!) The dark clouds collapsed, matter in the clouds got closer and closer together. The gas and dust particles moved at a faster rate. The center of the cloud got hotter and hotter and hotter. And it keeps changing... Before you know it... the dust and gas begins to rotate slowly around the hot center and the solar nebula flattens into a disk.

Planetesimals Form

With so many collisions happening in this swirling vortex of cloud, bits of dust start sticking together. This dust begins to form the building blocks of called .



Planets Form

The bigges	st planetesimals collect n	nore and more of the	e dust & gas and eventually become a
Inner & C	Outer Planets Form		
The	planets (or	planets)Jupiter	r, Saturn, Uranus and Neptune, were all able to collect a ton of dust
in the cool	er, outer solar nebula. Or	nce they grew large	enough, their gravity was strong enough to attract the nebula gases,
hydrogen a	and helium. The	planets (or	planets) - Mercury, Venus, Earth & Mars, couldn't take the
heat and al	ll of the gases burned off	leaving only the ro	cky parts.

What makes an inner planet different from an outer planet?

Inner Planets:

- Few or no _____ atmosphere
- core in Earth & Mars

Outer Planets:

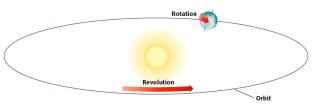
- Mostly atmosphere
- moons core
- not dense

Planetary Motion: Rotation

The Earth spins, or , around its axis. Only 1/2 of the earth faces the sun at any given time. As the earth rotates, different parts of the Earth receive sunlight. The half facing the sun is _____(____), and the half facing away from the sun is (). Did you know we're all a little crooked?? The Earth's axis is tilted 23.5°. The Earth also rotates very quickly -1000 miles per hour! How long does it take the Earth to complete one rotation (or one spin around its axis)? It takes one day - or 24 hours.

Planetary Motion: Revolution

The Earth also travels around the sun in a path called an . The motion around the sun along its orbit is called a . The other planets ALSO revolve around the sun on their orbits. How long does it take the Earth to revolve around the sun? The Earth revolves around the sun in 365 days or 1 year. We call this the . Make sure you know the difference between revolution & rotation!!!!



Question of the day

hemisphere's winter.

Why do we have seasons??? Does the Earth get closer to the sun for summertime to occur?????

The placement of the Earth in orbit has NOTHING to do with seasons The seasons are caused by ______. Hey, didn't I warn you _____. Hey Northern Hemisphere is tilted toward the sun. In the winter, the Northern Hemisphere is tilted away from the sun. In fact, Earth is actually closest to the sun during the Northern

