

Dwarf Planets Reading Comprehension

Name _____

In 2006, the number of planets in our solar system dropped from nine to eight when Pluto was reclassified as a dwarf planet. Companies rewrote their textbooks to accommodate the new information, websites edited their depictions of the solar system, and astronomers readjusted their knowledge of the cosmos. But what exactly led to this shift in perception of Pluto, and what makes a dwarf planet different from a regular planet?

In many ways, dwarf planets bear similarities to the planets we typically study. Both planets and dwarf planets are in orbit around the sun, and are not satellites. In addition, both have to have enough mass such that their gravity is the most significant force affecting their shape. If an object in space is too small—for example, less than a couple kilometers in diameter—it is more affected by other astronomical forces and therefore takes on an irregular shape. Planets and dwarf planets are affected mostly by gravity, and hence have a spherical shape. The main difference between planets and dwarf planets has to do with the space surrounding their orbits. Planets use many methods, including capture, collision, and gravitational disturbance, to get rid of smaller space objects that enter the area near their orbits. However, dwarf planets are not able to clear objects that exist in the space around their orbits because their mass is not significant enough to do so.

As of now, there are five officially recognized dwarf planets in our solar system: they are Ceres, Pluto, Haumea, Makemake, and Eris. Ceres is located in the asteroid belt, and the other four can be found in the outer solar system. Pluto is the largest of the five, and is made up 1/3 of water. NASA has only reached two of the five planets for further study; in 2015, its Dawn and New Horizons space missions visited Ceres and Pluto. Therefore, we have only studied and observed Ceres and Pluto enough to be sure that they are dwarf planets. While we have identified five dwarf planets currently given the borders of space NASA has studied, there may be another 40 objects in our solar system that could be classified as dwarf planets if given more time and research. There could be up to 200 more dwarf planets located in the Kuiper Belt, and over 10,000 in the regions past the Kuiper Belt. The presence of dwarf planets in our solar system and beyond could be much more significant than it seems today: the further we progress in space travel, the larger our body of knowledge becomes.

1. Which of the following is not a similarity shared by planets and dwarf planets?

- a. Their orbit
- b. Their rings
- c. Their mass
- d. Their shape

2. According to the article, why can't dwarf planets keep the space around their orbit free of debris?

- a. They are only able to capture, but not collide or gravitationally disturb.
- b. Doing so would alter their spherical shape.
- c. They don't have enough mass to do it.
- d. It would alter their gravitational patterns.

- 3. How many dwarf planets might exist in the universe?**
- 2
 - 5
 - 40
 - None of the above
- 4. Which statement is incorrect?**
- NASA has reached two of the five known dwarf planets.
 - Makemake is located in the asteroid belt.
 - Pluto is composed 1/3 of water.
 - Haumea is located in the outer solar system.
- 5. Why are we certain that only Ceres and Pluto are dwarf planets, despite having identified five?**
- Ceres and Pluto are the only two that are unable to clear the space in their orbits.
 - The other three dwarf planets may actually be real planets in our solar system due to their spherical shape.
 - The other three dwarf planets may be composed 1/3 of water.
 - Ceres and Pluto are the only two NASA has visited and confirmed to be dwarf planets; the other three have yet to be confirmed.
- 6. Why is it important to continue space travel and research related to dwarf planets?**
- It may reveal thousands more dwarf planets in and beyond our solar system.
 - It may help dwarf planets grow into planets.
 - It may help Pluto feel less lonely.
 - It may help broaden our understanding of collision, capture, and gravitational attraction.
- 7. Which is not a dwarf planet?**
- Ceres
 - Eris
 - Venus
 - Pluto