

THE SOLAR SYSTEM AND INNER PLANETS

Remote Learning – Lecture 4

Ms. Winkle

FINISH FROM LAST WEEK:

- ▶ **Meteoroids** are objects in space that range in size from dust grains to small asteroids. Think of them as “space rocks.”
- ▶ When meteoroids enter Earth’s atmosphere (or that of another planet, like Mars) at high speed and burn up, the fireballs or “shooting stars” are called **meteors**.
- ▶ When a meteoroid survives a trip through the atmosphere and hits the ground, it’s called a **meteorite**.

EXAMPLE

- ▶ Every year from late July to mid-August, the Earth encounters a trail of debris left behind from the tail of a comet named Swift-Tuttle. This isn't the only trail of debris the Earth encounters throughout the year, but it might be one of the most notorious as it is responsible for the annual Perseid meteor shower, one of the best and well-known yearly meteor showers.
- ▶ <https://www.youtube.com/watch?v=WZIJFtlkRNY>

METEOROIDS PRACTICE

- ▶ Draw a diagram showing the surface of Earth, the atmosphere, and outer space. Label where meteoroids, meteors, and meteorites will be found.

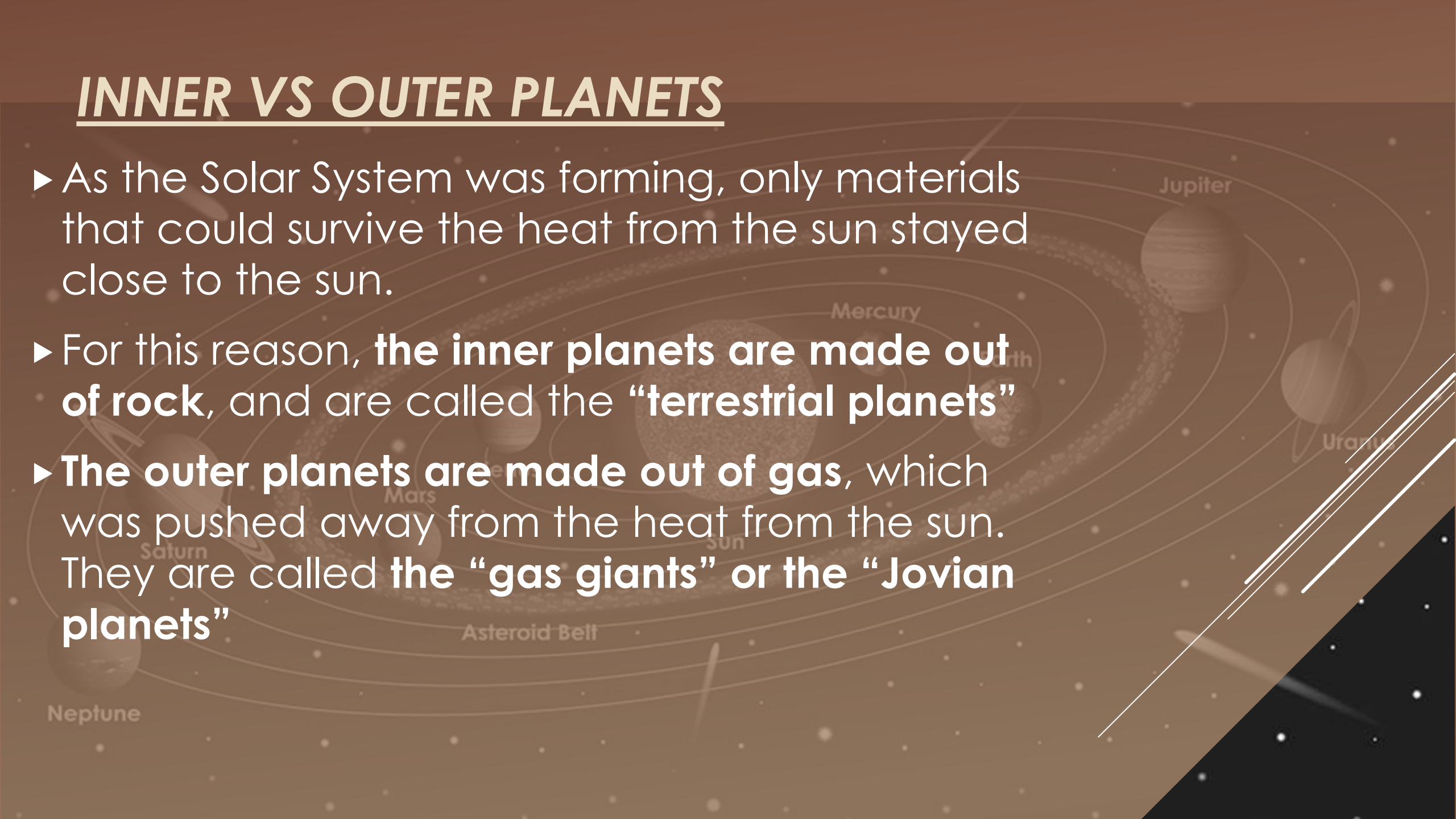


SOLAR SYSTEM STRUCTURE REVIEW GAME RULES

- ▶ All students have been randomly assigned to a team. There are a total of 6 teams.
- ▶ Students will be called on, and will answer questions INDEPENDENTLY
- ▶ No other student should be talking; only the student that was called on may answer
- ▶ If the student called on gets it current, the whole team will win 1 point
- ▶ The team with the most points will win 10% extra credit to lowest grade for 4th grading period
- ▶ You will be asked anything related to what we have covered online so far: layers of sun and structure of solar system

INNER VS OUTER PLANETS

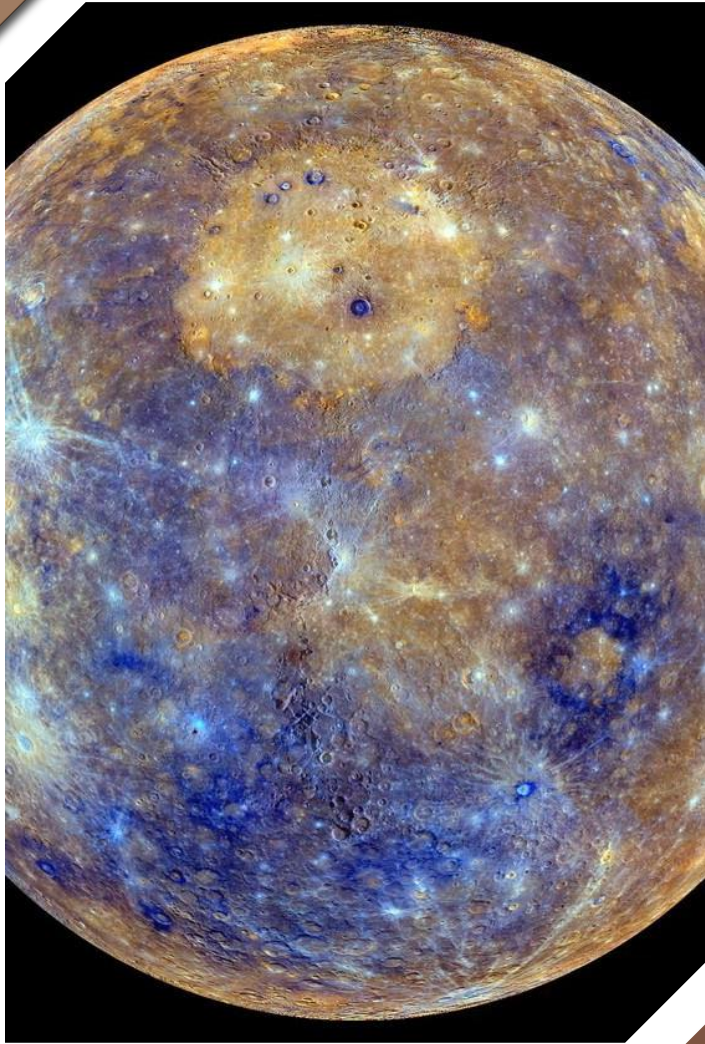
- ▶ As the Solar System was forming, only materials that could survive the heat from the sun stayed close to the sun.
- ▶ For this reason, **the inner planets are made out of rock**, and are called the “**terrestrial planets**”
- ▶ **The outer planets are made out of gas**, which was pushed away from the heat from the sun. They are called the “**gas giants**” or the “**Jovian planets**”





INNER PLANETS

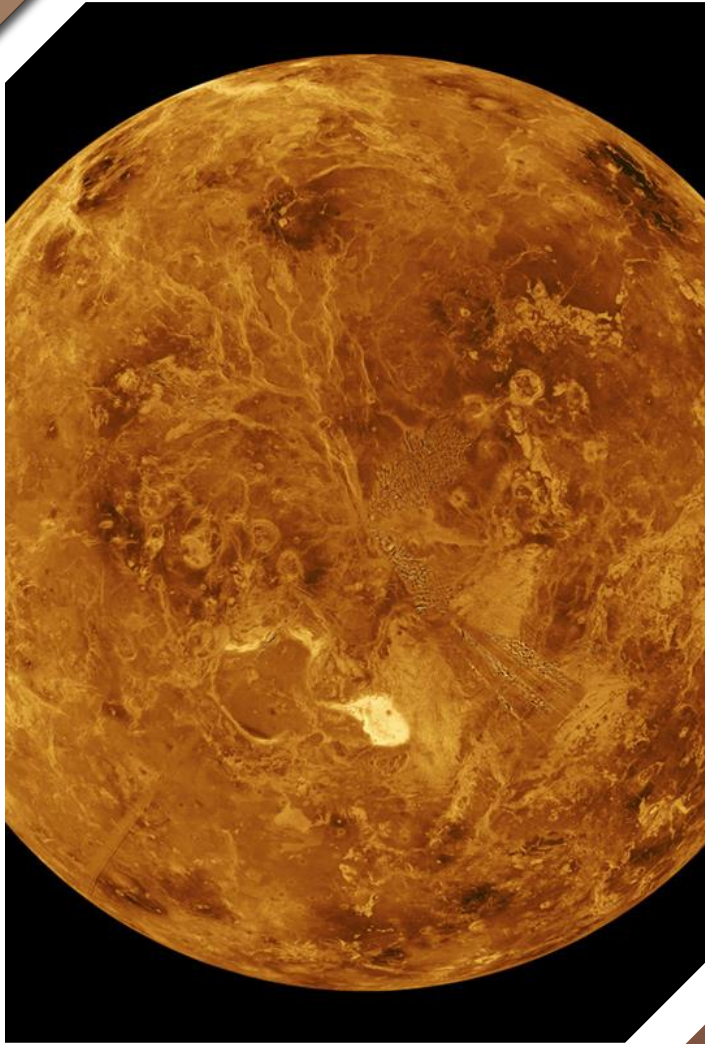
- ▶ Mercury, Venus, Earth, Mars
- ▶ All are rocky with a core and distinct layers
- ▶ All have only a few or no moons
- ▶ Are all small in size, as compared to the gas giants



MERCURY

- the smallest planet in our solar system, is only slightly larger than Earth's moon.
- Since Mercury is so small, it has a very weak gravity and thus very little atmosphere to stop impacts and it is covered with craters.
- Mercury's dayside is super-heated by the sun, but at night temperatures drop hundreds of degrees below freezing. Ice may even exist in craters.
- Year: About 88 Earth days.
- Day: About 59 Earth days.
- Diameter: About 3,000, less than half of Earth's.
- Temperatures: - 279 degrees Fahrenheit on the side away from the sun; 801 degrees Fahrenheit on the side facing the sun.
- 0 Moons

VENUS



- Second planet from the Sun and our closest neighbor
- Venus spins slowly in the opposite direction most planets do.
- Since Venus is about the same size as Earth, it has a similar strength of gravity, allowing it to have a thick atmosphere. Venus' atmosphere is very different from Earth's. . .
- **Atmosphere**
 - Venus' atmosphere consists mainly of carbon dioxide, with clouds of sulfuric acid droplets. The thick atmosphere traps the Sun's heat, resulting in surface temperatures higher than 880 degrees Fahrenheit (470 degrees Celsius). It is the hottest planet!
- **Day**
243 Earth days
- **Year**
225 Earth days
- **Radius**
3,760 miles | 6,052 kilometers – almost the same size as Earth!
- **Moons**
0



EARTH

- **Only planet that we know of to have life (we are still searching)**
- **Atmosphere**
 - Strong gravity allows a thick atmosphere. This atmosphere has oxygen and water vapor to sustain life. It also helps keep the temperatures on Earth moderate: not too hot, not too cold
- **Day**
1 Earth day
- **Year**
365.25 Earth days
- **Radius**
3,959 miles
- **Moons**
1
- **Temperature**
-128 to 135 degrees Fahrenheit

MARS

- The fourth planet from the Sun, Mars is a dusty, cold, desert world with a very thin atmosphere.
- This dynamic planet has seasons, polar ice caps and weather and canyons and extinct volcanoes, evidence of an even more active past.
- lots of evidence that Mars was much wetter and warmer, with a thicker atmosphere, billions of years ago.
- Smaller than Earth → Weaker gravity → thinner atmosphere
- **Day**
24.6 hours
- **Year**
687 Earth days
- **Radius**
2,106 miles | 3,390 kilometers
- **Moons**
2: Phobos and Deimos
- **Temperature**
-225 to 95 degrees Fahrenheit



Mars' largest moon Phobos as seen by Mars Reconnaissance Orbiter in 2008.



Deimos

