|  |
| --- |
| And it all started with a Big Bang |

|  |
| --- |
| The 4 Fundamental Forces were created:   * Gravity * Electromagnetism * Strong Nuclear Force * Weak Nuclear Force |
| All the matter & energy that will ever exist is created. |

|  |
| --- |
| As the universe expanded, it cooled and Hydrogen & Helium began to form. |
| Gravity begins to pull matter together forming areas of Hydrogen & Helium. |

|  |
| --- |
| Collisions of Hydrogen & Helium atoms generate heat. |
| Denser clouds of Hydrogen & Helium causes Gravity to Increase. |

|  |
| --- |
| Temperatures Reach 10 Million Degrees Celsius. |
| The First Stars Form. |

|  |
| --- |
| Stars use elements as fuel and create new elements. |
| Stars Run Out of Fuel. |

|  |
| --- |
| Stars explode in a Supernova creating even more chemical elements. |
| Because a supernova exploded near the Milky Way Galaxy, then it became seeded with all of the various elements. |

|  |
| --- |
| Because gravity began to interact and push all of these elements together, then the conditions became just right for a protoplanetary disk to develop. |
| Because of the abundance of Hydrogen and Helium at the center of the protoplanetary disk and the effects of gravity, then when temperatures hit 10 million degrees Celsius, our Sun was born. |

|  |
| --- |
| Because gravity continued to force the various atoms and molecules to orbit around our newly formed Sun, then because of random collisions, these atoms and molecules began to accrete and eventually grew into meteors, asteroids, planetesimals, and planets. |
| Because of the Sun’s intense heat, most of the lighter elements such as Hydrogen and Helium were blown further out into our Solar System. |

|  |
| --- |
| Because the majority of the heavier elements were closer to the Sun, the 4 inner planets became terrestrial (rocky) in composition. |
| Because the majority of the lighter elements were further from the Sun, the 4 outer planets became gassy in composition. |

|  |
| --- |
| Because the early Earth was extremely hot, and most of the metals sank to the core, the Earth’s core became solid metal and produced a magnetic field that protected the Earth from the Sun’s radiation. |

|  |
| --- |
| Because the Earth developed a liquid type mantel and a solid crust, Earth’s continents shifted and moved as the Earth constantly recycled its solid rocky material. |

|  |
| --- |
| Because there was a Mars sized object that struck the young Earth, then Earth began to rotate on its axis and the debris from the collision accreted to form the Moon. |
| Because of the gravitational pull between the Earth and the Moon, the Earth’s oceans have a predictable rise and fall (tides). |

|  |
| --- |
| Because there have been millions of supernovae throughout the universe, then there have been the creation of many exoplanets that orbit other stars. |
| Because the Earth developed an atmosphere and was just the right distance from the Sun, liquid water appeared. |

|  |
| --- |
| Because the Earth was a rocky planet with many complex chemical elements and just the right amount of energy, simple life forms began to develop. |
| Because of the development of DNA, new and more complex life forms began to appear. |

|  |
| --- |
| Because of the development of nerve cells, organisms developed brains that allowed for thinking and consciousness. |
| Because organisms moved to land, they developed skin to avoid drying out, ways to breathe out of water, and new ways to reproduce. |

|  |
| --- |
| Because an asteroid wiped out most of the dinosaurs, mammals soon replaced them as the dominant species on the planet. |