

We had an open day yesterday. I'm writing this on Saturday, so I don't know how many people came. Many people are afraid of the corona virus and the number of cases in Sapporo is slowly rising, so I wouldn't be surprised if it was less than half of the numbers we were expecting. A number of companies have announced that they have successful vaccinations¹ which are entering the last stage of testing. Hopefully, they will be able to roll those out² early in 2021 and we can all go back to normal. That would be wonderful. I've forgotten what it is like not to wear a mask outside.

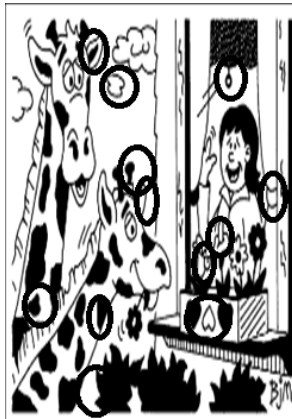
Something Interesting (Spaceflight)

1. The first space flight was in 1961 by Russian Yuri Gagarin. He orbited³ the earth once.
2. The first man on the moon was American Neil Armstrong on July 21st 1969. The last man on the moon was Gene Cernan in 1972.
3. Each space shuttle flight costs about \$1,500,000,000.
4. The space shuttle's speed is 5040 km/h at launch⁴ and 28,800 km/h in orbit⁵.
5. 12 astronauts have walked on the moon.
6. 550 people have flown in space since 1961.
7. There is about 2,200 tons of garbage (space junk⁶) floating in orbit around the earth. This makes it very dangerous for space shuttles to leave earth. Most of it is small and there are 128 million pieces. NASA tracks⁷ most of them.



Can you find the differences? There are 15 this week. Some are hard.

Last week's answer



SpaceX's Dragon Docks with the International Space Station

Last Friday, the shuttle owned by SpaceX, flew a crew of 5 astronauts to the International Space Station. SpaceX is owned by Elon Musk, the owner of the Tesla electric car company. NASA used to own all their own space shuttles, but it was incredibly expensive to launch things into space because the boosters (the rockets) could only be used once. SpaceX have developed a way of reusing the boosters. When they detach⁸ from the rocket, they fall to earth. NASA's boosters



would splash into the sea and be lost. SpaceX's boosters fire their rocket before impact⁹ and land smoothly on a boat. This makes it much cheaper.

One of the astronauts was Japan's Soichi Noguchi. He has flown on three different types of space shuttle and he said that the SpaceX Dragon was the smoothest one he has travelled on. This is his second time to the International Space Station and he will stay there until the spring.

Now that NASA is contracting¹⁰ space shuttles rather than build their own, they can concentrate on other things. There is a plan to send an astronaut back to the moon by 2022. After the last moon landing in 1972, public interest¹¹ in going to moon disappeared. That meant that it was very difficult for NASA to spend money on it. Now that private companies are involved, it is possible again. 2022 would be the 50th anniversary of the last moon landing. I think I will try to be the astronaut on the 60th anniversary moon landing. I'm sure I can do it.

1.Vaccination ワクチン 2.Roll out 発売 3.Orbit(動詞)公転する 4.Launch 打ち上げ 5.Orbit(名詞)軌道 6.Space junk 宇宙にあるごみ 7.Track 目の配る 8.Detach 外す 9.Impact 衝撃する 10.Contract 契約 11.Public interest 公益



World Records

Have you ever made a paper airplane? Did it go very far? Mine never do. The world record for throwing a paper airplane is 69.14m. American John Collins made the record in 2012. Since then, even he hasn't been able to break the record. Mr. Collins is an aircraft designer (real, not paper) and a specialist¹ in aerodynamics². It took him about 30 minutes to make the airplane that flew so far. He has made many other planes as well. He has designed a boomerang-plane that comes back to you when you throw it, and a bat-plane that flaps³ its wings when it flies. He says that he will keep trying to break the record.



The pain you feel today will be the strength you feel tomorrow.

Something interesting

The ISS is the heaviest spacecraft in the world. It is 419 tons. It wasn't lifted into space in one piece because it would be too heavy for any spaceship to carry. It is an international space station, so the parts were constructed⁴ in many different countries and then flown into space for construction. They were put together between 1998 and 2000. The first crew to stay in the space station arrived there in November 2000. Since 2000, extra parts have been added and the space station has continued to grow. The space station is expected to be usable⁵ until 2030. By then, it will be obsolete⁶ and will probably have been replaced by something different. When that happens, it will be deorbited⁷. That means it will fire its rockets and head towards Earth. It will break apart in the atmosphere⁸ and most pieces will burn up. The pieces that survive will fall into the ocean.



The longest time anybody has spent in space is 438 days. Russian astronaut Valery Polyakov stayed on the Mir Space Station from 1995 to 1996. This long flight was an experiment to see how the human body copes⁹ when it is in low gravity¹⁰ for a long time. Many of the organs and systems in our bodies have evolved¹¹ to work with gravity. Polyakov was a medical doctor and he volunteered for this mission. The scientists that reviewed all of the data about Polyakov said that he was basically¹² ok and that long-distance spaceflight shouldn't be a problem. Polyakov was healthy and his mental state was fine. This means that it should be possible for astronauts to travel to Mars. This is a long way and would take approximately 21 months for a spacecraft to make the journey. During that time, the astronauts would be living in very low gravity. The astronauts on the ISS are living at 90% of Earth's gravity. We think it is zero-gravity, but it isn't. The astronauts and everything in the capsule float because they are in freefall around the Earth. They are always falling.

1.Specialist 専門家 2.Aerodynamics 空気力学 3.Flapp 羽ばたく 4.Construct 作る 5.Usable 使える 6.Obsolete 廃れた 7.Deorbited 軌道離脱 8.Atmosphere 大気 9.Cope 対処する 10.Gravity 重力 11.Evolve 進化する 12.Basically 基本的