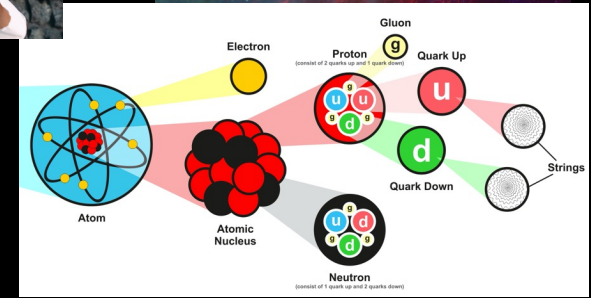
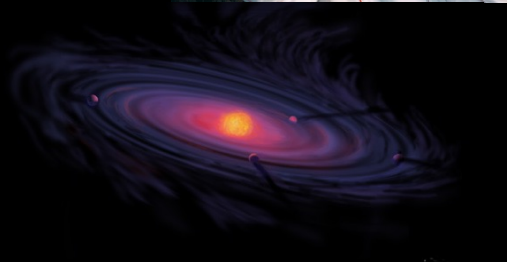
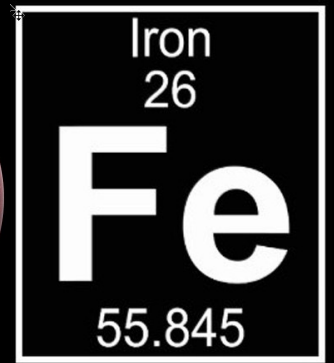
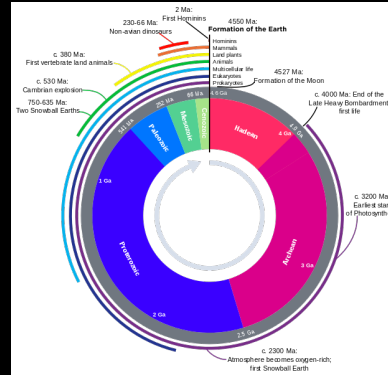


Earth's Origins - How We Got Here

- In The Beginning
- Nucleosynthesis
- The Circle of Life
- Historical Timeline
- The Creation of Earth
- Angular Momentum
- Protoplanetary Disk
- Nebular Hypothesis
- Earth's Shape and Dimensions



Preview File

Please enjoy this preview of your Student Version of the presentation. Please note within this sample file:

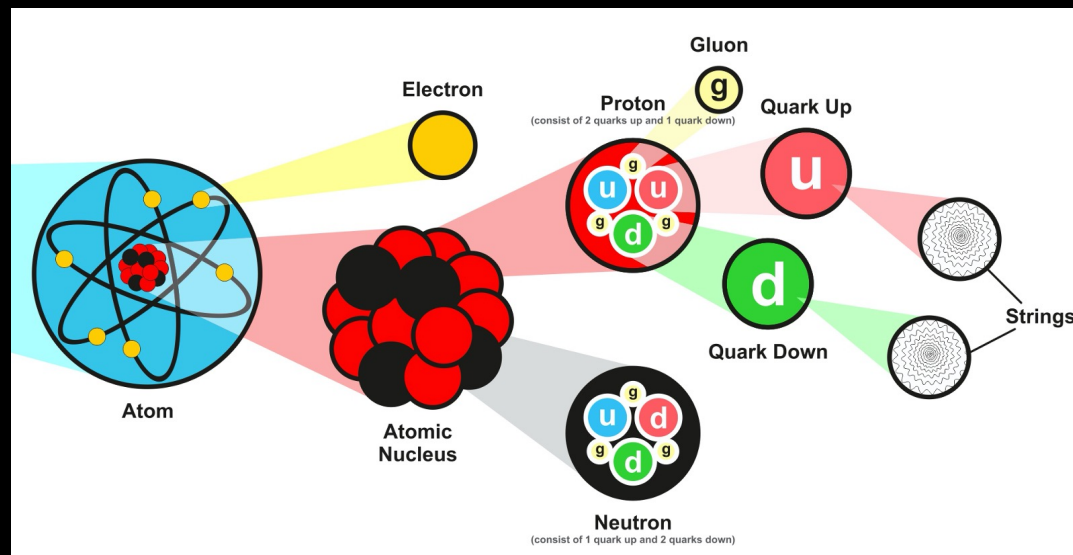
- Some slides appear blank because they have been removed
- Student versions have portions of the text removed which is given in the teacher version and appear as _____ which the students are to fill in
- Other slides may have on them, this represents writing that has been removed on this sample

The paid full version of your resource includes both Google Slides and PowerPoint and is Google Classroom Ready



In the Beginning...

- The universe was energy
- Energy became elementary particles called Quarks
- Quarks combined to become Protons, Electrons, and Neutrons
- _____



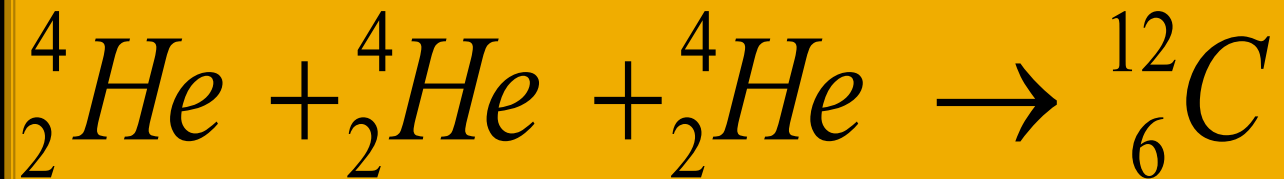
In the Beginning...

- While the universe was first expanding, the first elements to form were hydrogen and helium
- Eventually, ...
- _____
- So, where did all the other elements that make up the Earth come from?



In the Beginning...

- Recall: As the universe was changing from energy into particles, the force of gravity was becoming more dominant
 - Gravity pulled these clouds of gas together to make stars
 - When the inward pull of gravity was strong enough,
-



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HAS BEEN REMOVED**

The Circle of Life

- _____
- Then, gravity can collapse these heavier elements into new stars and planets
- We are all just stardust
- In order for us to live, stars had to die → Circle of Life!



Note: The explosive energy in a Supernova is enough to fuse all the rest of the elements from iron up to uranium

Earth



- This means that it is impossible for the Earth to have been around at the beginning of time

- _____

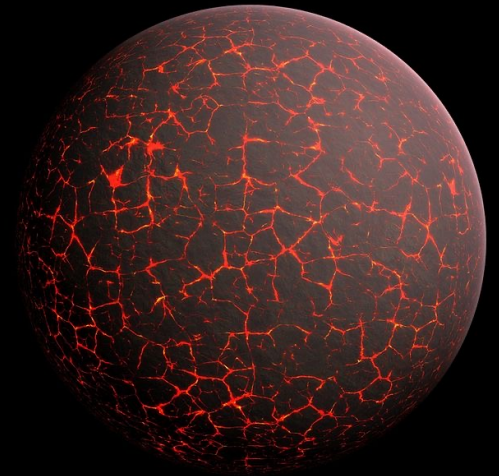
Timeline of Creation

- The Beginning: 14 billion years ago
- The Milky Way: 13 billion years ago
- Our Solar system
 - The Sun: 4.6 billion years ago
 - The Earth: 4.6 billion years ago
 - The Moon: 4.5 billion years ago

**THE CONTENT ON THIS SLIDE
HAS BEEN REMOVED**

The Creation of Earth

- All
- At first, it was a gigantic cloud of dust and gas
- _____
- Gravity works in 3 dimensions and tends to pull things towards a common centre in an even manner
 - This results in a sphere



Early Earth

Angular Momentum



1

- But, if gravity is pulling things inward, why is everything spinning???

- _____
 - _____

CLICK THE VIDEO
IMAGES IN SLIDESHOW
MODE TO ACCESS THE
VIDEO.



2

- A giant cloud of gas doesn't move very fast but, as it collapses, it speeds up!
- Just

Gravity

But, if gravity makes things into spheres, why is everything flat?

Galaxies



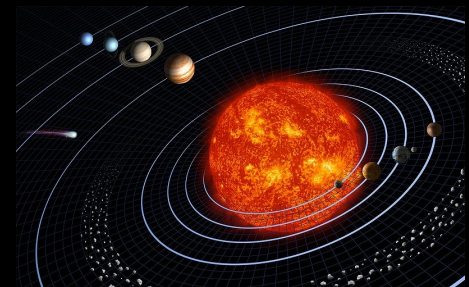
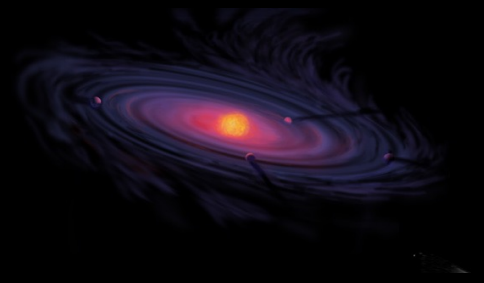
M82 Galaxy



Andromeda

Even though galaxies are technically flat... the Milky way is still 1000 ly thick!!!

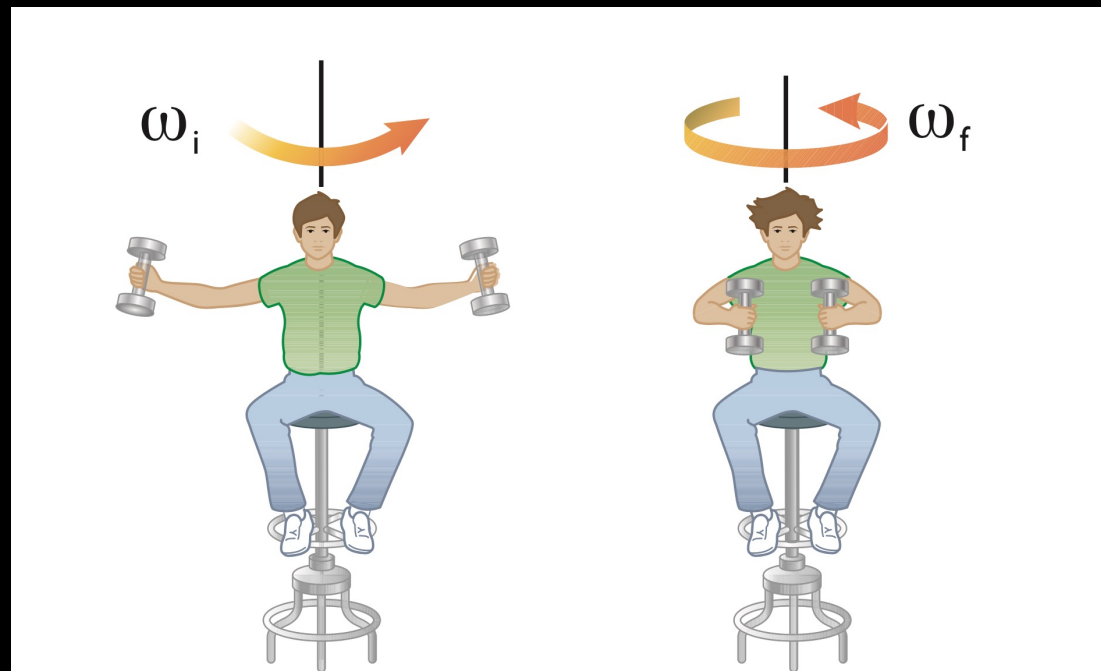
Solar Systems



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Angular Momentum

- As gravity pulls things towards their centre, the radius (l) gets smaller
- _____



Angular Momentum



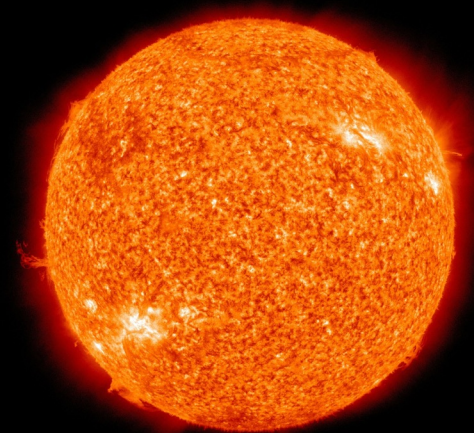
- Therefore, things will want to spread out along the direction of the spin
 - I.e. things that spin will tend to flatten out



Outward Circular Motion

- It is this outward circular motion that is balanced with the inward pull of gravity that keeps all matter from falling into the Sun

- _____



Protoplanetary Disk



3

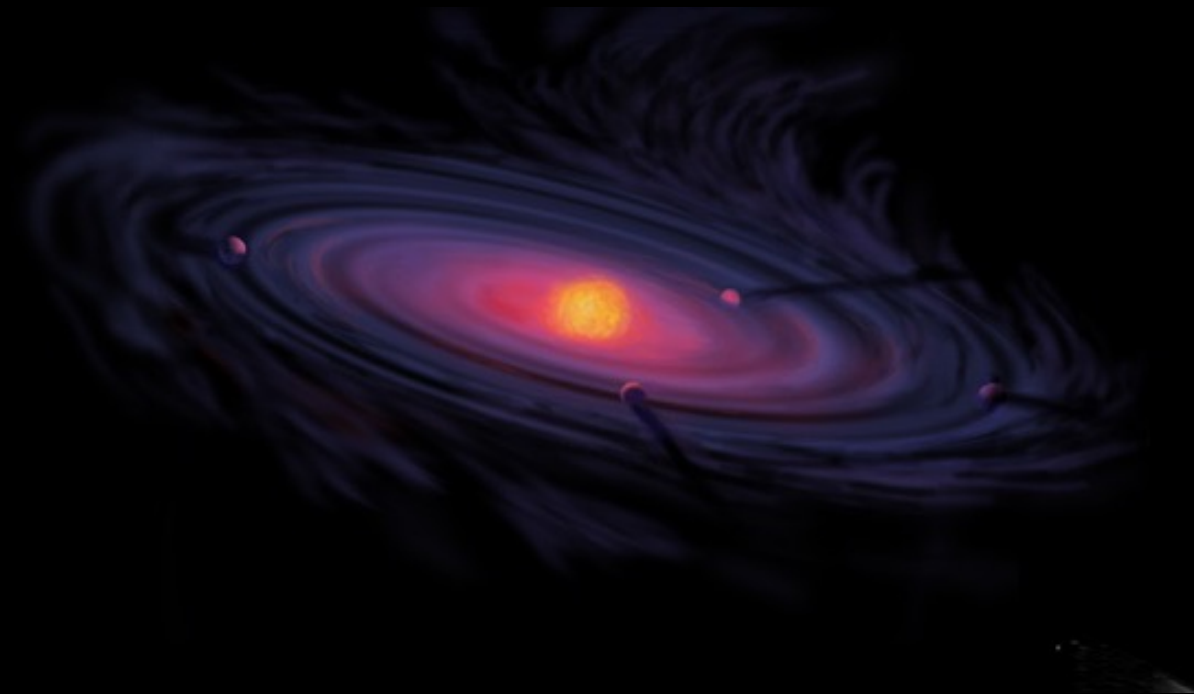
An artist's conception of a protoplanetary disk

- Proto = first, earliest, or original

- As the original gas/dust cloud collapses with gravity, everything flattens out
- The sun is created at the centre with most of the mass and

- Accretion is the

.....



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HAS BEEN REMOVED**

Earth's Shape

■ _____



Note: This picture is an exaggeration. The Earth is actually pretty close to a sphere.

Earth's Dimensions

- Mean radius 6,371.0 km
- Equatorial radius 6,378.1 km
- Polar radius 6,356.8 km
- Flattening of 0.3%
 - Therefore, the Earth is flattened by 0.3% when you compare the poles to the equator

