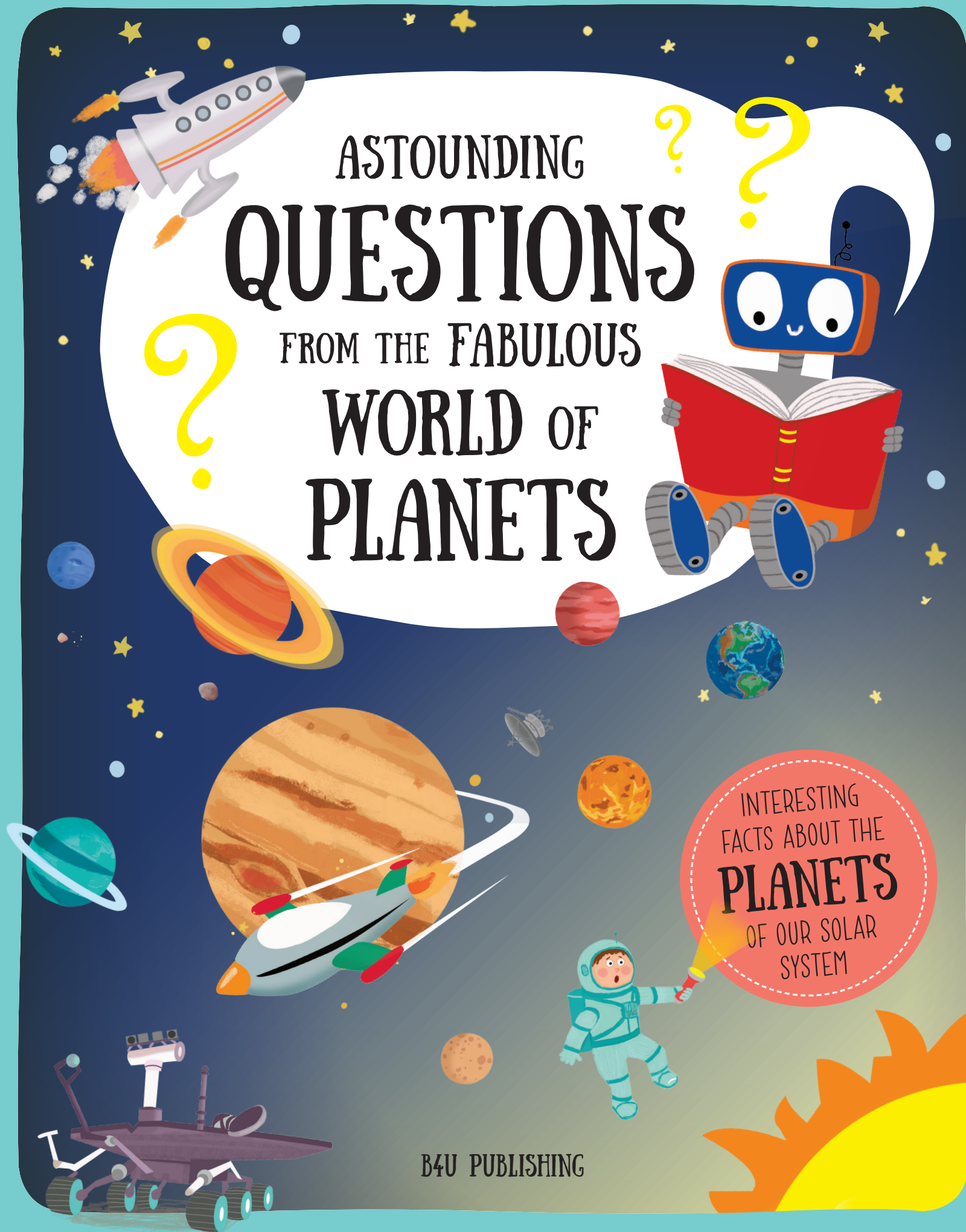


ASTOUNDING QUESTIONS FROM THE FABULOUS WORLD OF PLANETS

Written by Pavel Gabzdyl
Illustrations by Inna Chernyak

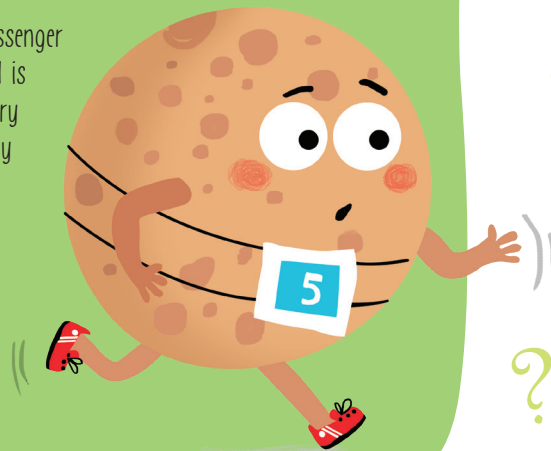


INTERESTING
FACTS ABOUT THE
PLANETS
OF OUR SOLAR
SYSTEM

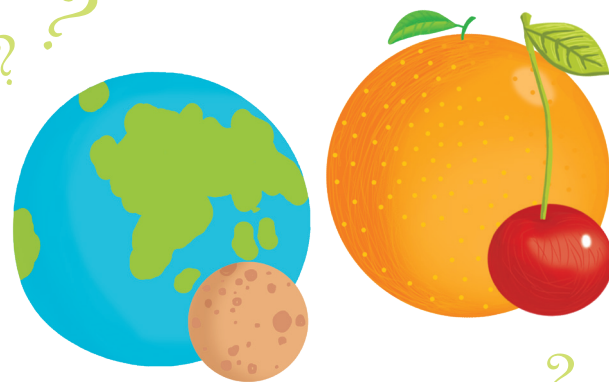
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1. WHAT'S MERCURY LIKE?

This planet, named after the Roman-winged messenger of God, is the smallest in the solar system and is closest to the sun. The surface of Mercury is very similar to the surface of our Moon. It is primarily grey and has many craters. Mercury is a kind of planetary sprinter. Its **orbiting speed** around the sun is faster than any of the other planets. In a mere second, it covers 50 kilometres of its orbit. In comparison, Earth covers "only" about 30 kilometres per second.



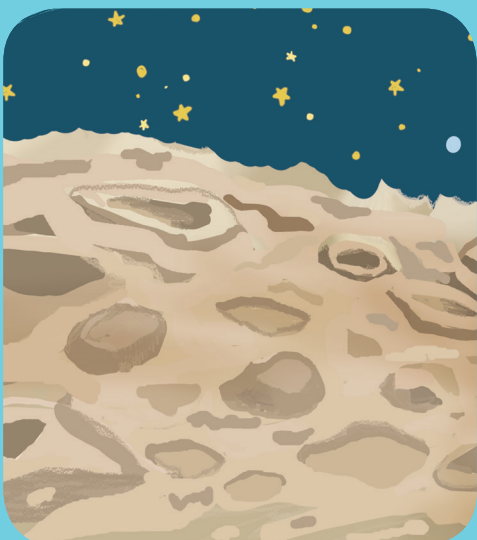
3. HOW BIG IS MERCURY?



Getting a grasp on Mercury's size is not any easy feat. Knowing that Mercury has a **diameter of 4,879 kilometres** does not really mean anything to us. If, however, we were to tell you that Mercury is two and half times smaller than Earth, then you'd have a better idea of its size. We can have an even better grasp of its size by shrinking down both planets. So if our planet is the size of an orange, Mercury would then be only the size of a big cherry. Mercury's entire surface area is like that of America and Africa combined.

4. IS IT ALWAYS HOT ON MERCURY?

You probably think that because Mercury is out of all the planets closest to the sun, then it must be scorching. And you'd be right to think so. During the day the temperature reaches **430 °C!**



2. WHY DOES MERCURY LIKE TO STAY HIDDEN?



Finding Mercury in the night sky shouldn't be hard – afterall, its brightness outshines even **Sirius**, the brightness star in the sky. So why do we see Mercury only rarely? As Mercury is closest to the sun, it resides close to it in the earthly sky as well. Ideal conditions for seeing Mercury is shortly before sunrise or at sunset by looking low on the horizon; however, a view is often blocked by far-off hills and trees. On top of that, Mercury's visibility is limited to a span of two weeks once every two months.

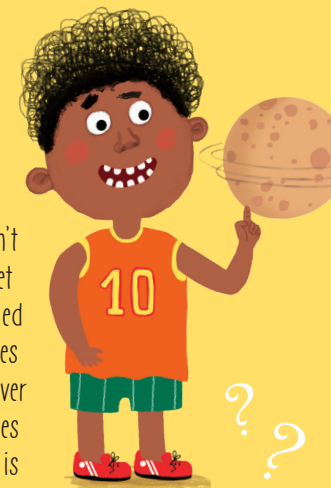
5. CAN WE GO ICE SKATING ON MERCURY?

What kind of bizarre question is that?! After all, Mercury is so close to the sun that tin and lead can melt at its mid-day temperatures! So how could there be ice? Yet you can actually ice on Mercury. In fact, close to Mercury's poles there exist craters where the sun doesn't shine. Ice most likely exists in those dark places thanks to the impact of comets and comet cores (partially comprised of ice) which formed the craters. Evidence of **ice** on Mercury has been proven, although ice skating there would be rather difficult - ice on Mercury is covered by a thick layer of dust.



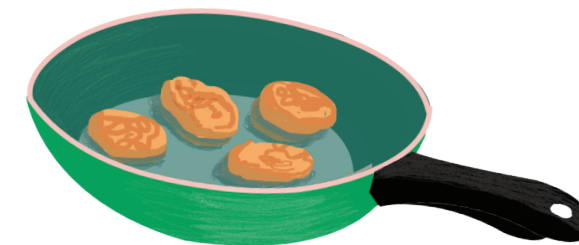
6. HOW LONG IS A DAY ON MERCURY?

That's a tough question! In fact, once upon a time, astronomers weren't sure if Mercury rotates on its axis. They believed that one side of the planet was always pointed towards the sun, whereas the other was imprisoned in eternal darkness. It wasn't until later they discovered that Mercury does spin on its axis. While our planet is able to complete a single rotation over 24 hours, Mercury spins around once in almost 59 days. Moreover, it goes around the sun once in 88 days, which means that a day on Mercury is **176 earth-days-long**. Just imagine: one frigid night lasting over 2,000 hours and steamy day lasting the same amount of time.

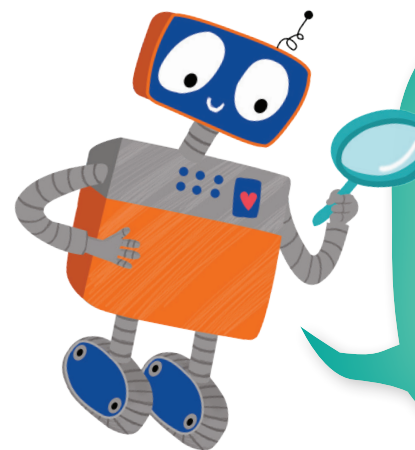


7. WHAT IS THE CALORIS BASIN?

Just like on the moon, there are lots of craters as well. One such crater far surpasses all others in size. It is a massive round structure surrounded by mounds approximately 2 metres high. This crater is called the **Caloris Basin** and was only discovered in 1974 from images from the Mariner 10 probe. The diameter of the basin is 1,500 km, making it one of the largest remnants from a cosmic body in the entire solar system!

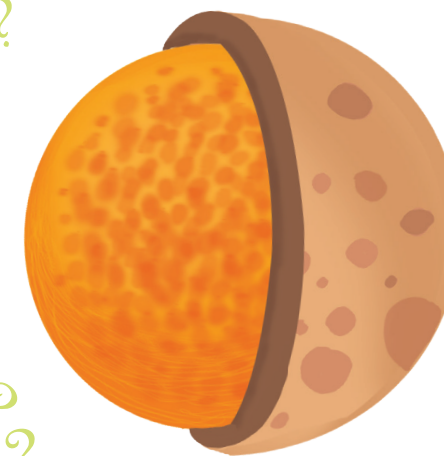


MERCURY, THE SMALLEST MOON-LIKE PLANET



8. WHAT'S HIDDEN IN MERCURY'S CORE?

The composition of Mercury's core is one of the greatest mysteries of the solar system. Whereas with other rock-based planets (Earth, Venus, Mars) it can be said that the larger the planet, the greater its **overall mass**; Mercury, however, doesn't fit this description. In fact, Mercury is the smallest of the planets, yet has the most mass in the solar system after our own planet!



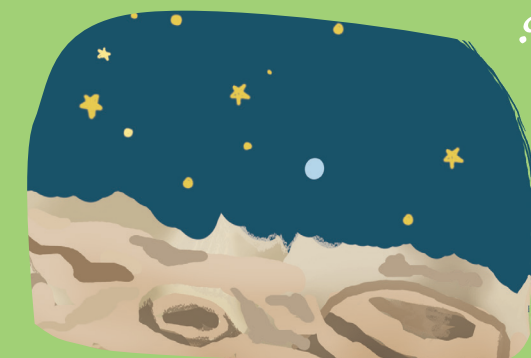
9. WHY IS MERCURY SHRINKING?



Scientists have discovered that Mercury must have shrunk sometime in the past. Breaks and cracks on the planet's surface are proof of that. The **cooling** of its molten core most likely have led to its reduced size. In fact, its cooling core (similar to the shrivelling of an apple) is shrinking and the entire planet is getting smaller along with it – Mercury has shrunk by about 15 km since its formation. But not to worry, it looks like Mercury is not going to do anymore shrinking.

10. WHAT'S THERE TO SEE ON MERCURY?

There are many geological formations on Mercury that were formed before there was even life on Earth.

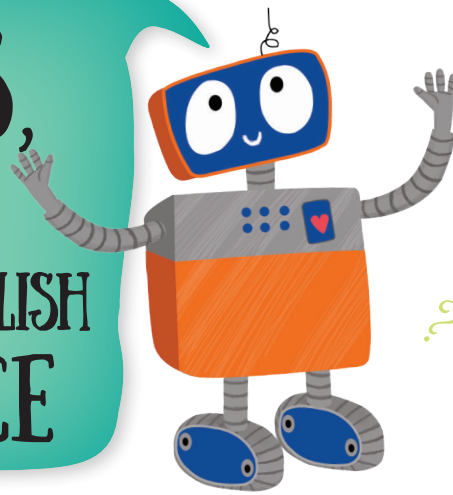


1. WHAT'S VENUS LIKE?

Venus is a beautiful planet! After the Sun and Moon, Venus is by far the brightest object in the earthly sky. Sometimes Venus is so bright that some people think it's a UFO. It's no wonder then that the old Romans named this sparkling planet after the **goddess of love and beauty**. Up close though, Venus is not as charming as it appears. An inhospitable and extremely hot planet can be found under its overcast sky caused by poisonous gasses.



VENUS, A BEAUTY WITH A HELLISH SURFACE



4. WHY IS IT ALWAYS OVERCAST ON VENUS?

When astronomers first started looking at Venus with the first telescopes, they discovered that except for the changing phases, there was not much to see on its surface. The lack of visibility was caused by a **thick cloud covering** which made it difficult to see the surface. Note that Venus's atmosphere is 100x denser than Earth's!



2. WHEN IS VENUS A MORNING STAR AND WHEN IS IT AN EVENING STAR?

Venus moves around the sun within Earth's path. That's why we can see Venus only on and off before sunrise or at sunset. When Venus is visible in the **morning**, it is called a morning star. When it is visible in the **evening**, it is called an evening star. Venus is lost in the sun's rays for about 50 days when it changes from a morning to an evening star. The change from an evening to a morning star takes almost 10 days. Venus is a morning or evening star for about 8.5 months.

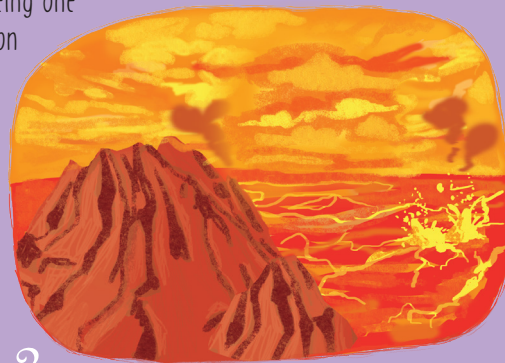
3. HOW DID CLEOPATRA GET TO VENUS?

If you ever look at a map of Venus, you will probably find the name Cleopatra there. That's because a **100-kilometre-long** crater on Venus is named after the most famous of the Egyptian queens. In fact, astronomers decided to give all formations on Venus women's names. In addition to Cleopatra, you will also find on Venus Astrid Lindgren, author of Pipi Longstocking or the name of actress Greta Garbo. Even men's names made it to Venus though. There's a mountain range named Maxwell after the 19th century Scottish scientist whose work contributed to the invention of radar.



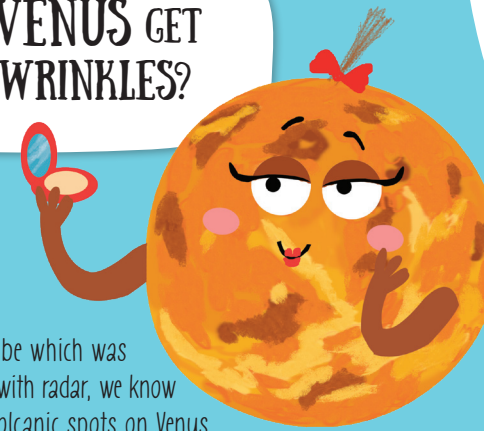
5. WHY DOES VENUS'S SURFACE REMIND US OF HELL?

You wouldn't want to spend a holiday on Venus. It's terrible there! Venus's atmosphere of carbon dioxide is to blame. This gas actually prevents heat created from the sun to escape back into the atmosphere. That's why temperatures can reach a miserable 500 °C! Also, pressure on the surface is so strong that it would be like being one kilometre under water on Earth! When the Soviet probe **Venera** touched down on this hellish world in the 1970s, it only lasted tens of minutes in the inhospitable atmosphere.



6. HOW DOES VENUS GET RID OF ITS WRINKLES?

Thanks to the **Magellan** probe which was able to examine the surface with radar, we know that there are over 2,000 volcanic spots on Venus. It seems that Venus is like a woman who applies a layer of make-up to her face. She doesn't use powder though, but a layer of lava which smooths over all of the planet's previous wrinkles. According to Earth standards, Venus doesn't spoil herself with this youth serum very often – only about once every half a billion years.



7. DOES IT RAIN ON VENUS?

It depends on how you look at it. There is lightening on Venus and even clouds made of sulphuric acid. This corrosive substance gradually descends to the surface, but before it can be touched, it evaporates high up in the atmosphere. Therefore, one good thing: It doesn't rain on Venus. Anyways, who would want to experience rain which eats away at umbrellas and clothes?



8. DOES VENUS HAVE A PLANETARY SISTER?



9. WHY DOES VENUS ROTATE IN THE OPPOSITE DIRECTION?



It's true. Just like Uranus, Venus rotates on its axis in the opposite direction of other planets in our solar system. Venus rotates on its axis the slowest of all the planets. One rotation takes **243 Earth days!** Scientists suspect that this unusual and slow rotation is caused by Venus's dense atmosphere which slows its rotation.

10. ARE THERE VOLCANOES ON VENUS?

There are lots of interesting remnants on Venus from volcanic activity. We don't know, however, if there are any active volcanoes on Venus today.

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Would you like to explore all the planets in the solar system with our curious little robot? If so, all you need to do is to open this book and start exploring! There are 80 amusing questions and answers about the 8 planets of our solar system and their moons as well. Would you like to know if you could ice-skate on Mercury? Why does the surface of Venus remind us of hell? Where do Martians live? How did Saturn's rings come to be? Or what does Uranus smell like? You'll learn many new and interesting facts in the answers. And you'll have loads of fun with many interactive and playful mechanisms while you'll reading!



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