**<http://www.kidsastronomy.com/academy/lesson110_assignment2_4.htm>**

**Some Astronomy History:**

**There have been many great scientists all around the world.  The first of these lived in ancient Greece, and Arabia thousands of years ago.  They discovered the size of the Earth, named many of the stars and constellations, and were very smart.  Sadly, for a very long time after these scientists died people did not remember what they had discovered.  That is until around 500 years ago when a period of time known as the renascence began.**

**Copernicus:**

**The first of these renascence scientists was a man named Copernicus.  In 1543 Copernicus published a book about a new idea he had.  Most people in his day thought that the Earth was at the center of the Universe.  They thought that the stars were little holes in a glass ball which surrounded the Earth.**

**Copernicus thought, "what if the Universe is not centered on the Earth, what if the Earth is actually a planet circling the Sun".  Not many people liked his book, they may have put him in jail for writing it, if he hadn't died shortly after he published it.**

**Of course we know today that Copernicus was right.  The Earth really is a planet which circles the Sun.**

**Galileo Galilei:**

**Shortly after the death of Copernicus the next great Astronomer was born.  His name was Galileo.  Galileo was the first Astronomer to use what we call science to find out what the Universe is made of.  Copernicus was right, but he was only guessing.  Galileo was not going to guess.**

**In the fall of 1609 Galileo heard about a new invention called a telescope.  He decided to build a telescope and use it to look at the Universe.  Up until now people had only been able to guess what the Universe was, but Galileo was actually going to look at it and find out the truth.**

**You may remember that in Astronomy Packet # 1 we talked about some of the things Galileo saw with his telescope.  He looked at the milky way and discovered that it was made up of millions of stars, each at a different distance from the Earth.  If the Universe was really a glass sphere then all the stars would be at the same distance from the Earth.**

**When he looked at the Moon he discovered mountains, valleys, and craters.  Everyone at that time thought the Moon was also a perfectly round ball.  Galileo discovered that it was not.**

**He noticed that the planets Mercury and Venus pass through phases just like the Moon.  The only way they could do that is if they circled the Sun, and not the Earth.**

**And most importantly of all Galileo discovered four moons around Jupiter.  This meant that everything in the Universe did not circle the Earth.  He could clearly see four moons which circled Jupiter.**

**In addition to these discoveries Galileo also discovered that everything falls at the same speed.  If you jumped off a bridge at the same time as an elephant you would both hit the water at the exact same time.  Galileo did not throw an elephant off a bridge, instead he dropped two round balls off the Leaning Tower of Pisa.  One was very heavy, and one was light.  Both hit the ground at the same time.**

**The most important thing about Galileo is that he was not guessing.  He could clearly prove to anyone that what he had discovered was true.**

**Isaac Newton:**

**Galileo accomplished a lot of amazing things in his life, but they pail in comparison to what Isaac Newton was able to do.  He invented Calculus a difficult type of math, he discovered prisms, he invented a new type of telescope, he discovered the laws of motion which govern how things move in space, and he was the first person to explain mathematically how gravity works.**

**Newton's Myth:**

**Most people think that Isaac Newton discovered gravity when he was hit on the head by a falling apple.  This story is actually not true.  People have known since the beginning of time that apples go down when they fall from trees.  What Newton did was realize that the force of gravity follows the same mathematical rules as light.  He did this by observing how quickly the Moon circles the Earth.**

**Newton's Laws of motion:**

**As stated above Isaac Newton was the first person to understand how objects move in outer space.  He came up with three laws, which we still use today.   He described these laws as such:**

**1.  An object continues at rest or in motion in a straight line unless acted upon by another object or force.**

**2.  The acceleration of an object is inversely proportional to its mass.  In other words the heavier an object is, the more energy it will take to speed it up, or slow it down.**

**3.  To every action there is an opposite and equal reaction.  Or in other words if you push on something in outer space, it will push against you just as hard.  If you throw something in outer space you will go the opposite direction.**