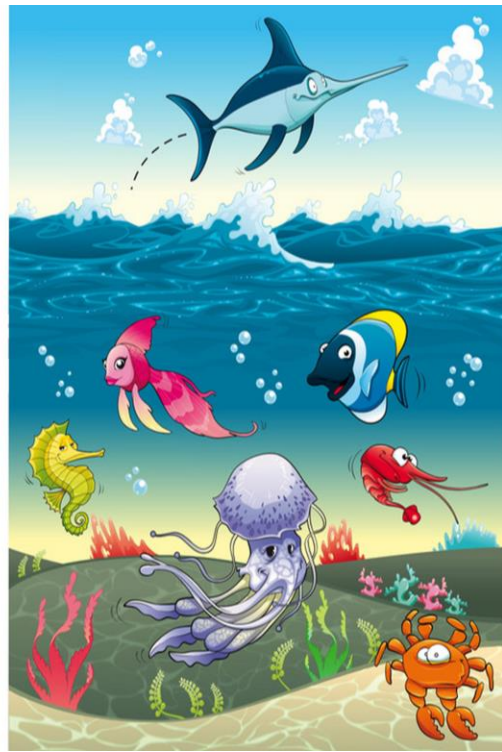
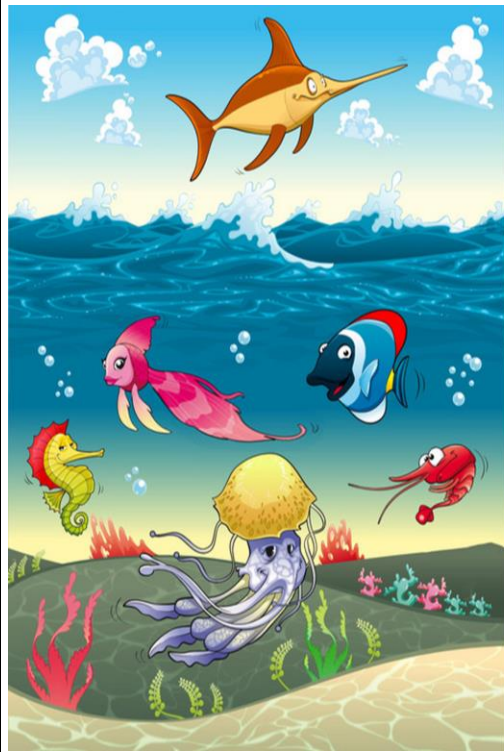


Wow! It was cold last week! The kind of cold that sinks to your bones. It was so cold in my house that the condensation<sup>1</sup> on the inside of the windows froze! Are your houses warm or cold? Do you have the heater on at night, or do you turn it off when you go to bed? School is always pretty warm. When I was at high school, the school would only turn the heaters on if it got really really cold. And, living in England, it never got that cold, so the heaters were only on for a few weeks a year. But, when they were on, they were so hot you could burn your hands!

### Something Interesting (Battery)

1. Benjamin Franklin came up with the word “battery” to mean a group of electrical<sup>2</sup> devices. He took the word from the army where “battery” means many things working together.
2. The first electrochemical<sup>3</sup> battery was made by Alessandro Volta. It was about 40cm high. He didn’t realize that the electricity came from a chemical reaction<sup>4</sup>. He thought that he had created a source of inexhaustible<sup>5</sup> energy.
3. The rechargeable<sup>6</sup> battery was invented in France in 1859.
4. About 30 billion batteries are bought every year.
5. The first miniature batteries were invented in 1950 and increased the number of watches in the world. Up until 1950, watches had to be wound daily<sup>7</sup> so that they would work. They became much easier once there were small batteries in them.



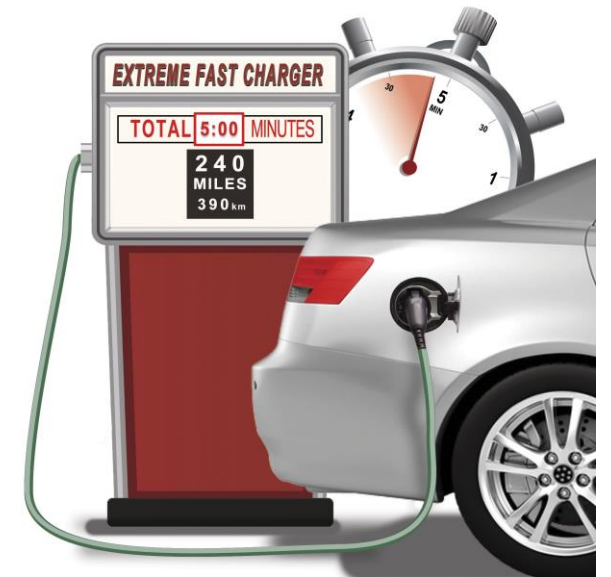
Can you find the differences? There are 15 this week. Some are hard.

### Last week’s answer



### Recharge a Car Battery in 5 Minutes

An Israeli company, StoreDot Ltd., has managed to make a car battery that can be completely recharged in 5 minutes. Today, only about 1% of cars in the world are fully<sup>8</sup> electric. However, this number will start to rise as countries look at ways to reduce their carbon emissions<sup>9</sup>. Across the world, gasoline powered cars produce about one fifth of all greenhouse gasses. Electric cars produce no green house gas and, if the electricity is made from renewable energy sources<sup>10</sup>, they are much better for the Earth.

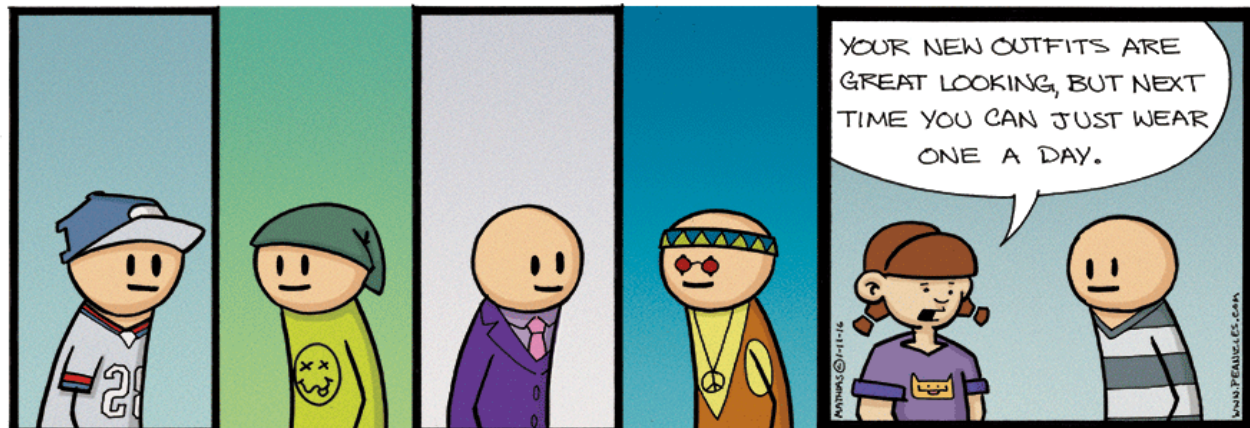


The biggest problem with electric cars at the moment is how long it takes to charge them and how far they can drive on a single charge. Owners of electric cars often suffer from something called “range<sup>11</sup> anxiety”. This means they are nervous because they don’t know how far they will be able to drive on their battery. Also, it takes about 2 hours to fully charge a car now, so people don’t know if they will be able to make their journey in time.

This new battery changes that. The company have made a battery using silicon nanoparticles<sup>12</sup> that can transfer electricity very quickly. Their battery can charge to 100% in 5 minutes. This will change how many people want to buy an electric car. Once that starts to change, gas stations will switch to offering electric charges and people’s anxiety will disappear. Then, one day, we will have driverless cars, and I will be able to watch a movie on the way to Costco.



1. Condensation 結露 2. Electrical 電気に関する 3. Electrochemical 電気化学の  
4. Chemical reaction 化学反応 5. Inexhaustible 減価しない 6. Rechargeable 充電できる  
7. Wind a watch 時計のねじを巻かれる 8. Fully 完全に 9. Carbon emission 炭素放射  
10. Energy source 電気の源 11. Range 距離 12. Nanoparticle ナノ粒子



### World Records

This is something I was thinking about the other day when I watched the music major's graduation concert. When do they breathe? The singers and the wind instrument<sup>1</sup> players never seem to breathe. So, I googled it, and that is where this week's record comes from. Alpaslan Durmus has the world record for the longest continuous<sup>2</sup> singing note. He managed to sing without stopping or breathing for 1 minute and 52 seconds! That is crazy! How long can you go for? I have tried and I cannot get past thirty seconds. It is very difficult. I want to see how long the music majors can sing for. I think some of them will be able to pass one minute! Can we break this record?



# CHALLENGE

# Every day, in every way, we are becoming better and better.

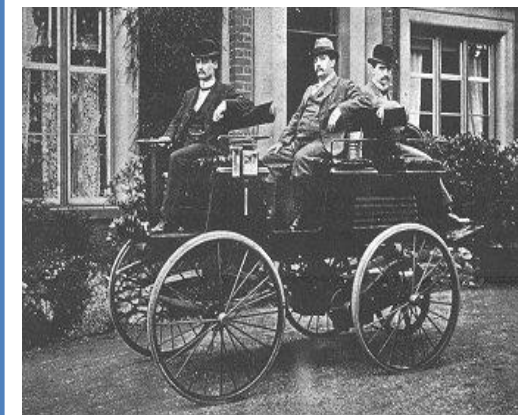
## Something interesting

Electric cars are becoming more popular now, but they used to be far more common than they are these days. We often think that the car was invented by Karl Benz in 1876. However, he invented the first car with a working internal combustion engine<sup>3</sup>. The first car that could carry people was invented in 1769 and it was steam powered<sup>4</sup>. It had a large space for coal<sup>5</sup>, a burner<sup>5</sup>, and a huge tank of water. It worked, but it was very impractical<sup>6</sup>.

In 1859, the rechargeable battery was invented and soon after that the first electric car was invented. As we know that there are more gasoline cars than electric cars now, we would be forgiven for thinking<sup>7</sup> that the gasoline car soon outsold<sup>8</sup> the electric car. This is not true. By 1910, in New York, 70% of all cars were electric. Why? They were quiet and they didn't smell like gasoline cars. They did not use gears<sup>9</sup>. They started instantly<sup>10</sup>.



A steam car



An early electric car



A gasoline car handcrank

(Gasoline cars had to be started with a handcrank on the front of the car.) They were cheaper than gasoline cars. However, by 1920, this had changed. There were two reasons for this. Firstly, gasoline cars had overcome all of their problems. They had batteries to start instantly. They had mufflers to reduce<sup>11</sup> the noise and smell. Gasoline became cheaper. Secondly, the road networks in many countries were increasing. Electric cars only had a short range. That meant they were great in cities, but not for long distances. As people started to drive farther and farther, they needed to use gasoline cars. Until 2021. I hope.

- 1.Wind instrument 管楽器 2.Continuous 続ける 3.Internal combustion engine 内燃機関
- 4.Steam powered 蒸気 5.Coal 石炭 6.Impractical 常識に反する 7.Forgiven for thinking を思っても仕方ない 8.Outsell より多く売る 9.Gear ギア 10.Instantly 瞬間に 11.Reduce 減らす