Astronomy Lesson 2

Planets

Quiz Date:

Vocabulary

**Inner Planets**

* The solar system is divided into two groups of planets—inner planets and outer planets.
* The inner planets are called terrestrial planets, because they are small, dense and rocky.

**Mercury**

* On Mercury, you would weigh 38% of what you weigh on Earth.
* A day on Mercury is 59 Earth days long.
* Mercury spins on its axis much more slowly than Earth does.
* Mercury’s year is only 88 Earth days long.
* Mercury’s surface temperature ranges from -173C to 427 C.
* Diameter 4,878 km

**Venus**

* Venus is more similar to Earth than any other planet.
* They have about the same size, mass and density.
* Unlike Earth, the sun on Venus rises in the west and sets in the east.
* This is because Venus rotates clockwise while all of the other planets rotate counter clockwise.
* Earth is said to have prograde rotation.
* Venus has retrograde rotation.
* Venus rotates much more slowly than Earth.
* A day on Venus takes 243 Earth days, while a year takes 224 Earth days.
* The atmosphere on Venus is the densest of the terrestrial planets.
* It consists mostly of carbon dioxide and corrosive acids.
* The carbon dioxide traps heat from sunlight in the process known as the greenhouse effect.
* The surface temperature is 464 C.
* Venus is the hottest planet.
* Diameter 12,104 km

**Earth**

* Constantly changing weather patterns create the swirls of clouds that blanket the Earth.
* Earth formed at just the right distance from the sun.
* The temperatures are warm enough to prevent most of its water from freezing, but cool enough to keep it from boiling away.
* Liquid water is the key to the development of life on Earth.
* Water provides a means for much of the chemistry that living things depend on for survival.
* Diameter 12,756

**Mars**

* Because of its thin atmosphere, and its great distance from the sun, Mars is a cold planet.
* Mid-summer temperatures range from -13 C to -77 C.
* The atmosphere is so thin that the air pressure at the planet’s surface is equal to 30 km above Earth’s surface (about 3 times higher than most planes fly).
* The pressure of Mars’s thin atmosphere is so low that any liquid water would quickly boil away.
* The only water on Mars is in the form of ice.
* Liquid water did exist on Mars at one time.
* Most of that water is found in the polar ice caps or frozen beneath the surface.
* Mars has two volcanic fields.
* The largest mountain in the solar system is the extinct volcano Olympus Mons.
* Period of rotation 24 hours 37 minutes.
* Period of revolution 1 year 322 days.
* Diameter 6,794

**Outer** **Planets**

* All of the outer planets are gas giants.
* Gas giants are large without solid surfaces.

**Jupiter**

* Like the sun, Jupiter is made of hydrogen and helium.
* The outer part of Jupiter’s atmosphere is made of layered clouds of water, methane and ammonia.
* Jupiter also has a great red spot, which is a long lasting storm system, which has a diameter one and a half times Earth.
* At 10,000 km deep, the pressure is high enough to change hydrogen gas into a liquid.
* Unlike most planets, Jupiter radiates much more heat than it receives from the sun.
* Period of rotation 9 hours 50 minutes.
* Period of revolution 11 years 313 days.
* Diameter 142,984 km

**Saturn**

* Saturn is the second largest planet; it is 764 times the volume of Earth and 95 times more massive.
* Its composition is mostly hydrogen and helium, with methane, ammonia and ethane in the upper atmosphere.
* Saturn is not as colorful as Jupiter because it is cooler.
* Like Jupiter, Saturn gives off more heat than it receives from the sun.
* All of the gas giants have rings, but Saturn’s are the largest.
* The rings are only a few hundred meters thick.
* The rings consist of icy particles that range in size from a few cm to several meters across.
* Period of rotation 10 hours 30 minutes.
* Period of revolution 29 years 155 days.
* Diameter 120,536 km

**Uranus**

* Uranus has about 63 times the volume of Earth and is nearly 15 times as massive. Uranus is tipped over on its side; the axis of rotation is tilted by almost 90 degrees.
* For part of a Uranus year, one pole points toward the sun while the other pole is in darkness.
* The moons and the thin rings of Uranus all lie in a disk that is in the same plane as the equator of Uranus.
* The orbits of Uranus’s moons are all tilted out of the plane of the solar system.
* Uranus was hit by a massive object that tipped the planet over.
* Uranus was the first planet discovered with a telescope.
* The atmosphere is mainly hydrogen and methane gas, which absorbs the red part of sunlight very strongly.
* While Uranus is smaller than Jupiter and Saturn, it has similar densities.
* This suggest that they have water in their interiors.
* Period of rotation 17 hours 14 minutes.
* Period of revolution 83 years 274 days
* Diameter 51,118 km

Neptune

* Neptune was discovered in 1846.
* Neptune’s atmosphere is nearly the same as that of Uranus.
* Neptune’s’ atmosphere contains belts of clouds.
* Neptune has a great dark spot similar to the great red spot on Jupiter.
* Neptune’s interior release heat to its outer layers.
* This helps the warm gases rise and cool gases sink, setting up the wind patterns in the atmosphere that create the belts of clouds.
* Neptune also has very narrow rings.
* Period of rotation is 16 hours 7 minutes
* Period of revolution 83 years, 274 days.
* Diameter 49,528 km

Pluto

* Pluto is less than half the size of Mercury.
* It’s moon Charon is more than half its size.
* Pluto is made of rock and ice.
* It has a very thin atmosphere of methane.
* Pluto is covered by nitrogen ice.
* Charon is covered by water ice.
* Period of rotation
* 6 days, 10 hours
* Period of revolution 248 years