How are planetary objects alike and different?

At their most atomic level, planetary objects are alike and different based on what they are made of. There are three types of planets identified in our Solar System: terrestrial, Jovian, ice giants (Earle, 2019). Other objects such as: asteroids, meteoroids, the Kuiper Belt, and the Oort Cloud, all have their own identified compositions (Earle, 2019).

For example, take the planets of Mercury and Jupiter. Mercury is a terrestrial planet meaning it has a metal core and a rocky mantle (Earle, 2019). Therefore, Mercury has a solid surface. Mercury is a moonless, ringless planet whose atmosphere is made up of oxygen, sodium, hydrogen, helium, and potassium (Mercury, 2019). Farther out in the solar system, the composition of the planets shifts slightly. According to Crash Course, the planets father out are larger because the planets had more material in their disks. Also, the cooler temperatures farther out from what we know as the sun made it so these planets could hold onto lighter gasses (Crash Course, 2015). For this reason, Jupiter is a gas giant rather than a terrestrial planet. Different from our solar system’s smallest planet, Jupiter is the system’s largest planet. A second difference in the characteristics of these planets is that Jupiter has 75 moons and is a faint ringed system (Jupiter, 2019). However, similar to Mercury, Jupiter's atmosphere is made up of hydrogen and helium (Jupiter, 2019). An interesting argument these two planets bring up is what qualifies an object as a planet because these two planets seem to be on drastic ends of a characteristic based “Planetary Spectrum”.

There are many other objects in space apart from the distinguished planets. Two such are comets and asteroids. A major difference between these two small bodies is that asteroid are rocky and airless objects while comets are balls of frozen gas, rock and dust (Asteroids, 2019 & Comets, 2019). The rocky nature of these small bodies is a similarity in that both objects originated as a product of the same “Big Bang” in our solar system. A second’ difference is the location of each small body. Comets are abundant in the Kuiper Belt (Comets, 2019). Asteroids are abundant in the asteroid belt between Mars and Jupiter (Asteroids, 2019). While these two objects are composed of relatively different materials and are located in different places, a third similarity is that both orbit the sun (Comets, 2019).

Similar to Earth, many planets are comprised of the same elements – primarily hydrogen and helium. This is seen among the discussed planets. We interact daily with this feature as our atmosphere is comprised of gasses that protect human life from harsh rays and much more. Other similar features are of the terrestrial planets and their metal cores and rocky mantles. A more general similarity between Asteroids, Comets, Mercury, Jupiter and Earth is that all of these space objects revolve around the sun on a relatively flat plane (Crash Course, 2015).

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