

Know the basic structure of the Solar System

- Name all the planets in order
- Terrestrial planets versus Jovian planets
- What objects, besides planets, are in our Solar System?

Give a reasonable definition of the edge of our Solar System.

What is the greenhouse effect?

What is convection?

How does convection drive plate tectonics?

What methods can we use to measure the interior structure of the Earth?

- What does it mean that Earth has differentiated?

How does the Earth create its magnetic field?

How is Earth's atmosphere different than the other terrestrial worlds?

- How did Earth evolve this way?

What makes Earth suitable for life?

How do we use cratering to estimate the age of solar objects?

What is global warming?

What are the two distinct surface features of the moon?

What is the age of the moon?

- Why is one part of the moon younger?

How did the moon form?

- What evidence do we have to support this theory?

Why is Mercury's orbit very eccentric?

Describe the 2:3 spin orbit coupling of Mercury.

Explain how Mercury and the Moon have H₂O at their poles.

Why does Mercury have a magnetic field?

Why does Venus have a retrograde rotation?

Describe the atmospheric evolution of Venus (i.e. run-away greenhouse effect).

Describe the atmospheric evolution of Mars (i.e. reverse-run-away greenhouse effect).

Where is all the water on Mars located?

What are the white poles of Mars made of?

Life on Mars?

Why do we have so much less data about Jovian planets compared to Terrestrial planets?

What are the two elements that Jupiter and Saturn are mainly made up of?

What is differential rotation and how does it create weather patterns on the gas giants?

What creates the different striped bands on Jupiter (Zones and Belts)?

What causes Neptune and Uranus to be so blue?

-What is Neptune more blue?

How do we know that the Jovian planets have a rocky core?

What creates the strong magnetic fields seen on the Jovian planets?

What creates the internal heating of the Jovian planets?

What is tidal locking?

What are tidal forces?

-How do tidal forces create a source of heat for objects that are tidally locked?

Name the four Galilean moons.

Why does Io have so much volcanism?

Why hasn't Europa's H₂O frozen?

Why has Ganymede's H₂O frozen?

What does it mean that Io, Europa, and Ganymede are in a 1:2:4 spin orbital coupling?

How do we know that Callisto is a dead moon and has been dead for a long time?

What is special about Saturn's largest moon Titan?

What are cryo-volcanoes?

How did Neptune's largest moon, Triton, cause Neptune to have a small number of Moons?

Describe planetary formation:

-Why do dense molecular clouds start to collapse?

-Why do these clouds heat up?

-Why do the clouds condense and spin faster?

-How are planetesimals formed?

Why are the Jovian planets so big?

Why do the Terrestrial planets not have huge atmospheres like the Jovian planets?

What is Jovian migration?