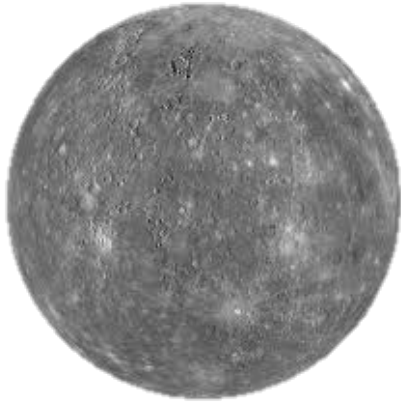


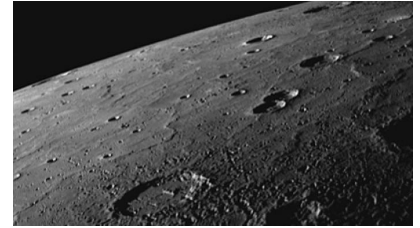
12 “Celestial Bodies” in our Solar System

Mercury



Mercury is a dead planet and the most heavily cratered object in the solar system. It is a world of black starry skies, gray craters, no moon and not enough gravity to hold an atmosphere. Without an atmosphere, Mercury is a silent world without any sound. Big cracks on the surface indicated that this planet is still shrinking, as its hot iron core grows cold. Mercury races around the Sun in 88 Earth days, but spins so slowly on its axis that it takes 176 Earth days from sunrise to sunset. On this planet, a year is shorter than a day! The daytime side exposed to the Sun for 6 months sizzles with a temperature of 427°C (800°F). This is hot enough to melt lead or set your house on fire. On the night side, frozen temperatures drop

to a chilling -183°C (-300°F) making Mercury one of the hottest and coldest places in our solar system at the same time.



Venus



Bright enough to cast shadows on the Earth at night, Venus had long been considered Earth’s “twin”. Both planets are about the same size and made of the same materials. However, surrounded by clouds of deadly sulfuric acid 40 miles thick, lit by 100 million volt lighting bolts, and covered by thousands of volcanoes, Venus might be considered Earth’s evil twin. Trapping in incoming sunlight with a runaway greenhouse effect, these clouds create surface temperatures of 465°C (870°F) that would melt lead. These blistering temperatures make Venus the hottest planet in the solar system. With the densest atmosphere of any planet, the

weight pushing down on the surface could crush a submarine, and a slight breeze on the surface could roll an astronaut over like a powerful ocean wave. Venus may be almost the same size as Earth, but nothing else about it resembles our beautiful blue planet.



Earth



Between Venus and Mars, a special planet formed that would eventually have oceans, land, and life. This third planet from the Sun shines like a blue gem in space with an oxygen rich atmosphere created by microscopic plants. Spinning on its axis at 1,000 miles an hour, it takes 365.25 days to make one complete trip around the sun. Located at just the right distance from our star, it is the only planet where water exists as a liquid, as a solid (ice), and as a vapor (in clouds). With the most diverse terrain of any planet, the hard outer crust is just a thick layer covering a molten interior. In fact, if we could shrink Earth down to the size of an apple, the ground we walk on would be as thin as an apple peel. Yet, on this

beautiful world, life thrives everywhere: under the seas, inside rocks, on mountains, in deserts, and even high up in the atmosphere.

Mars



Fifty million miles farther out into space, we find Mars, the last terrestrial planet. Like a piece of iron left out in the rain, Martian soil has rusted red. That's why Mars is called the red planet. Half the diameter of Earth, Mars is a spectacular world. The canyon Valles Marinaris dwarf anything found on Earth. Seen in the artwork below, this canyon would stretch from New York to San Francisco. Mars has a volcano that stands 17 miles high, large polar ice caps, and dust storms that can blanket the planet for months. Someday humans may live on Mars, but it won't be easy. The carbon dioxide atmosphere is so poisonous and cold that

liquid water cannot exist on the surface. But if you like pink daytime skies, orange Martian sunsets, and vast desert scenery, Mars might be the perfect getaway for you!



Ceres / Asteroid Belt



Astronomers were surprised when Ceres was discovered by accident in 1801. They immediately classified it as the fifth planet from the Sun, bumping Jupiter to sixth. In 1850 they changed their minds and reclassified it as an asteroid. In 2006 they decided it belonged in a new group of planet called dwarf planets. Hidden deep inside the asteroid belt, Ceres takes 4.6 Earth years to make one orbit around the Sun. About a quarter the diameter of our Moon, it is the largest object in the asteroid belt. Asteroids are really pieces of unfinished worlds left over from the early solar system. Collisions frequently

occur between the rocky leftovers. Occasionally, Jupiter's gravity nudges an asteroid out of its orbit and sends it towards the Sun. Very rarely, a big one hits Earth, which can be disastrous. Just ask the unlucky dinosaurs!

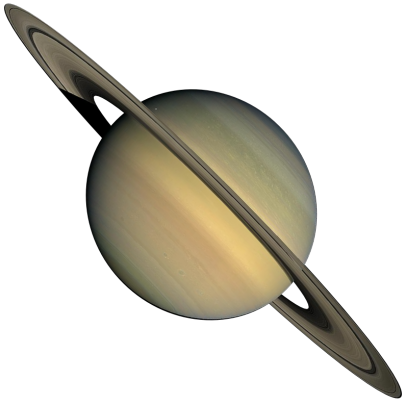


Jupiter



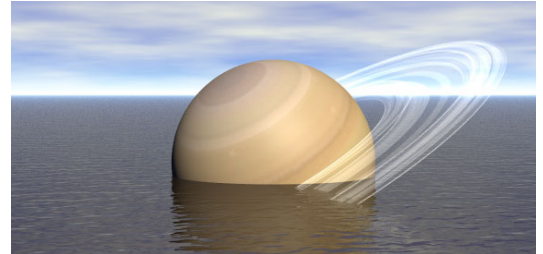
Jupiter is the next planet in line. All of the other planets could easily fit inside it. With at least 63 moons, Jupiter is almost a miniature solar system itself. This planet is made of hydrogen and helium gases with methane mixed in, so there is no solid surface to walk on. Jupiter's skies are blanketed by slushy frozen clouds filled with brilliant flashes of lightning and a giant Earth-size hurricane called the Great Red Spot. Radiating more than twice the amount of heat it collects from the Sun and spinning around once every ten hours, Jupiter bulges in the middle and smells terrible. The colorful brownish red stripes are made of ammonia hydrosulfide, which smells like rotten eggs. The white clouds are made of ammonia, so they smell like strong window cleaner. Jupiter also has rings circling it, but they are too thin to be seen from Earth.

Saturn

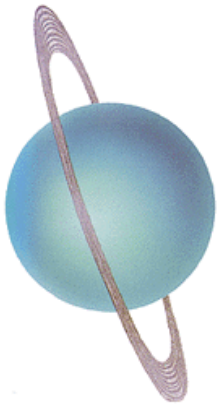


Saturn is the most distant planet visible to the naked eye. Like Jupiter, it has no surface to walk on. Its frozen slushy atmosphere, made mostly of hydrogen and helium gas, forms faint bands across its surface. Saturn's density is so low that if you dropped the planet into water, it would float like a fishing bobber. Consisting of thousands of individual little bands called ringlets, the most dazzling set of rings surrounds Saturn like a crown. Composed of particles ranging from dust grains to giant boulders, they are the remains of a small moon or asteroid that was torn apart hundreds of millions of years ago. The rings are brighter than Saturn itself. Astronomers

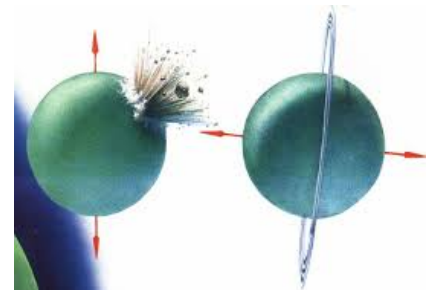
divide them into seven different bands labeled A to G. If you ever have the chance to look at Saturn through a telescope, do it! No other planet in our solar system is quite as regal.



Uranus



Uranus glows like an aquamarine gem because of the methane gas in its atmosphere. Resembling a tiny green pea when viewed in an amateur telescope, this icy giant is larger than Earth. Unlike any other planet in our solar system, Uranus has a 98-degree tilt to its axis. Scientists think that early in its history the planet was hit by something really big that knocked it completely over on its side. Uranus's rings turned sideways, too. Viewed straight on, it looks like a bull's-eye in space. Right now, Uranus's north pole faces the Sun while its south pole faces away into space. This means the North Pole is experiencing 42 years of darkness. There is no solid surface on Uranus. It is made mostly of hydrogen and helium gas like our Sun. Uranus has 27 moons, the third highest number of moons behind Jupiter and Saturn.

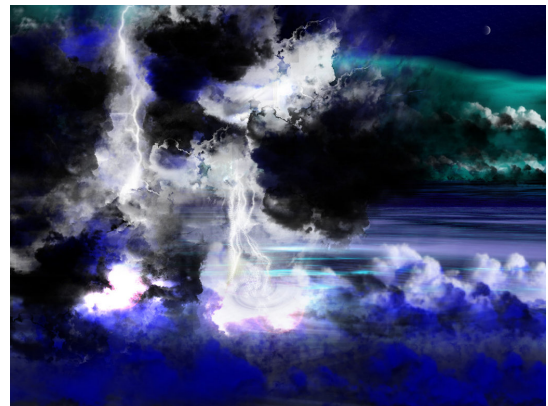


Neptune



Neptune is named after the Roman god of the sea. It also has the wildest weather of any planet in the solar system, with winds that blow at speeds more than 1,200 miles an hour. Like the rest of the gas giants, Neptune has no solid surface to walk on. The temperature at the top of the cold layer is a chilling -214°C (-350°F). However, Neptune's core remains hotter than the Sun's surface. Internal heat bubbling up causes violent wind and hurricanes. Neptune was

discovered using mathematical calculations. When astronomers realized something big was affecting the orbit of Uranus, they calculated where that object might be in space. When they searched, they found Neptune. Since its discovery more than 160 years ago, Neptune has yet to complete one full orbit around the Sun.



Pluto



For the last 10 years of his life, Percival Lowell, the astronomer made famous for believing he had discovered canals on Mars, searched for “Planet X” beyond the orbit of Neptune. As hard as he tried, he never found it. In 1930, 14 years after Lowell’s death, Clyde Tombaugh discovered Pluto. Tombaugh was a 22-year-old night assistant at the observatory named after Lowell and was born in Streator Illinois. For 76 years Pluto was the ninth planet from the Sun. Then, in 2006 it was demoted

to a dwarf planet and, with the additions of Ceres, became the 10th planet from the Sun. Because Pluto’s moon Charon is so large, some astronomers consider Pluto and Charon a double-planet system. Located at the fringes of the Kuiper Belt, Pluto travels in an egg-shaped orbit around the Sun, sometimes crossing inside the orbit of Neptune to temporarily become the ninth planet from the Sun again. Pluto is one of the coldest objects in the solar system. When it reaches its farthest distance from the sun, its atmosphere freezes and falls to the ground where it looks like a thin coating of sugar frosting.

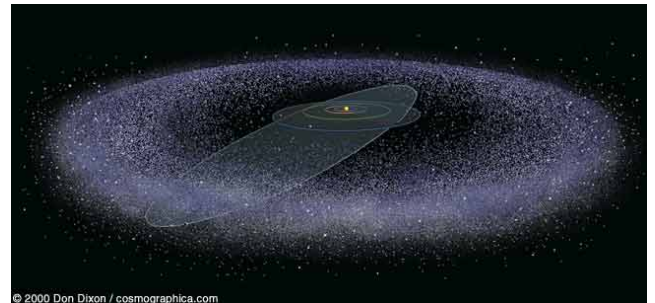


Haumea/Kuiper Belt



Located in the Kuiper Belt, Haumea is one of the most unusual objects in the solar system. It is as big across as Pluto, but shaped more like a chicken egg. Some scientists have called the planet a “cosmic football” because it tumbles end over end like a football kicked for a field goal. Spinning once every four hours, Haumea is probably the result of an earlier collision that left this oblong shape behind and started its unusually rapid rotation. All of the information we can gather tells us it is a solid

rock with a glaze of shiny ice covering it. If you could cut it in half, it would remind you of an M&M. The outside candy coating is the ice and the chocolate found inside is the rock.



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Eris



Eris is the coldest and most distant dwarf planet in our solar system with an orbit that is more oval than round. Larger than Pluto, it is made of one-third rock and two-thirds ice. With its moon Dysnomia, Eris passes through the Kuiper Belt and continues traveling ten billion miles beyond it. Because it is larger than Pluto, its discoverers originally name it the solar system’s tenth major planet. Today it is classified as a dwarf planet.

In the future, more dwarf planets will be added to our solar system list. In our universe, dwarf stars are the most common type of star and dwarf galaxies are the most common type of galaxies. It makes sense that dwarf planets may be the most common type of planets out there too.

