

Content Area:

Science

Aims:

To broaden students' general knowledge of the solar system
To identify different features of the solar system like the Sun, the Moon, the planets, comets, and asteroids.
To help students grasp the concept of the vastness of our universe

Assumed knowledge:

Students will be able to recognize each planet or moon by its unique and identifiable features
Students will be able to determine the position of the planets and their relative sizes and distances
Students will identify the differences between planets, moons, comets and asteroids
Students can name the constellation of the stars

Anticipated problems:

Students may have problems with understanding the new vocabulary

Teaching aids:

A quiz

Solar system worksheets
A documentary video 'How big is the Universe' by National Geographic
<https://www.youtube.com/watch?v=CxZWt2wUu10> /44:03 min/

New vocabulary:

Vocabulary connected with the subject: spin, faint, resemble, assign, deflect, shield, streak, terrestrial planet, dwarf planet, demote sth down, comprehend, dimension, vast, velocity, insignificant

Sources:

<http://listverse.com/>
<http://www.space.com/>
<https://www.youtube.com/>
<https://en.wikipedia.org>

Topic: The Solar System

How Well Do You Know Our Solar System? Here are some pretty simple questions to test your knowledge. Good luck!

- | | | | |
|---|--------------------------|--------------------|------------------------------------|
| 1 Which planets have rings? | A Saturn Uranus | B Saturn Neptune | C Saturn, Uranus, Jupiter, Neptune |
| 2 Which planet is the biggest? | A Earth | B Jupiter | C Saturn |
| 3 How many planets are there? | A 9 | B Too many | C 8 |
| 4 Pluto is ... | A a dwarf planet | B a planet | C Mickey Mouse's dog |
| 5 How old is the Earth? | A 4,6 billion years | B Like, old! | C 1,3 billion years |
| 6 Which of these planets has no moon? | A Mars | B Jupiter | C Mercury |
| 7 What is the hottest planet in the Solar System? | A Mercury | B Venus | C Mars |
| 8 What planet is closest in size to Earth? | A Jupiter | B Venus | C Saturn |
| 9 What planet is nicknamed the 'Red Planet'? | A Uranus | B Neptune | C Mars |
| 10 What is the third planet from the Sun? | A Earth | B Mars | C Venus |
| 11 What is the sun? | A planet | B star | C asteroid |
| 12 What is the NASA's most famous space telescope? | A Hubble Space Telescope | B Armillary Sphere | C Parkes Observatory |
| 13 What is the name of the force holding us to the Earth? | A germination | B gravity | C tidal flow |
| 14 Does the sun orbit the Earth? | Yes | No | |
| 15 Have human beings ever set foot on Mars? | Yes | No | |

Read some interesting facts about the Solar System and check your answers.

The Closer It Gets, the Cooler It Is

If asked what the hottest planet is, most people would point to Mercury. While this is not true, it is a completely sensible conclusion since Mercury is, after all, the closest planet to the sun. But it turns out that Venus is actually a hotter planet than Mercury, even though it is further away. The reason for this is that Mercury doesn't even have an atmosphere, which means that there is nothing to hold the heat in. Venus, on the other hand, has a notoriously thick atmosphere that traps the heat created by the sun. Interestingly, Venus is also quite the black sheep of the planet world, and spins in the opposite direction.

Dwarfs in the Universe

For many years we had been told that Pluto was a planet, and this was considered to be unquestionable fact. In 2006 nasty scientists pulled the rug out from under us and announced that Pluto was no longer considered to be a planet. They threw Pluto out of the planet club and demoted it down to a "dwarf planet". While similar to planets in many ways, dwarf planets share their orbits around the sun with other objects such as asteroids or comets. There are actually five dwarf planets in our solar system. One of them is the reclassified Pluto. The other four are Ceres, Eris, Haumea, and Makemake. There are also "dwarf stars" in the Universe. Their colours can range from blue to red, depending on temperature. The Sun is currently a type of star known as a Yellow Dwarf.

Kings of the Rings

While many of us were taught in school that Saturn had amazing rings, made up of small rocks, ice and other particles, there are actually several other planets that also have rings around them. In fact, all of the larger planets in the solar system have been found to have rings. This is true of Jupiter as well as Neptune. Even Uranus has nine bright rings around it and a few fainter ones which are difficult to see, due to the distance.

Moon is Cool.

Moons, also called satellites, come in many shapes, sizes and types. There are more than 181 moons of the various planets, dwarf planets and asteroid in the solar system. Earth is the only member of our sun's family to have just one moon. Mercury and Venus have none. Mars has two small moons. The giant planets, Jupiter, Saturn and Neptune, have so many moons that they resemble miniature solar systems. Astronomers have assigned them romantic names like Atlas, Pandora, Ophelia, Ariel, Juliet. The moons in our solar system come in a rich variety of sizes, temperatures, atmospheres and behaviors. They also

perform useful tasks. Our own Moon probably deflected a number of asteroids that might have smashed into Earth, causing enormous damage. The huge craters on the Moon bear witness to its service as a shield for our planet.

Make a Wish upon a Star

A meteorite is a bright streak of light in the sky, often referred to as a "shooting star" or "falling star" and it is simply material from the solar system falling to Earth.

Twins Separated at Birth

Venus is the second planet from the Sun, the closest planet to Earth and the third brightest object in Earth's sky after the Sun and Moon. It is sometimes referred to as the sister planet to Earth, because they are similar in size and chemical makeup. The pair formed about the same time, more than four billion years ago.

The God of Sky

Named after the Roman king of the gods, Jupiter is fitting of its name. It is the fifth planet from the Sun and the largest and most massive planet in the Solar System. To put this in perspective, it would take 11 Earths lined up next to each other to stretch from one side of Jupiter to the other and it would take 317 Earths to equal the mass of Jupiter.

Follow Your Curiosity

Mars is the fourth planet from the Sun and last of the terrestrial planets. The keen interest on Mars is due to the hope of being able to discover life on the planet. The Mars Science Laboratory and its rover, Curiosity, is the most ambitious Mars mission yet flown by NASA. Curiosity is the "gee whiz" centerpiece of the mission. It was designed to assess whether the red planet ever had an environment able to support small life forms called microbes. In other words, its mission is to determine the planet's "habitability." While the rover was exploring Mars, it, like a tourist who snaps a photo of himself in front of the Eiffel Tower, stretched out its arm and captured a high-resolution self-portrait in spectacular surroundings.

Vocabulary

notoriously – notorycznie

spin – obracać się

faint – słaby, nikły

resemble – przypominać, wyglądać

jak

assign – przypisać, przydzielić

deflect – odpierać, odchyłać kurs

shield – tarcza, osłona

streak - smuga

terrestrial planet – planeta typu

ziemskiego

celestial (body) – (ciało) niebieskie

dwarf planet – planeta karłowata

demote sth down – zdegradować

assess – oszacować

centerpiece – centralna część,

gwóźdź programu, najważniejsza

atrakcja

Exercise

What do the underlined expressions mean in the texts? Choose from the options A, B or C.

pulled the rug out from under

A to help someone emotionally or in a practical way

B to suddenly do something which causes many problems

C to take away a rug a person is standing on so that he or she falls

bear witness to

A to show by your existence that something is true

B an ugly woman who is the witness

C to see a bear in the wild

the black sheep

A someone who is physically very strong but not very intelligent

B someone who behaves in such a foolish way in public that they look ridiculous

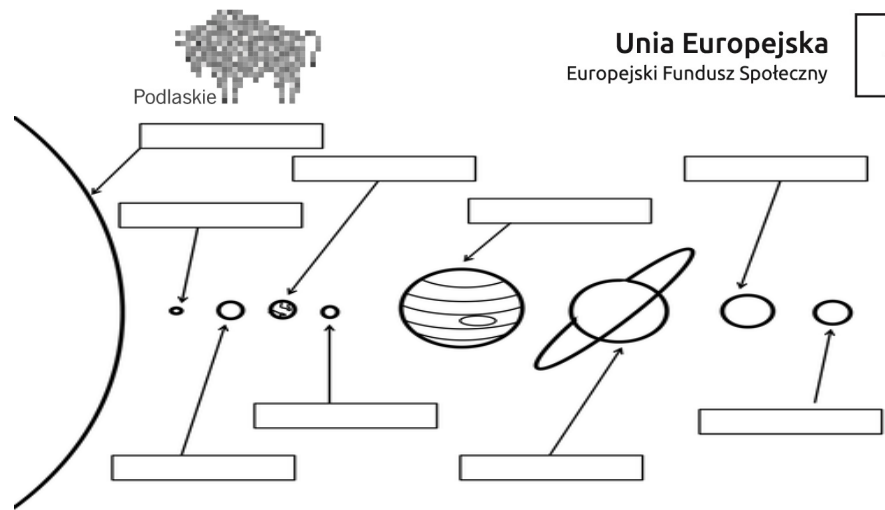
C someone who causes shame or embarrassment because of deviation from the accepted standards

gee whiz

A marked by spectacular or astonishing qualities or achievement

B used to express surprise or mild anger

C easily managed or handled



Exercise: Name the planets

Topic: *How Big Is the Universe* - a documentary video by National Geographic

Vocabulary

comprehend – pojąć

dimension – wymiar

height / length / depth – wysokość /

długość / głębokość

shrink (down) - zmniejszyć

vast - przepastny, rozległy

velocity - prędkość

siblings – rodzeństwo

insignificant – nieznaczący,

niepokaźny

curiosity - ciekawość

compare to – porównać do

Exercise: Uzupełnij zdania wyrazami ze słowniczka

1. "Do you have any _____?" "No, I'm an only child."
2. It took me a while to _____ algebra.
3. If we _____ the Earth to the size of a basketball, the moon will be the size of a tennis ball.
4. The wind _____ did not exceed 20 km.
5. We are so _____ that I can't believe the whole universe exists for our benefit.
6. Human beings seem to be an incredibly small but a very significant part of our _____ universe.
7. He _____ children _____ young trees, both still growing and able to be shaped.
8. Many people told me that my _____ would get me in trouble one day.

Exercise: Watch the video and complete the gaps in the sentences

The Sun weighs over 300,000 times more than the Earth. The Sun is 109 times as wide as the Earth.

_____ is the brightest star in the constellation of Lyra.

Canis Major constellation is known as the _____.

The brightest star in the night sky, known as the "dog star", is _____.

Dubhe is the red giant at the front of the _____ (also known as the Plough or the Great Bear)

_____ (a monster star) is an orange giant star located in the constellation of Taurus.

Betelgeuse is located _____ light years away from the Earth.

The biggest star is called _____ and it is _____ times the diameter of the Sun.

Mercury is _____ million miles away from the Sun

_____ is 67 million miles away from the Sun

Earth is _____ million miles away from the Sun

_____ is 142 million miles away from the Sun



Jupiter is 484 million miles away from the Sun

_____ is 886 million miles away from the Sun

_____ is 1.8 billion miles away from the Sun

_____ is 3 billion miles away from the Sun

A light year is the distance that light travels in _____ .

Light travels at 186 000 miles per second, _____ miles per hour.