

## Chapter Twenty-One: The Solar System

### Lesson 2: The Inner Planets

**Terrestrial planets:** the planets closest to the Sun, are made of rock and metal, and have solid outer layers

- Mercury, Venus, Earth, and Mars



#### Mercury:

- The smallest planet and closest to the Sun
  - Has no atmosphere
  - It depends on the planet's gravity strength to hold the gases
  - Mercury has little mass so not enough gravity to hold any gases
  - During the Day = 450°C
  - During the Night = -170°C
- Impact craters cover the surface of Mercury – without an atmosphere no erosion has occurred therefore the surface has never changed
  - Has a core made of iron and nickel
  - Has a mantle made of silicon and oxygen



#### Venus:

- About the same size as Earth
  - Rotates so slowly that its period of rotation is longer than its period of revolution...that means a day on Venus is longer than a year on Venus
  - Rotates east to west
  - Atmosphere is 97% Carbon dioxide...clouds of Venus are made of acid
- Average temperature of 460°C because of the greenhouse effect
    - **Greenhouse effect:** when a planet's atmosphere traps solar energy and causes the surface temperature to increase
    - Without the greenhouse effect, Venus would be 450°C cooler
  - Surface of Venus is covered in 80% solidified lava

## Earth:

- Earth has a Moon
- Distance from the Sun make Earth warm enough for large bodies of water to exist
- Earth's protective atmosphere, the presence of liquid water, and the planet's moderate temperature range support a variety of life.
- Solid inner core surrounded by a liquid outer core with a mantle above it and a crust layer on top.
- The crust is made mostly of oxygen and silicon and is constantly created and destroyed.



## Mars:

- About ½ the size of Earth
  - 2 very small and irregularly shaped moons. (Could be asteroids caught by Mar's gravity.)
  - Atmosphere is about 95% carbon dioxide.
  - Temperatures range from about -125°C at the poles to about 20°C at the equator.
- Reddish color is because the soil contains iron oxide (rust)
  - Martian volcano Olympus Mons is the largest known mountain in the solar system.
  - Has polar ice caps made of frozen carbon dioxide and ice.
  - The southern hemisphere is covered with craters while the northern hemisphere is smoother and appears to be covered in lava flows.