What's Going On?

Checking In

Minds on How Big?

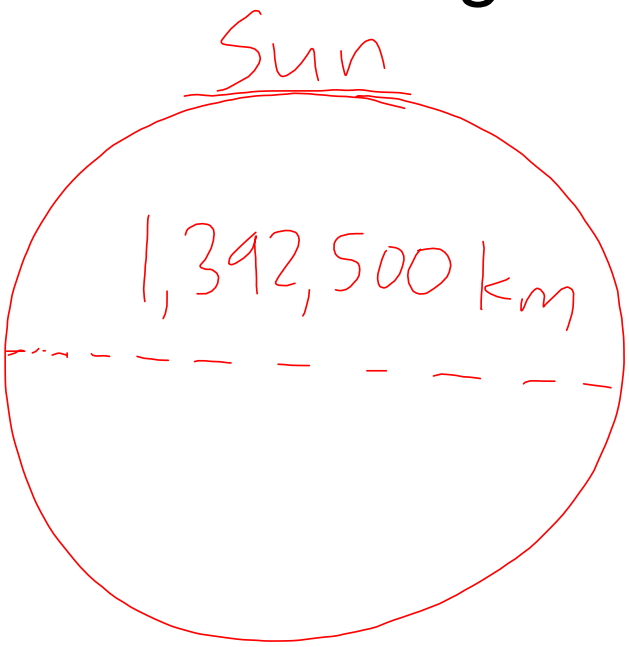
Action! The Solar System

Consolidation Charting the Planets

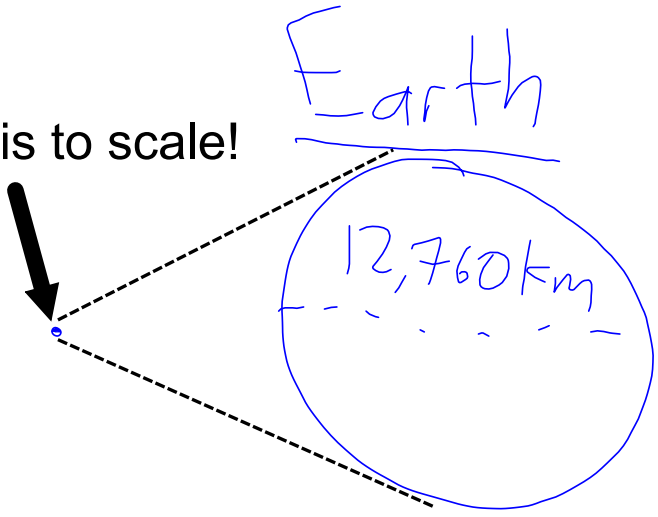
Learning Goal - I will be able to describe how the solar system, and the planets, were formed.

Minds on

How Big?



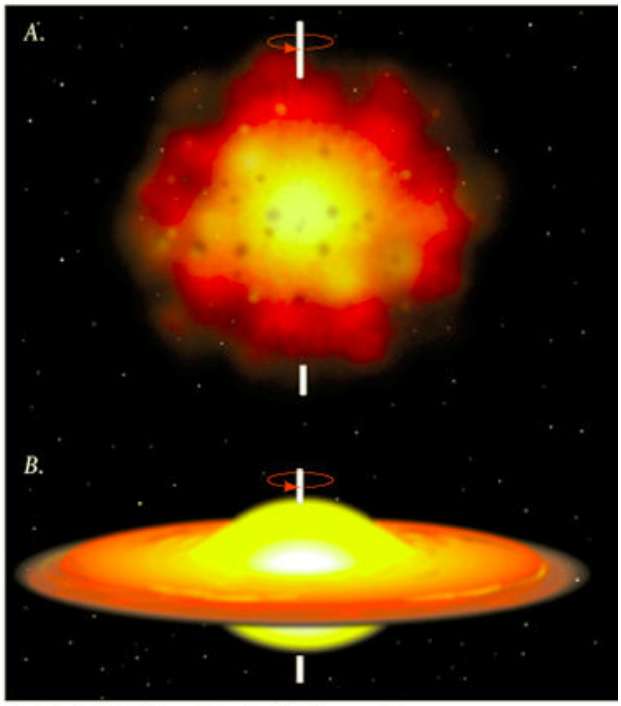
Here it is to scale!



Action!

The Formation of the Solar System

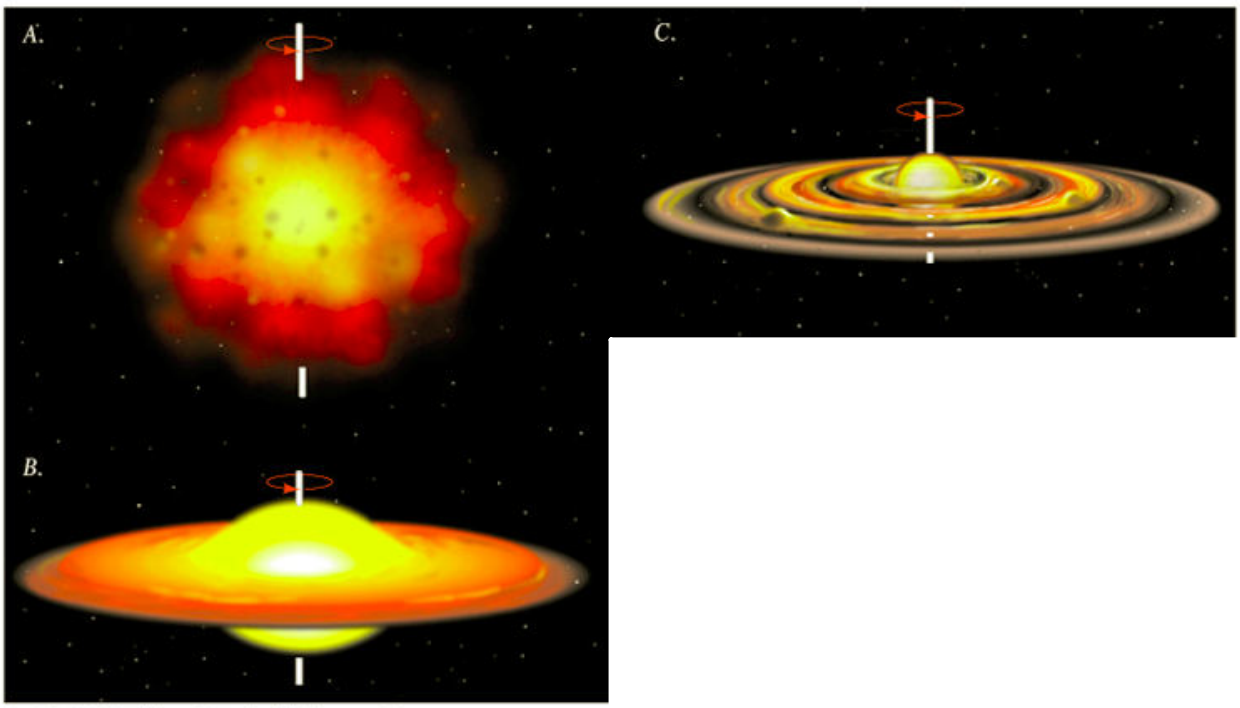
After the Sun formed, the leftover gas, dust and other debris in the nebula continued to spin, creating a disk around the new star.



Action!

The Formation of the Solar System

Small bodies began to form, growing into the planets, moons, asteroids, and comets that make up the solar system.



Action!

The Formation of the Solar System

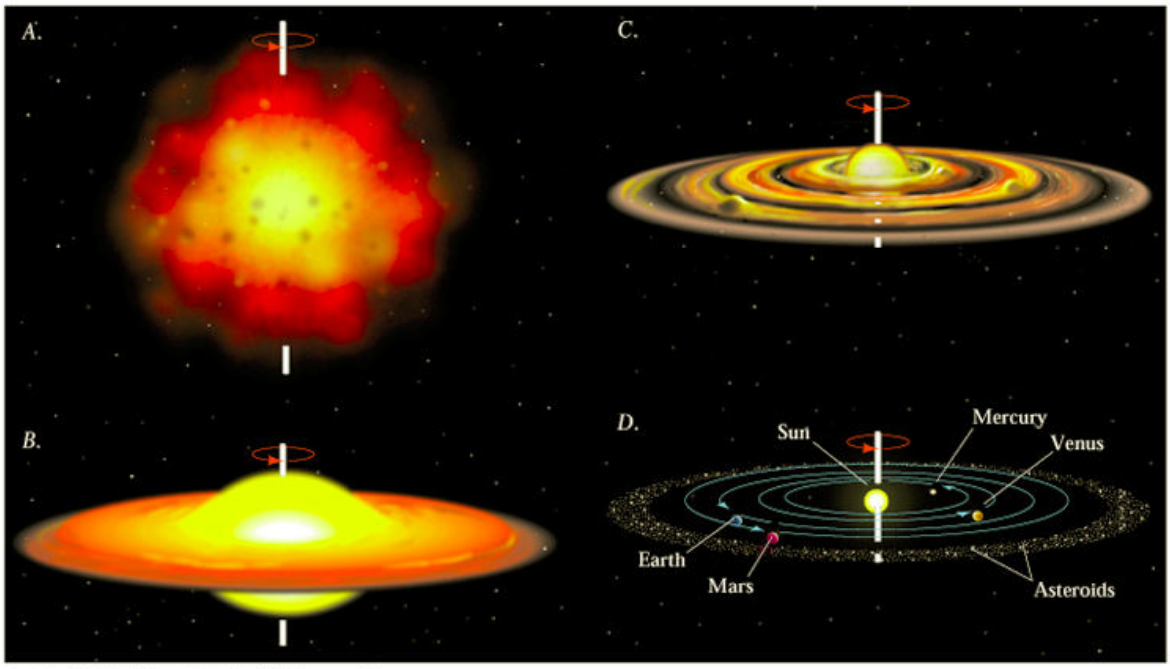
A planet is a _celestial_ object that orbits one or more _stars_ and is capable of forming into a _spherical_ shape under its own weight due to _gravity_. A planet does not create and radiate its own _light_, it merely _reflects_ the light of the star it _orbits_.

Action!

The Rocky Inner Planets

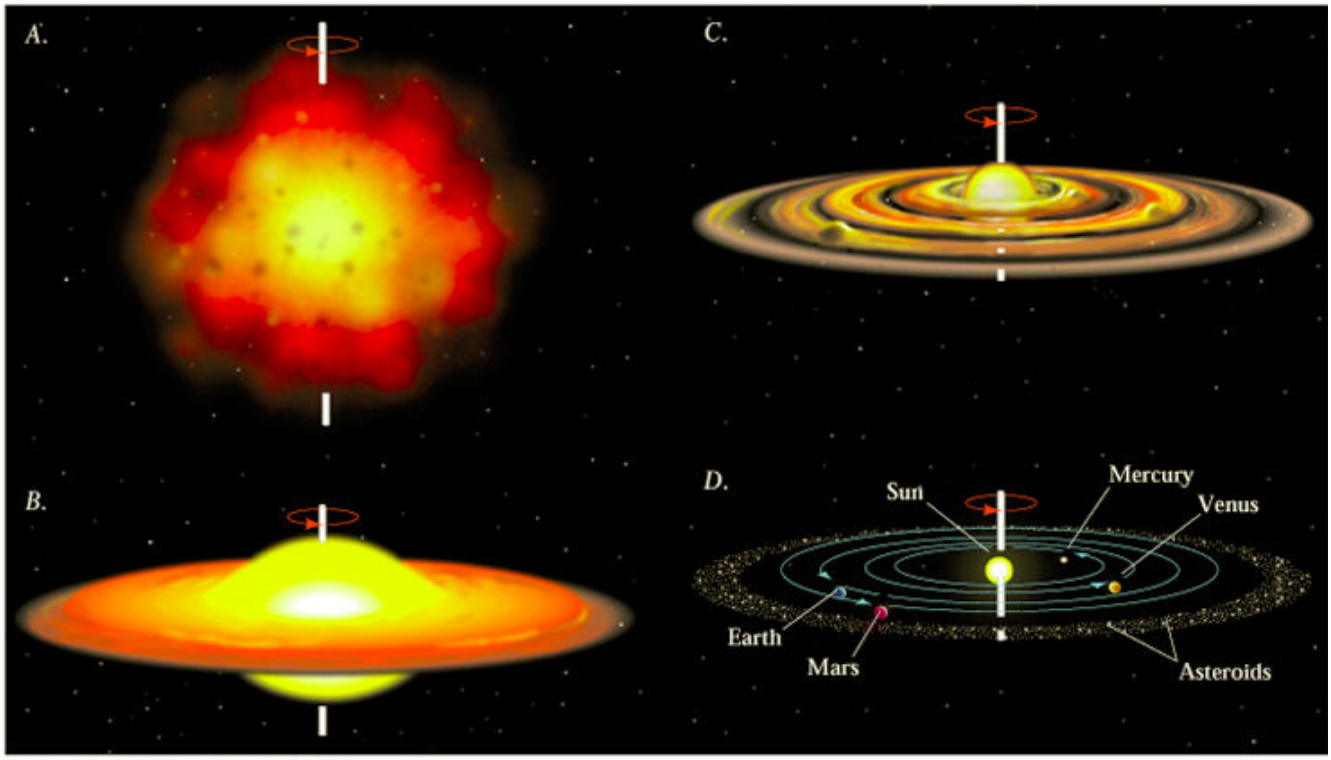
As the particles of dust and gas slammed into one another, they began sticking together. As they got bigger in size, gravity caused them to bind together more strongly. Objects orbiting too close to the Sun gradually fell into it, drawn by its gravitational force, and burned up.

However, 4 large objects lasted and eventually formed into the inner planets, Mercury, Venus, earth and mars.



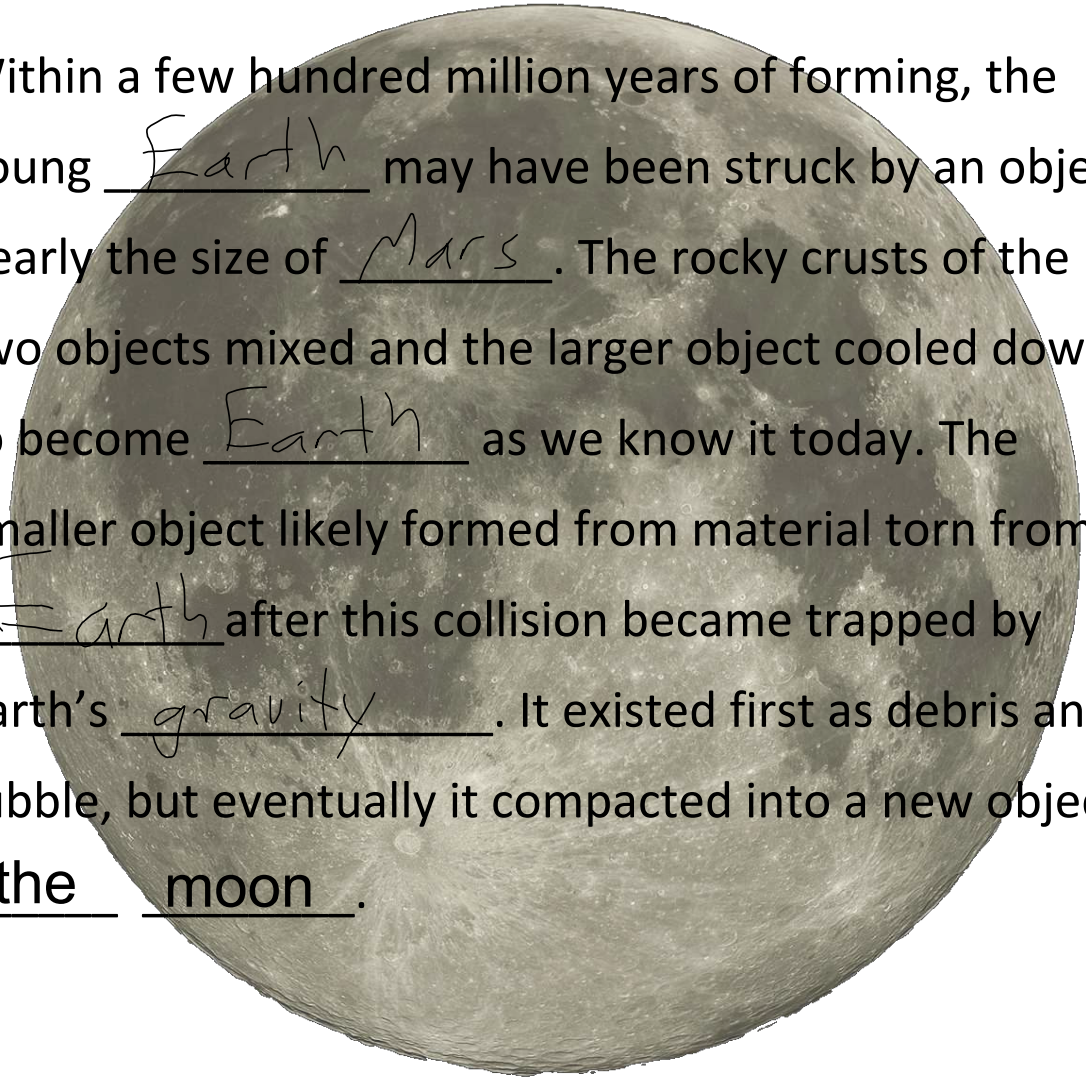
Action!

The Formation of the Solar System



Action!

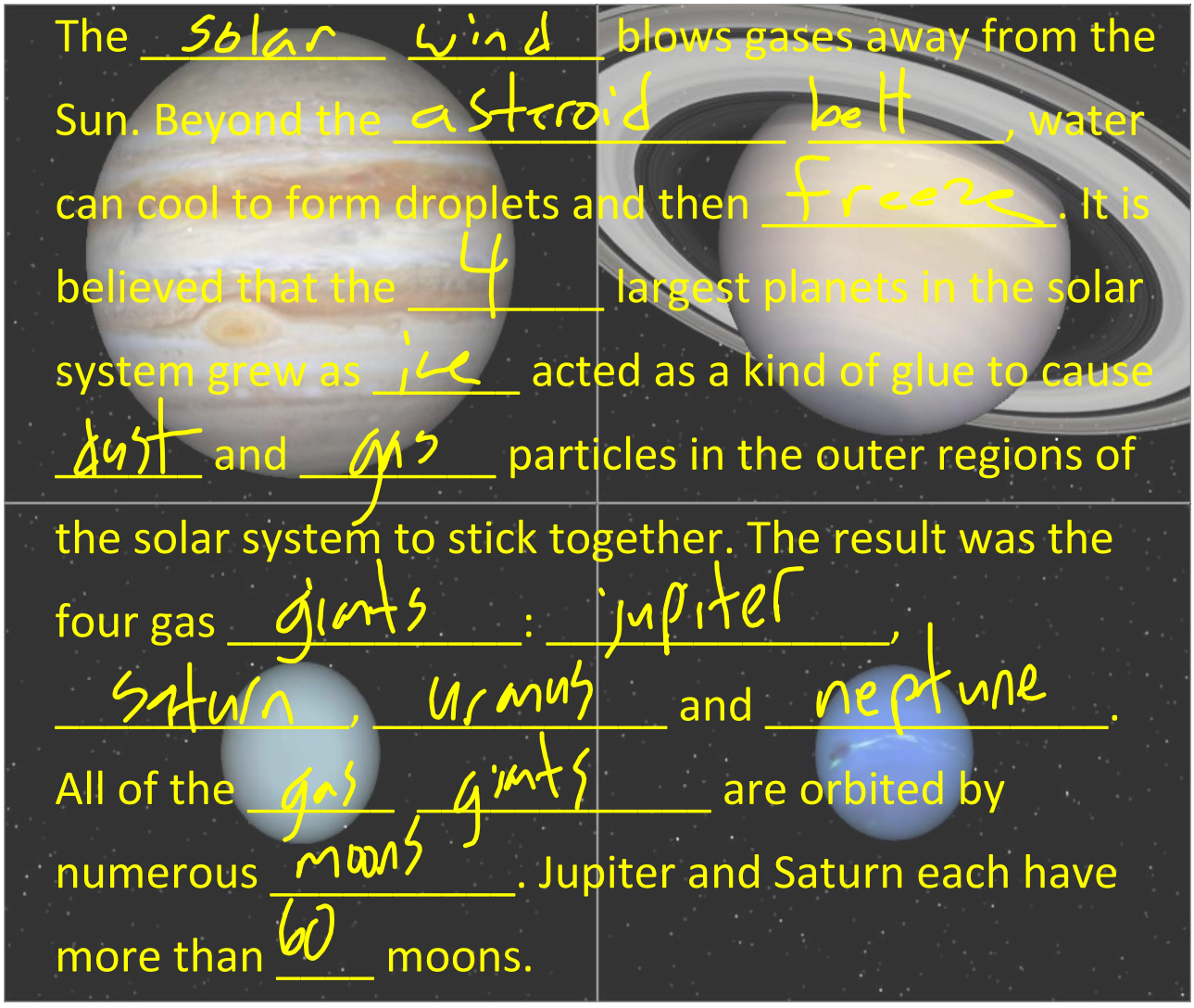
Earth's Moon



Within a few hundred million years of forming, the young _Earth_ may have been struck by an object nearly the size of _Mars_. The rocky crusts of the two objects mixed and the larger object cooled down to become _Earth_ as we know it today. The smaller object likely formed from material torn from _Earth_ after this collision became trapped by Earth's _gravity_. It existed first as debris and rubble, but eventually it compacted into a new object, _the moon_.

Action!

The Gaseous Outer Planets



The solar wind blows gases away from the Sun. Beyond the asteroid belt, water can cool to form droplets and then freeze. It is believed that the 4 largest planets in the solar system grew as ice acted as a kind of glue to cause dust and gas particles in the outer regions of the solar system to stick together. The result was the four gas giants: Jupiter, Saturn, Uranus and Neptune. All of the gas giants are orbited by numerous moons. Jupiter and Saturn each have more than 60 moons.

Action!

The Minor Planets

Beyond the gas giants are a number of very large balls of ice. These are called minor or dwarf planets, the most famous of which is Pluto. There are millions of small objects like Pluto orbiting the sun. Together they create a thin disk like the asteroid belt that forms a ring around the entire solar system. About 25 of these are large enough to be considered minor planets.

Action!

The Minor Planets

What Makes a celestial object a Planet?

1. It must orbit one or more stars.

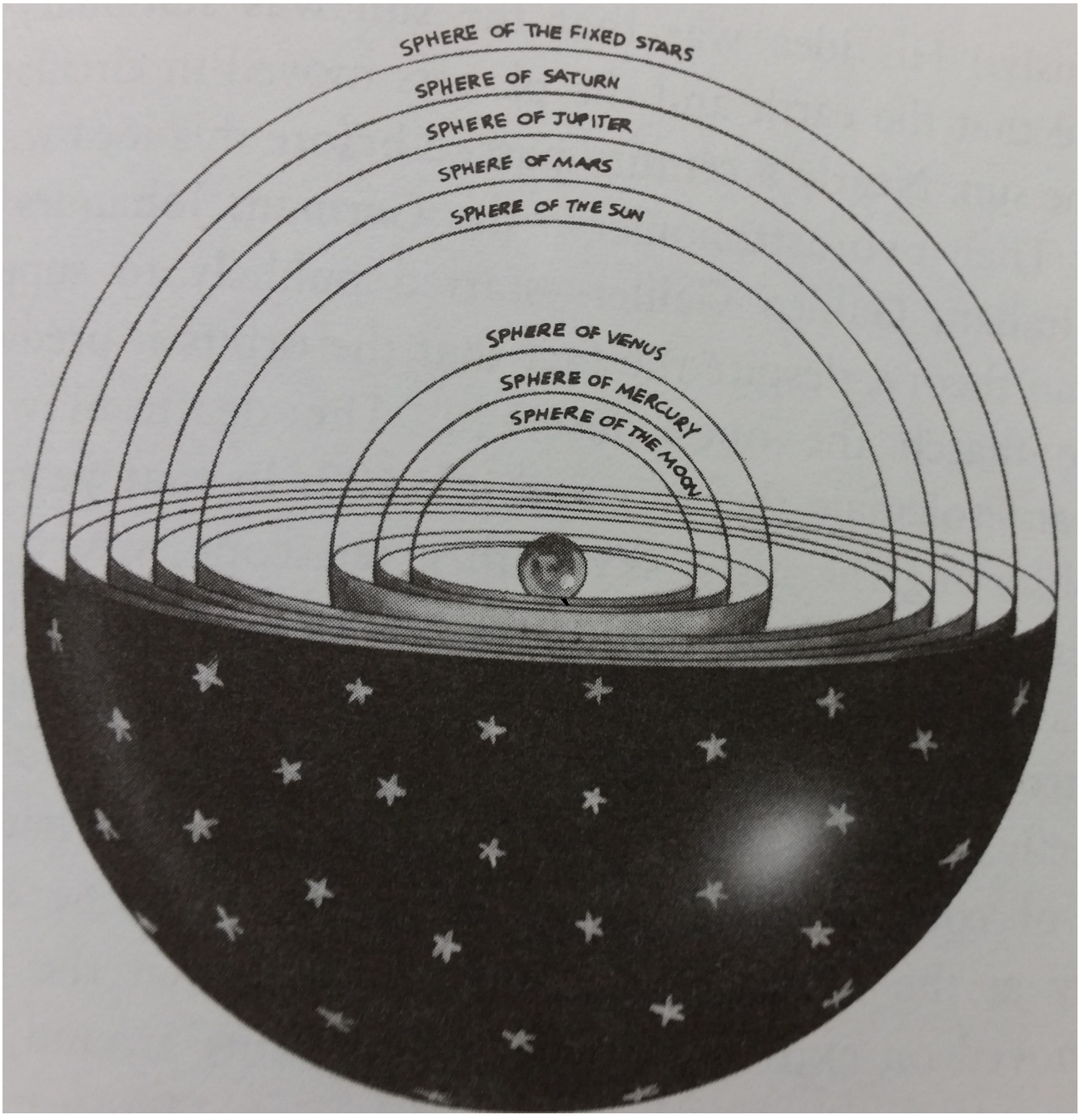
2. It must be massive enough to pull itself into a spherical shape.

3. It must be large enough to have cleared its neighbourhood.

or incorporated

Why is Pluto no longer a planet?!

It did not clear it's neighbourhood / path.


SPHERE OF THE FIXED STARS
SPHERE OF SATURN
SPHERE OF JUPITER
SPHERE OF MARS
SPHERE OF THE SUN
SPHERE OF VENUS
SPHERE OF MERCURY
SPHERE OF THE MOON

Action!

Comets and Meteors

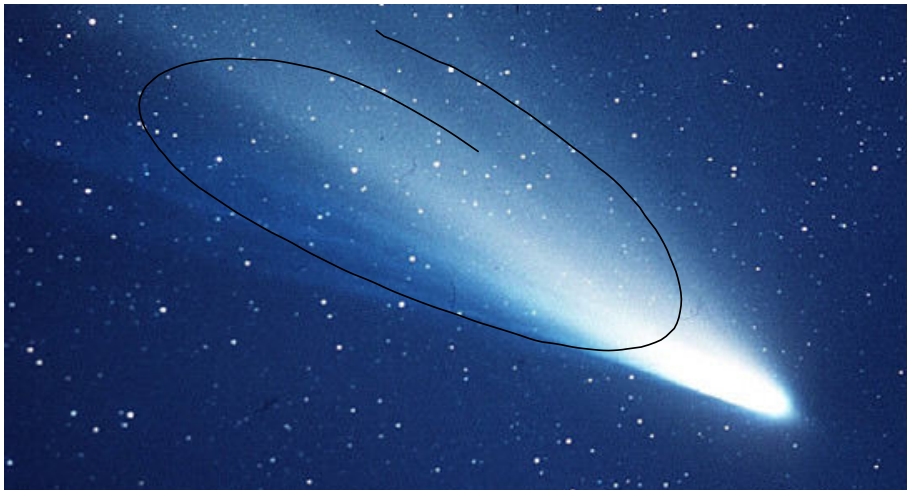
The most distant region of the solar system is the Oort Cloud. It consists of billions of fragments of ice and dust and is a major source of comets.

The Oort Cloud

Action!

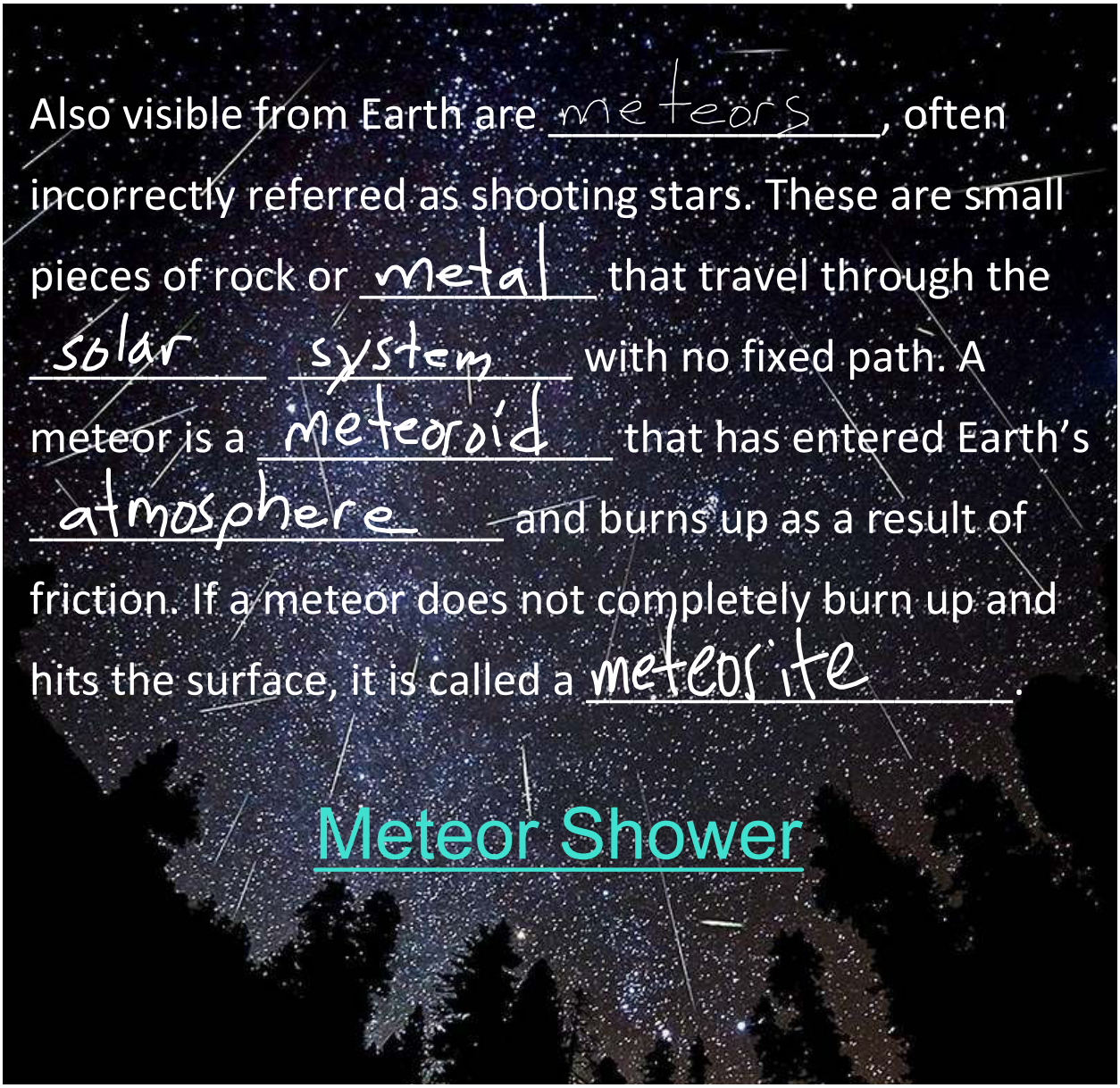
Comets and Meteors

A comet is a celestial object made of ice and dust. When a gravitational disturbance causes a comet to change its orbit and fall nearer the Sun, the Sun heats the comet, causing some of its ice particles to break away and spread into a tail millions of kilometers long, lit up by the Sun. Comets can sometimes be seen from Earth, passing across the sky over several days.



Action!

Comets and Meteors



Also visible from Earth are meteors, often incorrectly referred as shooting stars. These are small pieces of rock or metal that travel through the solar system with no fixed path. A meteor is a meteoroid that has entered Earth's atmosphere and burns up as a result of friction. If a meteor does not completely burn up and hits the surface, it is called a meteorite.

Meteor Shower

Consolidation

Homework

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7, 8, 12

And: Complete the giant handout

Homework!

Attachments

- 1 - Intro to Space - 1 - Contact Opening Scene.mp4
- Intro to Space - The Beginning of the Universe.mp4
- 1 - Intro to Space - 1 - Celestial Objects.mp4
- 1 - Intro to Space - 2 - How Many.mp4
- 1 - Intro to Space - 4 - What Makes a Planet.mp4
- 1 - Z - Intro to Space - How Many Universes.mp4
- A - Intro to Space - 1 - Contact Opening Scene.mp4
- B1 - Stars - Star Size Comparison.mp4
- B1 - (Stars) - Star Types.mp4
- B1 - (Stars) - Massive Stars in the Milky Way.mp4
- B1 - (Stars) - Tracking Stars Orbiting the Milky Way's Central Black Hole.mp4
- B2 (The Solar System) - 5 Years of the Sun.mp4
- B2 (The Sun) - 5 Years of the Sun.mp4
- B2 (The Sun) - Solar Flare.mp4
- B2 (The Sun) - Prominence.mp4
- B2 (The Sun) - Corona.mp4
- B2 (The Sun) - Solar Eclipse.mp4
- B2 (The Sun) - Aurora Borealis.mp4
- B3 (The Solar System) - Formation of Solar System.mp4
- B3 (The Solar System) - Formation of Moon.mp4
- B3 (The Solar System) - Oort Cloud.mp4
- B3 (The Solar System) - Meteor Shower.mp4
- B3 (The Solar System) - What Makes a Planet.mp4