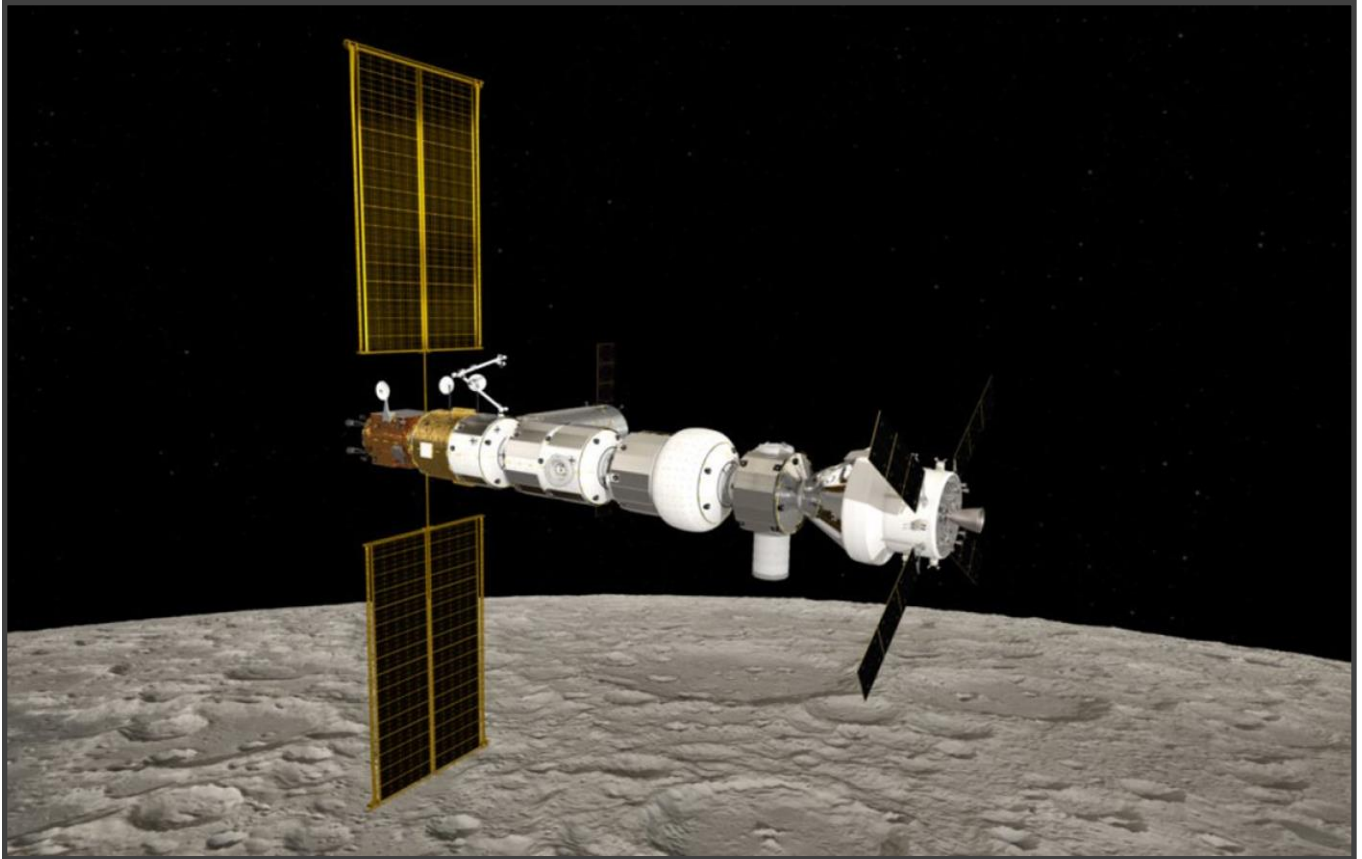


Spacegate Station Season 3

Episode 14 Resources



Resource Content

Power of the Planets

- Guided Notes
- Astronomy Activity
- Next Generation Sunshine State Standards (Florida)
- Next Generation Science Standards

This program was designed specifically to be used as part of science subject instruction, science remediation and science enrichment. The determination of the appropriate science standards that correlate to this program was established by a board of Science Specialists and teachers in Duval County Public Schools, Jacksonville, FL.

Spacegate Station Episode 14

Power of the Planets

Word Bank

Asteroids	Away	Coma	Comets	Earth
Gravity	Jupiter	Mars	Mercury	Moons
Milky Way galaxy	Neptune	Planets	Round	Saturn
Solar objects	Space debris	Sun	Tail	Uranus
Venus				

Guided Notes

Our solar system is in an outer arm of the _____, and anything related to the Sun we call “solar.”

In our solar system, _____ are large natural objects that orbit, or travel around our central star called the Sun. They can be made mostly of rock, or liquids or gases. In order from the closest to the Sun, the eight planets of our solar system are:

- | | | |
|----------|-----------------|-------------------|
| 1. _____ | My | Most |
| 2. _____ | Very | Very |
| 3. _____ | Educated | Elderly |
| 4. _____ | Mother | Men |
| 5. _____ | Just | Just |
| 6. _____ | Served | Sleep |
| 7. _____ | Us | Under |
| 8. _____ | Nachos | Newspapers |

To be classified as a planet a solar object must fit three criteria.

1. It must orbit the _____.
2. It must have enough mass to have a nearly _____ shape.
3. It must have a strong enough gravity to sweep up or deflect away most of the smaller nearby _____ or _____.

Pluto only meets two of the three criteria; it does not have enough _____ to clear its local region of other objects.

_____ are large natural bodies of rock that orbit planets. They are smaller than the planets they orbit. They come in different types, shapes, and sizes, and some of them even have atmospheres and hidden oceans.

_____ are very small, irregularly shaped bodies of rock and metal. They orbit the Sun, but they are more like giant rocks and much smaller than moon or planets. Since they are small, they do not have enough gravity to become round.

_____ are small, icy objects that orbit the Sun. Their orbits carry them from close to the Sun to the solar system's outer edges. When they get close to the Sun, its outer layers of ice melt and evaporate. The vaporized gas and dust form an atmosphere around the comet.

This atmosphere is called a _____, and the radiation and particles streaming from the Sun push some of this gas and dust into a long _____ which always points _____ from the Sun, no matter which way it is moving.

Astronomy Activity

Many students have difficulty visualizing the relative sizes of the planets in our solar system. In this activity students will use Playdough to model, in three dimensions, the relative sizes of the planets. They will get to visualize the relative volumes of the eight planets and the dwarf planet Pluto in the solar system.

Materials

1. Playdough or clay (three pounds per group)
2. plastic knife (one per group)
3. wax paper (one sheet per group)
4. planet placemats (one set per group)

INSTRUCTIONS

1. Divide the Entire Ball of Playdough (or clay) into 10 Equal Parts, you may find it easiest to start by rolling the ball into one big hot dog shape.

- Combine 6 parts together and put them into the Jupiter box.
- Similarly combine 3 parts and put them into the Saturn box.

2. Cut the Remaining Part into 10 Equal Parts

- Take 5 parts and combine them with the ball in the Saturn box.
- Combine 2 parts to put into the Neptune box.
- Combine 2 parts to put into the Uranus box.

3. Cut the Remaining Part into 4 Equal Parts

- Take 3 parts and combine them with the ball in the Saturn box.

4. Cut the Remaining Part into 10 Equal Parts

- Put 2 parts into the Earth box.
- Put 2 parts into the Venus box.
- Take 4 parts and combine them with the ball in the Uranus box.

5. Combine the Remaining 2 Parts and Cut into 10 Equal Parts

- Put 1 part into the Mars box.
- Take 4 parts and combine them with the ball in the Neptune box.
- Take 4 parts and combine them with the ball in the Uranus box.

6. Cut the Remaining Part into 10 Equal Parts

- Put 7 parts into the Mercury box.
- Take 2 parts and combine them with the ball in the Uranus box.

7. Cut the Remaining Part into 10 Equal Parts

- Take 9 parts and combine them with the ball in the Uranus box.
- Put 1 part into the Pluto box.

Finally: Now that you have divided the playdough to represent the planets by volume, roll the pieces in each planet's box into balls to best represent the shapes of the planets.

Mercury

Venus

Earth

Mars

Jupiter

Saturn

Uranus

Neptune

Pluto

Next Generation Sunshine State Standards (Florida)

- SC.3.E.5.3** Recognize that the Sun appears large and bright because it is the closest star to Earth.
- SC.3.E.5.2** Identify the Sun as a star that emits energy, some of it in the form of light.
- SC.4.E.5.3** Recognize that Earth revolves around the Sun in a year and rotates on its axis in a 24-hour day.
- SC.5.E.5.3** Distinguish among the following objects of the Solar System — the Sun, planets, moons, asteroids, comets — and identify Earth's position in it.
- SC.8.E.5.1** Recognize that there are enormous distances between objects in space and apply our knowledge of light and space travel to understand this distance.
- SC.8.E.5.3** Distinguish the hierarchical relationships between planets and other astronomical bodies relative to solar system, galaxy, and universe, including distance, size, and composition.
- SC.8.E.5.7** Compare and contrast the properties of objects in the Solar System including the Sun, planets, and moons to those of Earth, such as gravitational force, distance from the Sun, speed, movement, temperature, and atmospheric conditions.

Next Generation Science Standards (National)

- MS-ESS1-1** Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.
- MS-ESS1-2** Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.
- MS-ESS1-3** Analyze and interpret data to determine scale properties of objects in the solar system.
- 5-ESS1-1** Support an argument that the apparent brightness of the sun and stars is due to their relative distances from the Earth.