Handout 2 (pink)
Earth's Formation

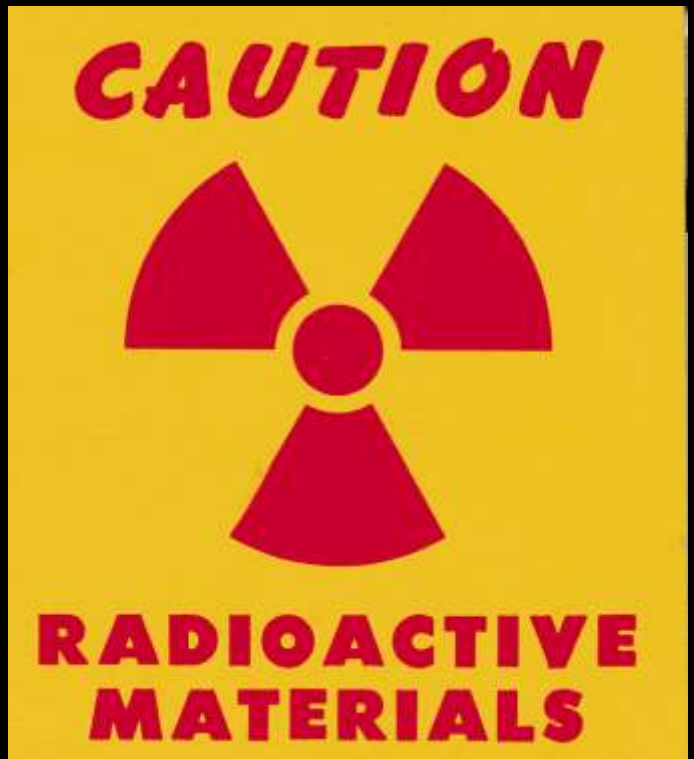
Determining Absolute Age

1. What is absolute age?

- The numeric age
- Actual age in years

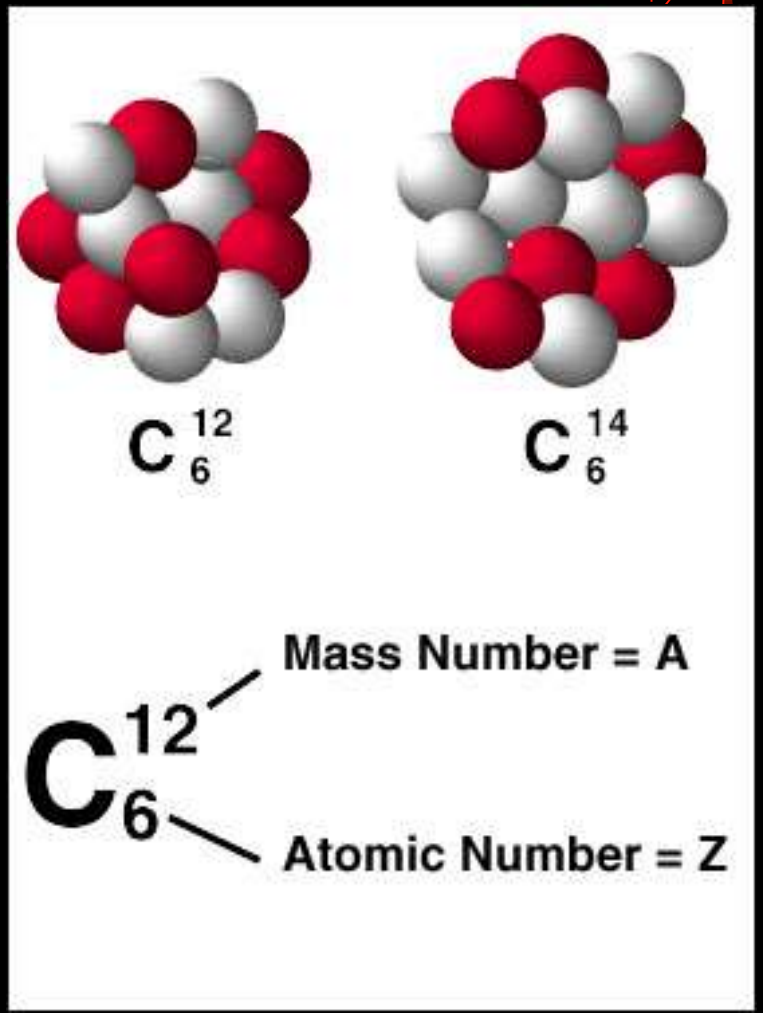
2. Small amounts of what type of materials in rocks can act as natural clocks?

- **Radioactive materials**



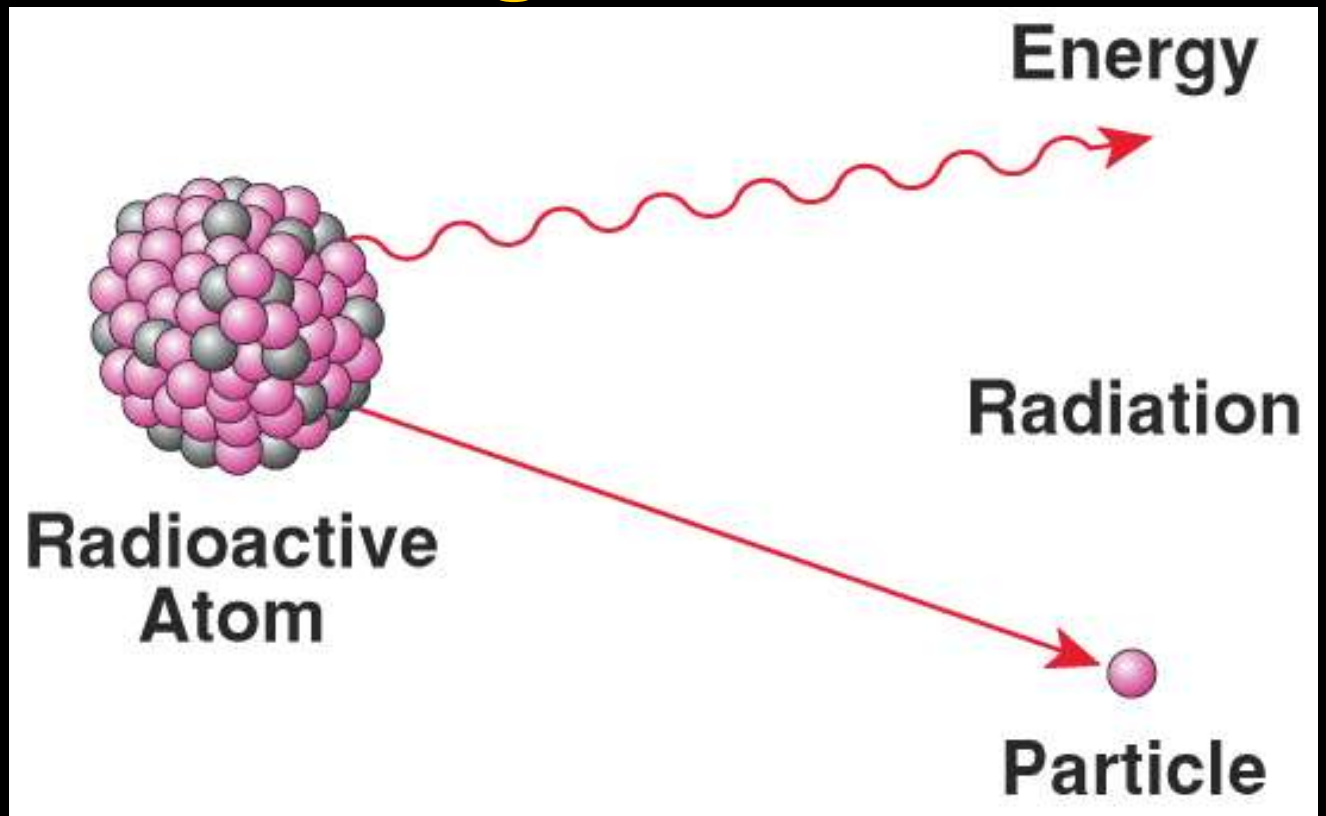
3. Atoms of the same element that have different numbers of neutrons are called

- **Isotopes**



4. Radioactive isotopes emit particles and energy

- **At a constant rate regardless of surrounding conditions.**



5. In what way is the natural breakdown of radioactive elements most useful?

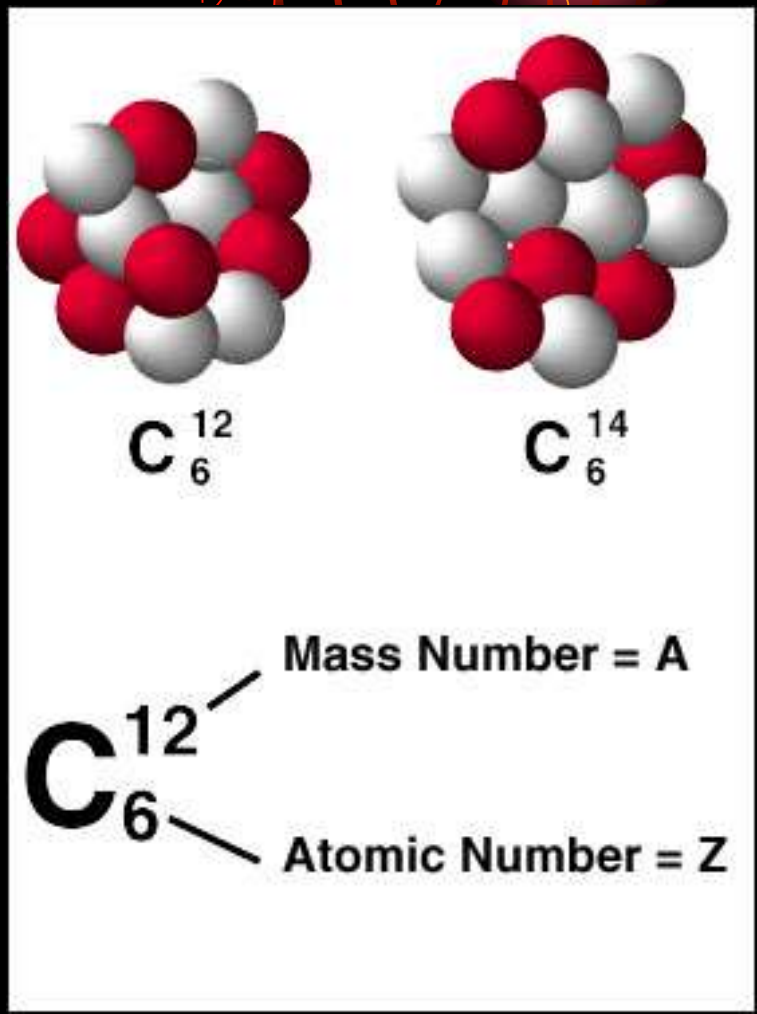
- It can accurately measure the absolute age of rocks.

6. The method of using radioactive decay to measure the absolute age of rocks is called

- **Radiometric dating**

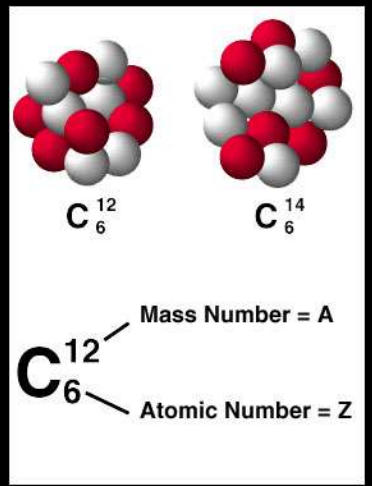
7. The original radioactive isotope in a rock is called

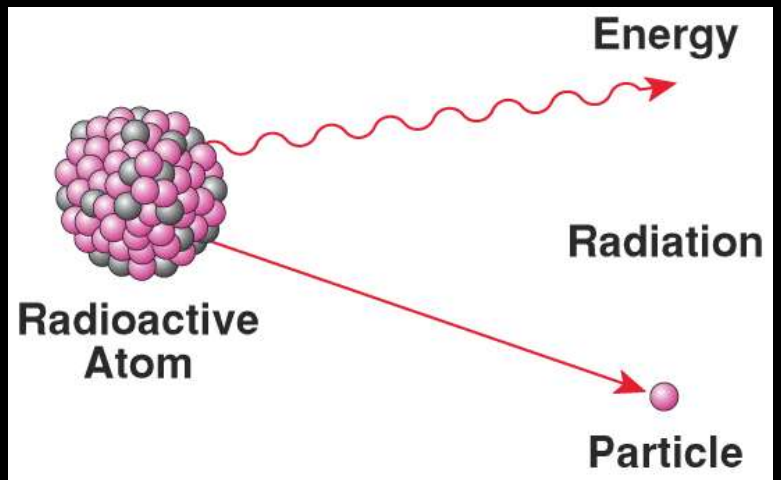
- **The parent isotope.**



8. What are daughter isotopes?

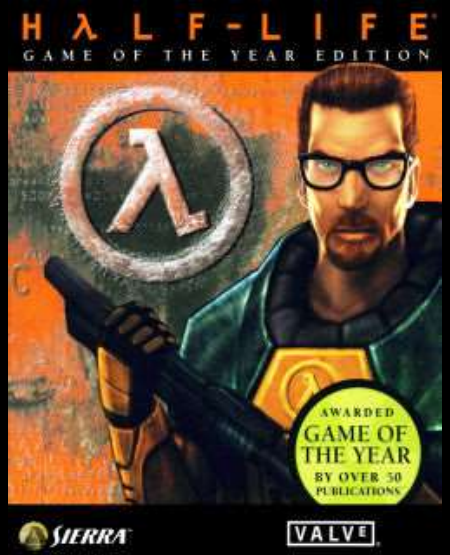
- **A different isotope of the same element or an isotope of a different element into which a radioactive atom has changed as it emits particles and energy.**





9. What is a half-life?

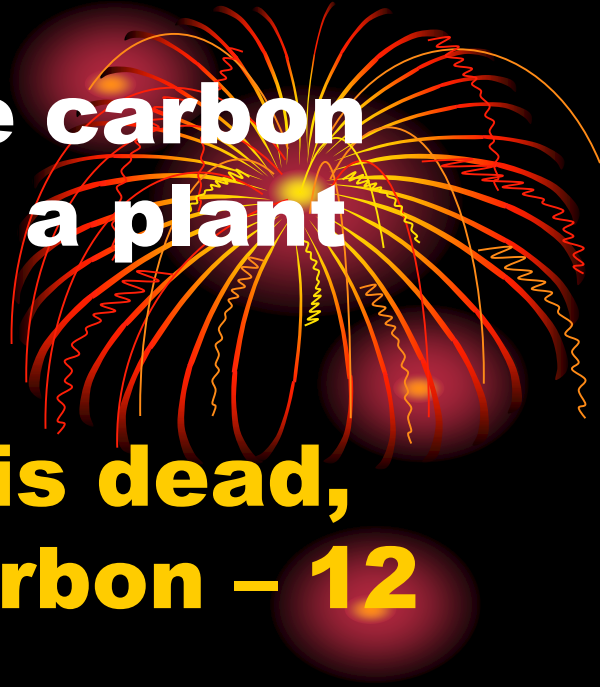
- **The amount of time it takes for half the mass of a given amount of a radioactive isotope to decay into its daughter isotope.**



10. What is the half-life of carbon – 14?

- about 5,730 years

11. Why does radioactive carbon – 14 begin to decay after a plant or animals dies?

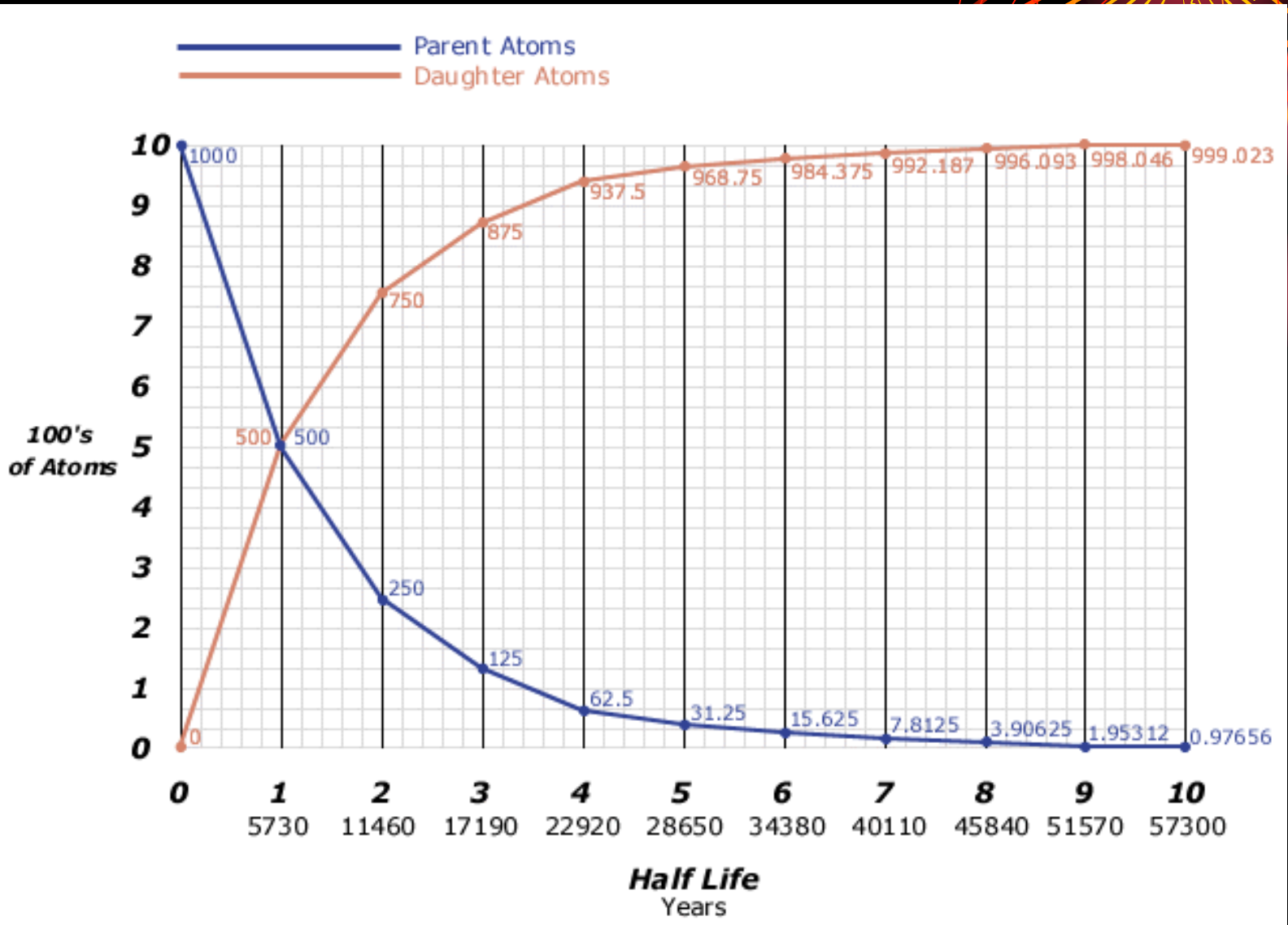


- **Because the organism is dead, it no longer absorbs Carbon – 12 or Carbon – 14.**

12. Explain how radiometric dating is used to estimate absolute age.

- ***By comparing the percentage of a radioactive (parent) isotope to a stable (daughter) isotope in a sample of rock, and based on the known rate of decay (half-life)of the parent, scientists can calculate the length of time since the rock formed.***

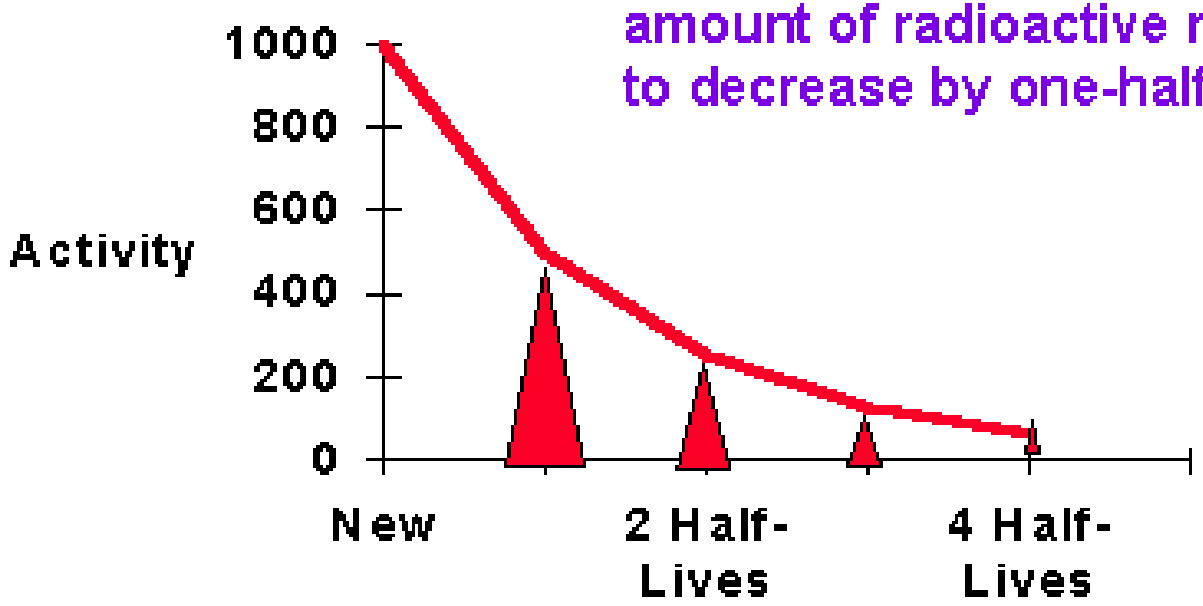
Radiocarbon Dating: Parent to Daughter



Eric B.

Half-Life

The time required for the amount of radioactive material to decrease by one-half

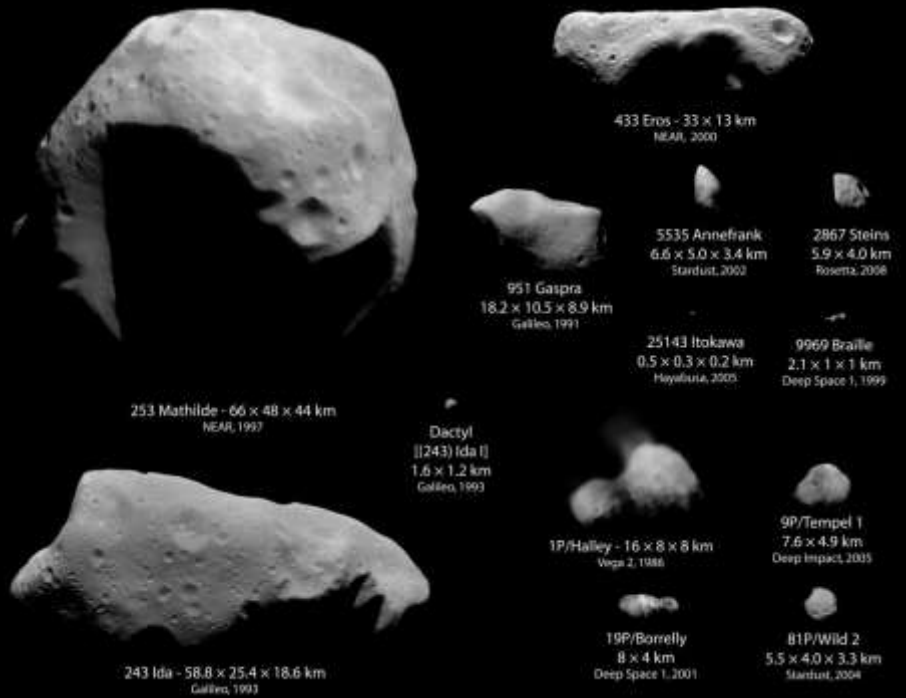


Chapter 28 Section 4

Asteroids, Comets, and Meteoroids

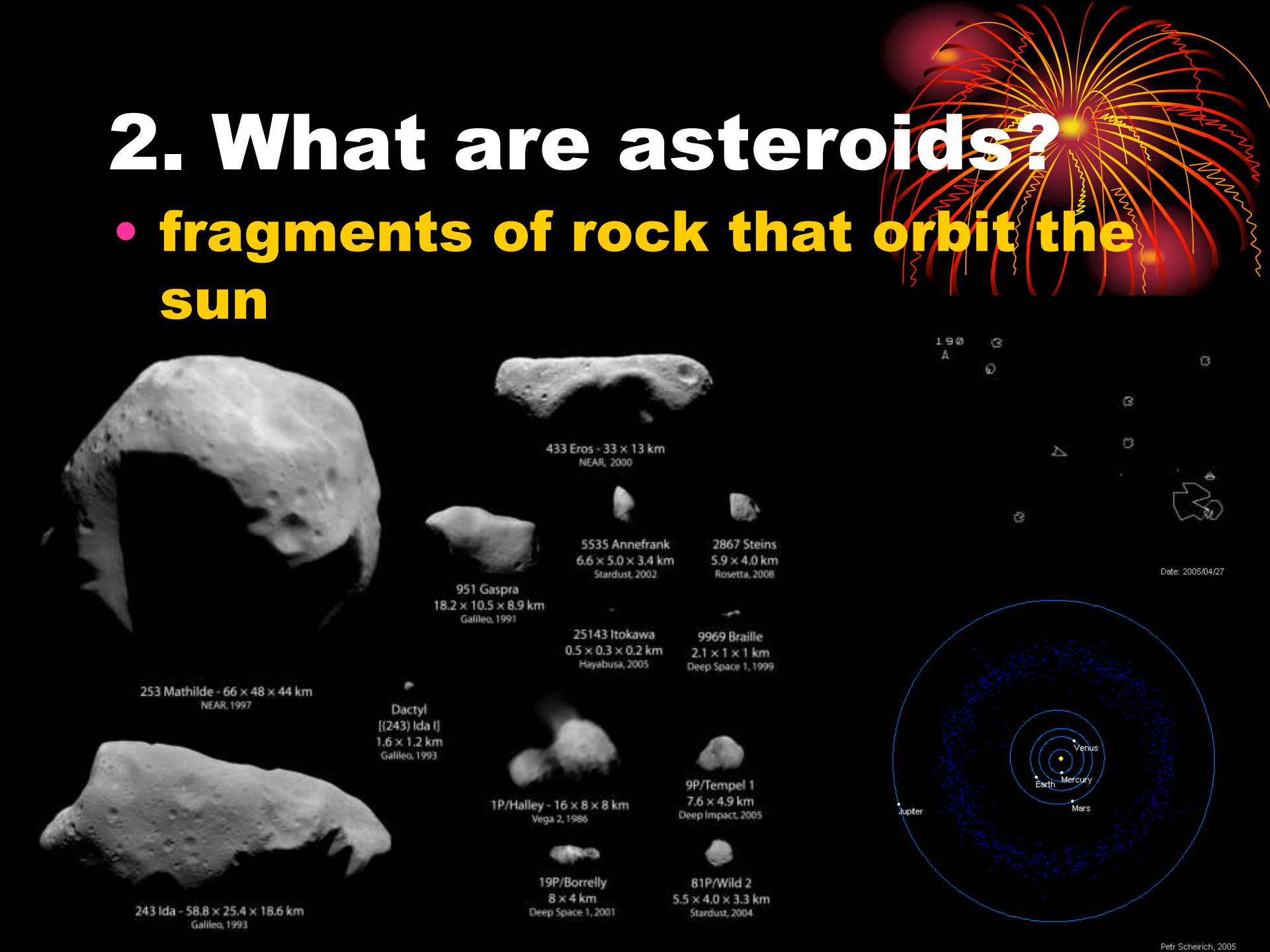
1. In addition to the sun, planets, and their moons, what occupies the space in our solar system?

- The solar system includes million of smaller bodies; some are tiny bits of dust or ice; others are as la



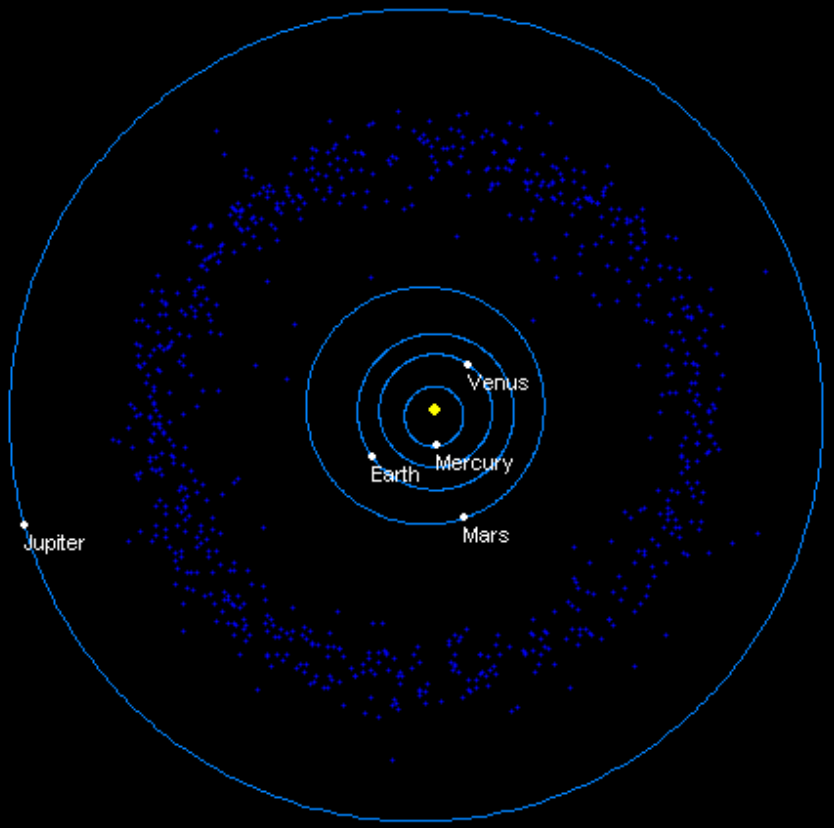
2. What are asteroids?

- **fragments of rock that orbit the sun**



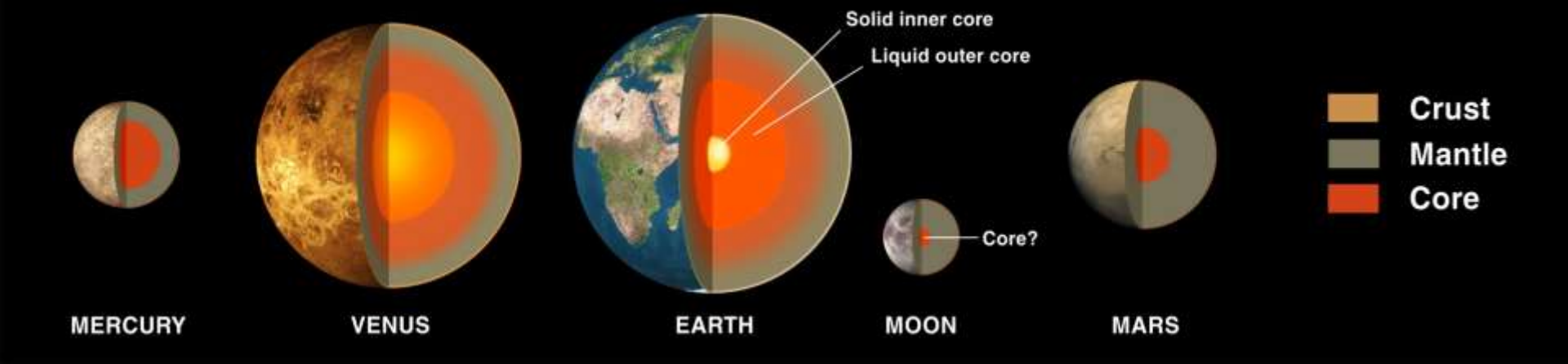
3. Most asteroids are found in the asteroid belt located

- **between the orbits of Mars and Jupiter.**



4. The composition of asteroids is similar to that of the

- **inner planets.**

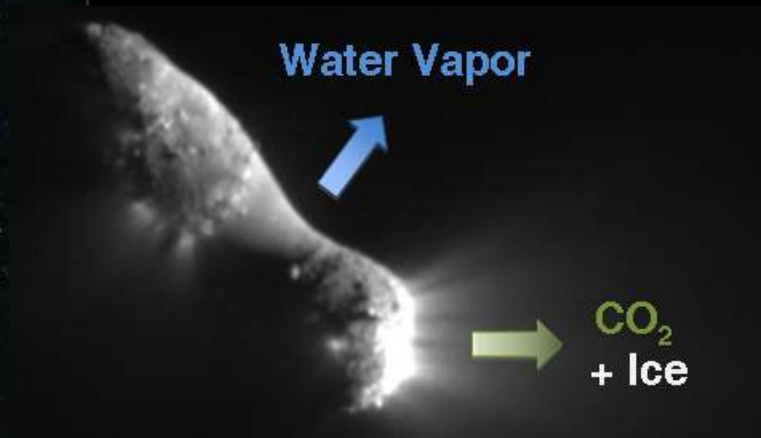


5. For what reason do many astronomers think that asteroids in the asteroid belt were not able to form a planet?

- **because of the strong gravitational force of Jupiter**

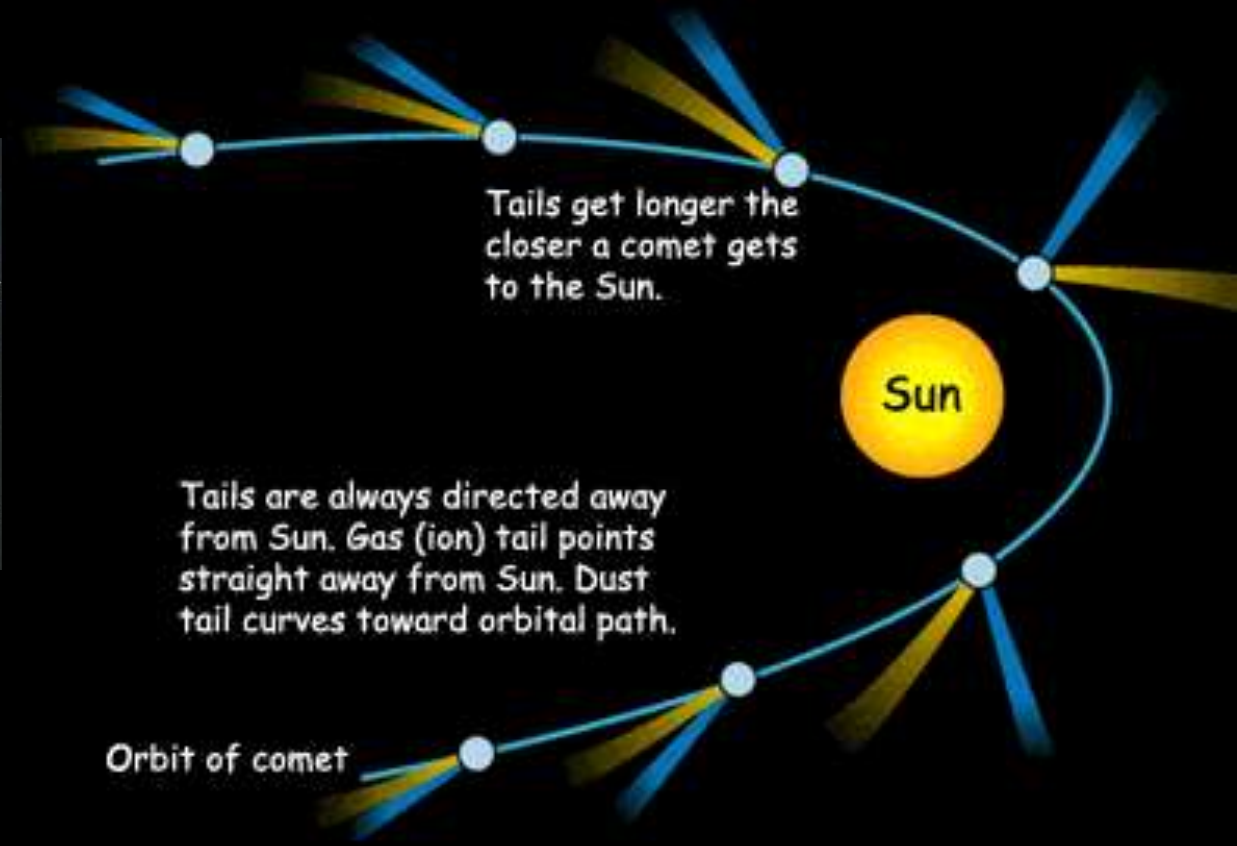
6. What is a comet?

- a small body of ice, rock, and cosmic dust that orbits the sun



7. A comet's spectacular tail forms when

- **sunlight changes the comet's ice to gas.**



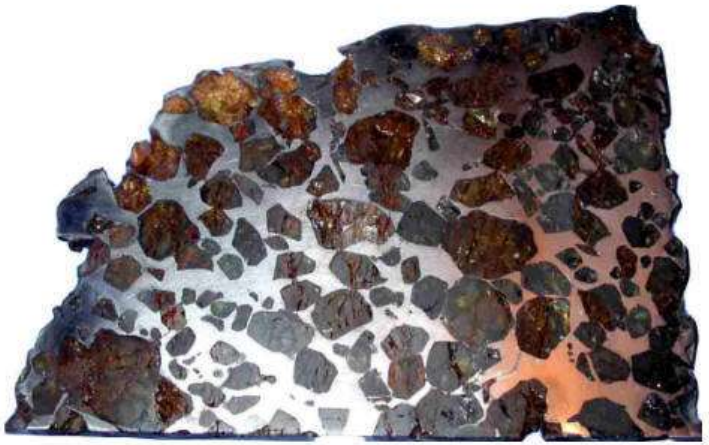
Matching 8-13

8.	meteor	**a.**	a large number of meteoroids entering Earth's atmosphere in a short period of time.
9.	meteor shower	**b.**	a bright streak of light that results when a meteoroid burns up in Earth's atmosphere
10.	iron meteorite	**c.**	a meteorite similar in composition to rocks on Earth that may contain carbon compounds
11.	stony meteorite	**d.**	the rarest type of meteorite
12.	meteorite	**e.**	a meteoroid or any part of a meteoroid that is left when it hits Earth
13.	stony-iron meteorite	**f.**	a meteorite with a distinctive metallic appearance

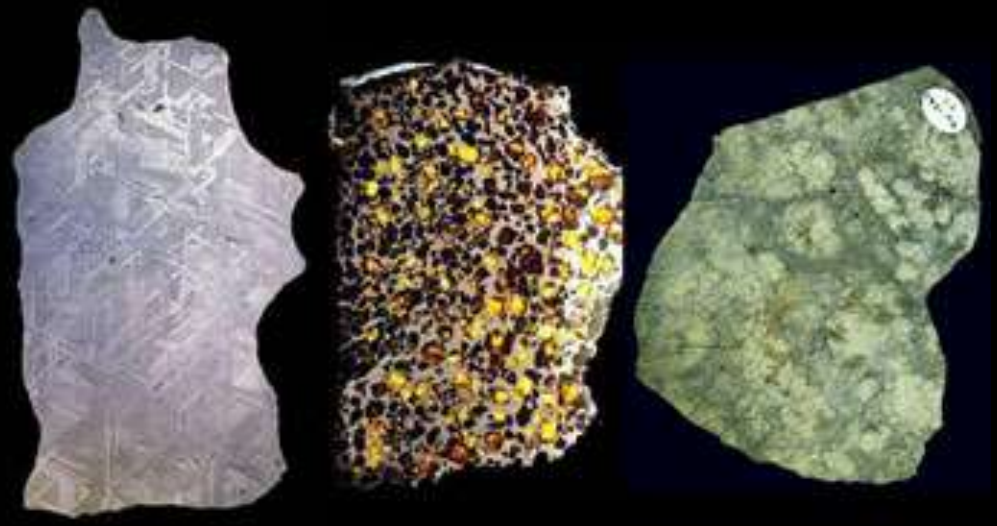
Types of Meteorites

STONY

IRON



STONY-IRON

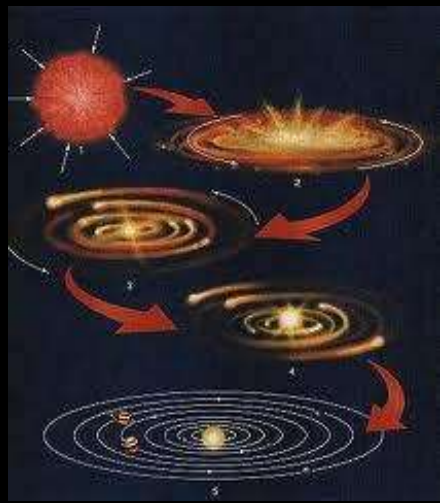


THE BARRINGER METEORITE CRATER

Fifty thousand years ago, a giant fireball streaked across the North American sky. It struck the earth in what is now northern Arizona, exploding with the force of 2 ½ million tons of TNT.

14. Why are the oldest meteorites important?

- **Because they may be 100 million years older than Earth and its moon, and thus may provide information about how the early solar system formed.**



The End...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"SSHHHHHHH!!! You'll scare away the fish."