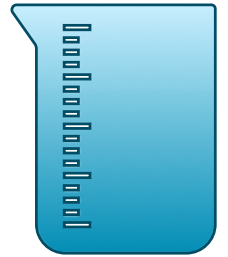


ΕΠΙΣΤΗΜΟΝΙΚΕΣ ΑΠΑΝΤΗΣΕΙΣ

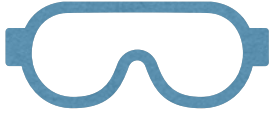
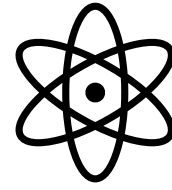
2

SCIENTIFIC ANSWERS

2



Περιεχόμενα

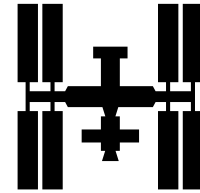


Chapter	Theme	Page
1	Space (continuation)	3-10
2	Technology	11-14
3	Nature (mountains and forests)	15-21
Quiz	—	22-25



Space

(Continuation)



Spaceships

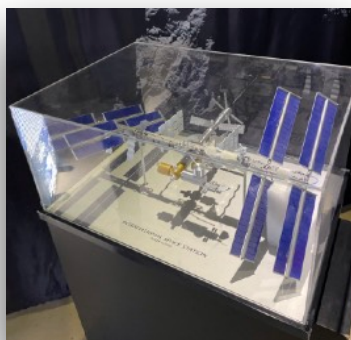


We imagine spaceships to be quite different from the one in the picture. However, this is a replica of the spacecraft that took the first humans to the Moon.

International Space Station (ISS)

The International Space Station functions as a floating scientific laboratory, deep space observatory, and high-tech Earth observation station. With 15 partner countries and five space agencies, the International Space Station is the largest international peace project in history. Its first module, Zarya (Dawn), was launched by the Russians in November 1998. Construction was completed with the transfer of the Alpha Magnetic Spectrometer from the space shuttle Endeavour, mission STS-134. The station consists of 15

pressurized modules, the truss structure, and solar panels. The Russians launched two more modules, Nauka (Science) and Uzlovoy (Node), in 2021. The ISS's lifecycle is set to end in mid-2031.



Bike on the ISS

Just as your leg muscles might betray you from lounging on the couch all day, the same could happen to the astronauts on the ISS. Despite the fact that astronauts work almost nonstop, the absence of gravity slowly shows its effects. While the average adult is recommended to exercise about 30 minutes a day for several days a week, the people on the International Space Station exercise for 90 to 120 minutes every day, just to maintain their bone and muscle mass at healthy levels.

Currently, they use the CEVIS system, the Cycle Ergometer with Vibration Isolation and Stabilization. It is basically a stationary bicycle, attached to one side of the International Space Station to ensure it doesn't start floating.

Astronauts wear heart rate monitors while riding the bike and then send the data to Earth so their trainers can analyze it and optimize their daily workout.

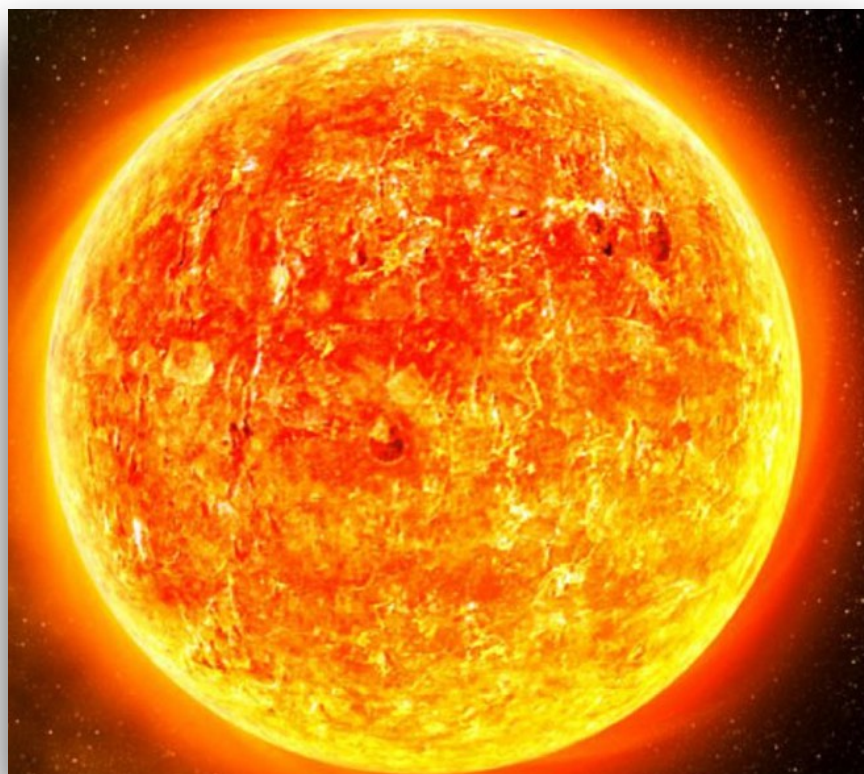
'We have a computer, so if you like to listen to music, you can do that. Or watch a movie,' says astronaut Doug Wheelock



Sun

There's nothing wrong with a little sun worship. Although the closest star to Earth is literally the star of the show, it's not really significant when you look at the big picture of the entire galaxy, which has 200 to 400 billion other stars, many like ours. Scientists call our star a 'G-type main sequence star,' which in simple terms means it is on the cooler side compared to some other hotter types, smaller than average in size, and not the most common type of star but not very rare either. It is a main sequence star because it is in the prime stage of its 10-billion-year lifespan, doing what most stars in the universe do: converting hydrogen into helium deep in their cores.

This main sequence process is called nuclear fusion and creates energy that travels to the surface of the sun (photosphere) and is released as heat and light. The core of the sun will gradually run out of hydrogen gas, which will signal the end of the sun. But we don't need to worry about that for the next five billion years or so



Sunspots

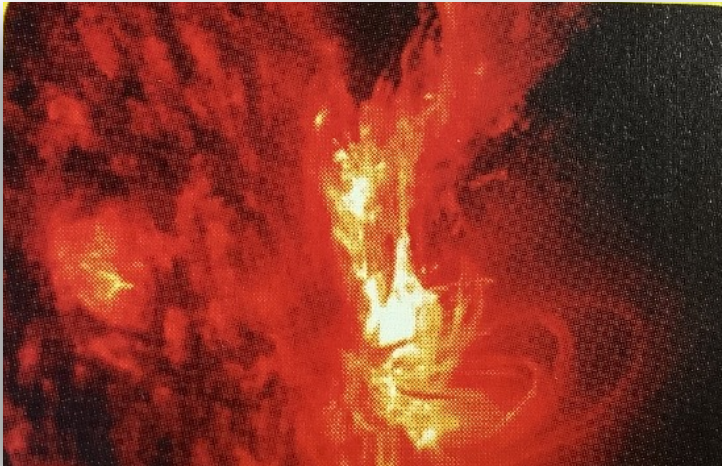
These cooler areas on the surface of the sun can emit charged particles known as solar flares that disrupt solar systems on Earth. Galileo Galilei was the first astronomer to observe sunspots.

Prominences

Occasionally, these strips of glowing gas, which are cooler than the surface of the sun but still extremely hot, are ejected and remain suspended by the powerful magnetic field of our star, then collapse back to the surface. Solar flares can be 10 times the size of Earth.

Sunbeams

The sun may appear to be a perfect sphere, but closer examination with special telescopes reveals imperfections...



Source of all (related to the sun): NATIONAL GEOGRAPHIC WHY NOT?

Why is the moon not always visible?

The moon does not shine by itself: moonlight is actually sunlight reflected from the surface of the moon. Just like here on Earth, the moon has a day side that faces the sun and a night side that faces away from it. The difference is that the moon takes about 30 days to rotate as it orbits around the Earth, which means a full day and night cycle on the moon also lasts about 30 days. When we see a full moon, it is noon on the side of the moon facing us. When we don't see the moon at all (this phenomenon is called a new moon), it is midnight on the moon. All the intermediate phases represent the various stages from morning, afternoon, and evening.



Why doesn't the moon have a specific name?

Imagine you have the first cat in the world as a pet. You had never seen a cat before, so you decided to name it 'Cat.' One day, you discover that there are other cats in the neighborhood. You call these animals 'cats' because that's what you named yours, but you know that 'cats' (the other animals) are different from 'Cat' (the name of your pet). Your cat still has the name 'Cat' even though the other cats have different names. The moon has a similar story.

How do you say the moon in...

Greek? Φεγγάρι (pronounced: Fegari)

Italian? Luna

German? Mond

Chinese? yuèliàng (pronounced: you-ay-lee-ong)

Hindi? Chaand (pronounced: Chond)



The American flag on the moon

Technology

Technology has revolutionized the way we live, work, and communicate. From the invention of the wheel to the development of the internet, technological advancements have continuously shaped human civilization. Today, we rely on technology for almost everything, from smartphones and computers to medical devices and renewable energy solutions. The rapid pace of technological innovation promises even more exciting developments in the future, such as artificial intelligence, quantum computing, and space exploration. These advancements have the potential to solve some of the world's most pressing challenges and improve the quality of life for people around the globe.

Surely, technology has evolved rapidly, and many companies contribute to this progress. One of the most important companies is Apple, which revolutionized the mobile phone industry with the creation of the iPhone. The man behind this innovation was Steve Jobs. Besides Apple, there are other famous companies in the technology sector, such as Samsung and Bell. At the same time, technological progress is not limited to devices but also extends to applications, such as ChatGPT, which provides answers to various questions. Let's see below a dialogue with an electrical engineer:

Journalist: What is the main job of an electrical engineer?

Electrical Engineer: I am involved in the design and development of electrical systems.

J: What skills are necessary for this job?

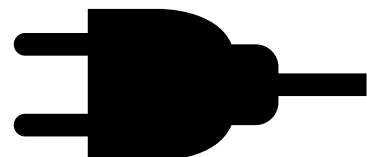
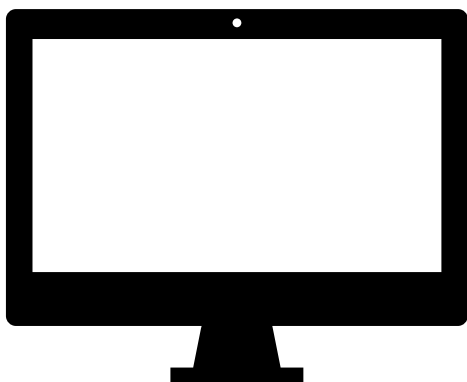
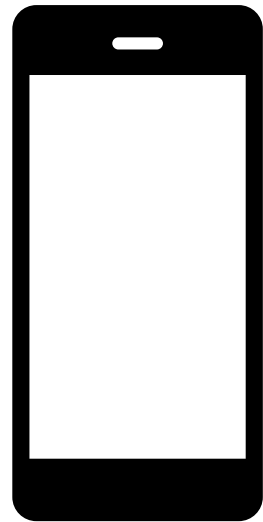
EE: Good communication skills and analytical thinking.

J: How do new technologies, such as ChatGPT, affect your field?

EE: They help in data analysis and process automation.

J: What challenges do you often face in your job?

EE: The continuous evolution of technology and the need for ongoing education.



As we mentioned above, Apple is one of the greatest companies that makes electronic devices (tablets, laptops, computers, etc.). This company also makes its own phones, which it calls iPhones.

So far, there are 16 iPhones (if we count only the main ones). The first iPhone created was the iPhone 1. After that, more were created, and we ended up being able to buy up to a brand new iPhone 16.

In reality, there are not just 16 iPhones. Between each number, there are other iPhones with slightly different names. For example, ...iPhone 6, iPhone 6s,... iPhone 16, iPhone 16 Pro, iPhone 16 Pro Max, ... etc.

These days, experts are working on several cutting-edge technologies to drive innovation and solve complex problems. Some of the key areas include:

1. Developing advanced AI models that can create sophisticated content, such as text, images, and simulations, to enhance productivity and creativity.
2. Making strides in quantum technology to solve problems that are currently unsolvable by classical computers.
3. Expanding and optimizing 5G networks to improve connectivity and support the Internet of Things.
4. Innovating in green energy technologies to combat climate change and promote sustainability.
5. Using biotechnology to develop personalized treatments based on individual genetic profiles.
6. Advancing self-driving car technology to improve safety and efficiency in transportation.

These efforts aim to transform various industries and improve the quality of life for people around the world.



Nature (mountains and forests)

Do mountains grow taller?

Yes! Many mountains do grow taller! For example, the tallest mountain in the world, Everest, is still growing. In fact, it grows by a few millimeters every year. Currently, its height is 8,848 meters, which is about the same as 125 large airplanes lined up!

Why is Everest growing?

Everest is growing because it is being pushed by huge rocky plates at its base, which collide and crush against each other as they move. This also causes some earthquakes.

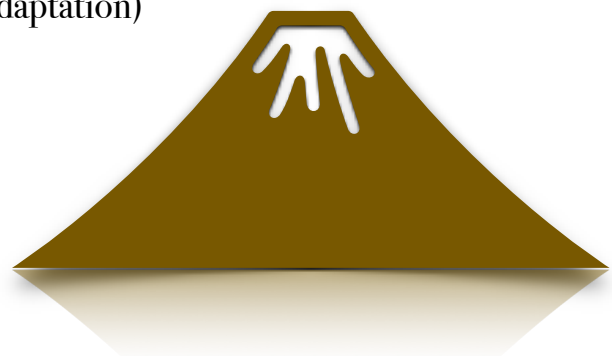
Volcanoes

Volcanoes are essentially mountains with craters at their top. Volcanoes erupt when hot, molten rocks, also known as magma, rise to the surface of the volcano. The magma flows out from the interior of the volcano. This type of volcano is called active.

Besides the active volcano, there is also the dormant volcano. A dormant volcano is like it is sleeping. However, if the magma finds a way to reach the surface, the volcano can suddenly wake up with an eruption.

If a volcano has no magma inside it, then it is an extinct volcano. An extinct volcano may have erupted in the past, but it will never erupt again.

Source: Book "I Ask and Learn About Nature" (adaptation)



The volcano of Iceland

The Fagradalsfjall of Iceland volcano erupted once again on January 15, 2024. The sky turned from blue to orange due to the lava. In Iceland, volcanic surges and eruptions are a common activity. What needs to be clarified is that a volcanic eruption does not happen overnight. Volcanoes give warnings before they do anything. They are not like earthquakes; they do not suddenly explode. They start a slow activity, which can last from weeks to years.

On all volcanoes, the state and research institutions place monitoring networks to know if a volcano is preparing for an eruption..



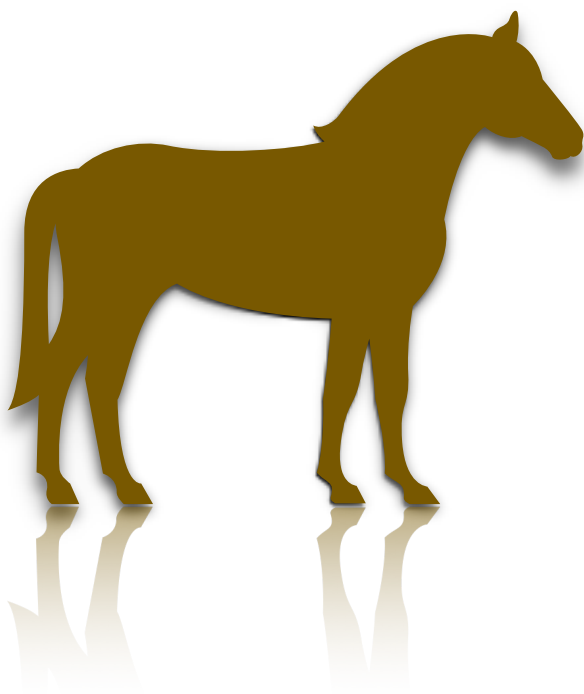
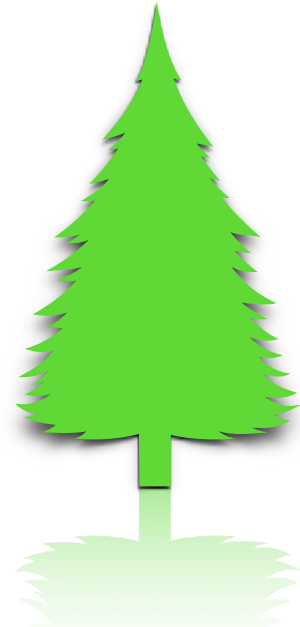
What do you call a mountain with hiccups?

A volcano!



Forests

Forests are a source of life. Various creatures live in them, and there are valuable plants that produce oxygen. These forests, created by nature millions of years ago, are being destroyed, unfortunately, by humans to obtain wood from the trees, build more buildings, and do other things that you will see below.



The forest of Sumatra

Sumatra (which is the largest island in Indonesia) has many tropical forests. It generally has a very big area of nature. Various animals live there, such as elephants, orangutans, lemurs, and other wild creatures. The most well-known animals there are the orangutans. They have reddish fur and are very flexible. Unfortunately, these orangutans are somewhat like endangered animals. Are you wondering why? Read below to find out.



Orangutans are “endangered animals” because huge areas of nature where they live and find food are being destroyed by people who have palm oil production companies. These companies cut down tropical trees to plant palms (not coconut palms) that produce an oil called palm oil.

To plant these palms, an area of land approximately 7,600 square kilometers had to be “destroyed.” The area has ended up being a monoculture of palms. This oil is used in everything from cosmetics to food. However, scientists have proven that palm oil is carcinogenic. This has not reduced the demand for palm oil at all. Thus, companies continue their destructive work.

To draw the world’s attention to the problem, an artist pruned palms in a plantation into the shape of SOS.



Quiz

Do you remember all the stuff you just read? Let's check it out!

1. What was the name of the person who made the iPhones?

A) Steve Jobs

B) Still Works

C) Working Steve

2. What is a volcano called that cannot erupt again?

A) Dormant

B) Extinct

C) Active

3. What is the moon called in German?

A) Luna

B) Mond

C) Moon

4. Which company made the iPhones?

A) SAMSUNG

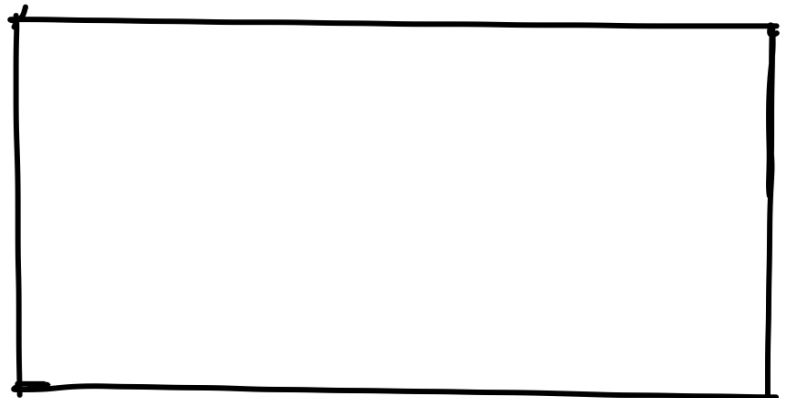
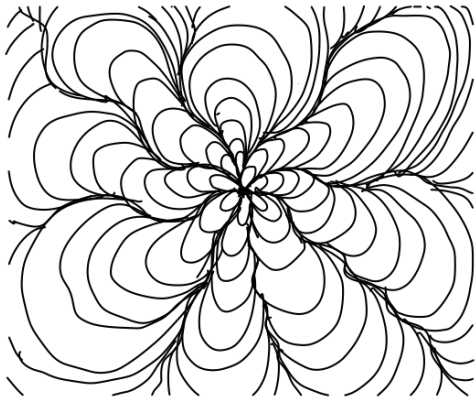
B) XIAOMI

C) APPLE

ANSWERS

1. = A
2. = B
3. = B
4. = C

Fun Time! Are you bored? Try and copy this image!



SCIENTIFIC ANSWERS

2

Inside our magazine, you will find useful information about Space, Technology, mountains, and forests. You will also discover other things you didn't even know existed! Keep the answers in your mind, because there's a quiz too!