

Reading Passage (204 words): Mercury, the Closest Planet to Our Sun

The closest planet to our sun and the smallest in the solar system, Mercury is also one of the least understood. Compared to more glamorous planets like Mars, Jupiter and Saturn, Mercury has received much less attention from scientific study missions. But NASA's Messenger probe is set to reveal the secrets behind the odd planet.

Mercury, due to its closeness to the Sun, is not nearly as dense as the core ratio of the earth. The iron core makes up most of the planet's mass. The "density" of something is a measure of how much it weighs (technically, its mass) per amount of space it takes up (its volume).

The planet Mercury is so small and so close to the Sun that it does not have any atmosphere. Perhaps Mercury has no atmosphere because of the weak gravity of the planet which prevents any gases from getting trapped near its surface.

Lastly, the surface of Mercury is smooth and devoid of craters, which is strange because it was long suspected that the surface had been bombarded with space rocks and other falling debris. If one were to compare Mercury to another planet, it could be compared to the planet Mars, which is also smooth.

Writing Prompt: Summarize the main points of the lecture explaining how they shed new light on some of the information mentioned in the reading passage.

Lecture (338 words): Misconceptions about the Planet Mercury

In recent years, space probes have been sent to Mercury, and what scientists once thought they knew about the tiny planet has changed drastically.

Mercury is so dense that scientists believe its heavy iron core accounts for two-thirds of the planet's mass, more than twice the ratio of core to mass for Earth, Venus, or Mars. The density of iron is 7.86 grams per cubic centimeter, which makes it a very dense metal. Scientists aren't sure what caused this incredibly high density but suggest it might have started off with more mass that got scraped off by collisions.

Mercury is so small, scientists long assumed it had no atmosphere. But Mariner 10 surprised experts by revealing a tenuous net of gas around the planet. Mercury's thin atmosphere constantly escapes the weak gravity of the planet, but somehow, certain gases are constantly replenished. It has a tenuous atmosphere made up of hydrogen, helium, oxygen, sodium, calcium, potassium and water vapor. Astronomers think this current atmosphere is constantly being replenished by a variety of sources: particles of the Sun's solar wind, volcanic outgassing, radioactive decay of elements on Mercury's surface and the dust and debris kicked up by micrometeorites constantly buffeting its surface. Without these sources of replenishment, Mercury's atmosphere would be carried away by the the solar wind relatively quickly.

Although Mercury's surface cannot be compared to any of the planets in our solar system, including Earth, the pock-marked surface of Mercury is highly reminiscent of the moon. The planet has been continually bombarded by space rocks that leave their mark with craters. But there are important differences between Mercury's craters and the moon's. For one thing, some craters on Mercury seem to be shallower than similar-sized craters on the moon, although the scientists must investigate further Messenger data to see if this trend holds across the planet. This image shows the littered surface of Mercury, where some craters are secondary, formed when material displaced in one impact lands nearby and forms another crater.