

Venus – Our “Sister” Planet

- _____ from the Sun
- Semi-major axis = _____ AU
- Radius = 6052 km ($0.95R_{\text{earth}}$)
- Mass = 4.9×10^{24} kg ($0.82M_{\text{earth}}$)
- Density = 5240 kg/m^3
- Rotational period = _____
— _____ (why?)
- Atmosphere
 - Mostly _____
 - _____ greenhouse effect
 - Very _____
- _____ the pressure at Earth’s surface
 - Russian Venera probes were either crushed during descent or survived only an hour due to high pressures
- Surface temperature = _____
 - Earth = _____, Mercury = _____
- No significant intrinsic _____

**2 Russian spacecraft landed on Venus and took the only pictures from its surface (Venera)
(they then failed shortly after landing due to extreme pressure and temperature)**

Venus surface temperature – 750K

- Hotter than _____
- So hot, _____

Three reasons why Venus is so bright as viewed from Earth

- It is _____
- It is _____
- It has a _____
 - The planet wide cloud cover _____ striking it

Venus has a Retrograde Rotation

- Most planets and moons _____ rotation, Venus is _____
- The reason is not known for certain, but may be due to a _____

Venus rotates very _____

- Rotation rate was not known until fairly recently
 - Cannot _____
 - determined from _____

	Earth	Venus
CO ₂		
Nitrogen		
Water		

Venus clouds rotate faster than the planet

Summary of Venus Atmospheric Components

Venus Summary

- Size is like _____
- Geology is _____ (except for water)
 - no _____ (may be related to lack of water)
 - no _____
- Atmosphere
 - _____ effect

• Not a good place to visit!

Mars:

- The god of _____
- _____ the size of Earth
- Earth-based observations:
 - _____ waxing and waning with the _____
 - _____ that looked like _____
 - Areas of color change that were thought to be _____
 - Has an _____
- Interesting Geological Features
 - _____ craters and _____ plains
 - Gorges larger than the _____
 - Vast Sedimentary Deposits in the _____
 - Valleys that look as if they could be _____
- Surface Features
 - Water Erosion?
 - Giant Volcanoes – _____
 - The size of the state of _____
 - _____ times the elevation of _____
 - Wind Erosion
- Exploration:
 - 1970's – _____ missions
 - Returned _____ of life, was it accurate?
 - 1980's – Many failed missions
 - 1996 – _____: First rover on Mars
 - Found evidence of erosion, but no life or water.
 - 2004 – _____: Long distance rovers
 - Supposed to last 90 sols; they are still running
 - Found strong evidence of water, lots of water
 - 2008 – Mars _____: Lander not a rover
 - Has found glaciers on Mars
 - Evidence of liquid water under the surface.
 - 2011 – Mars _____:
 - Much _____ than previous _____
 - No _____, nuclear _____
 - Why? _____
- _____ Field
- _____ Atmosphere is about 1% the _____ of Earth's
 - After planet cooled, the _____
 - The magnetic field _____.
 - This exposed Mars to _____ which tore the atmosphere away.
 - Without pressure in the atmosphere, _____ cannot exist on the surface.
- Moons of Mars
 - _____
 - _____