



# OVER *REACTING*

## FEATURING:

Fun experiments  
to do at home!

A-Z of fun  
science  
facts

Interviews with two  
licensed GP!

issue 1 - Iodine

# EDITORIAL

Welcome to the first issue of Overreacting - an innovative magazine designed for secondary school students. This edition features Careers in Stem as well as interviews from licensed GPs. Additionally we have interesting experiments to try at home, research articles, news updates as well as a fun quiz!

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# Five Fun Facts About Iodine!

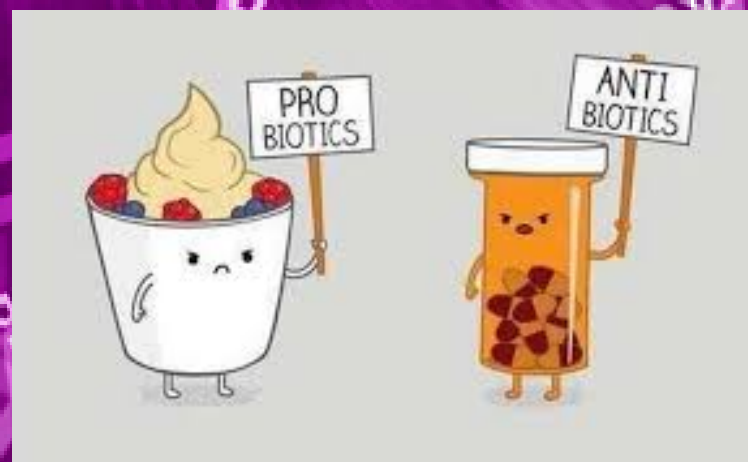
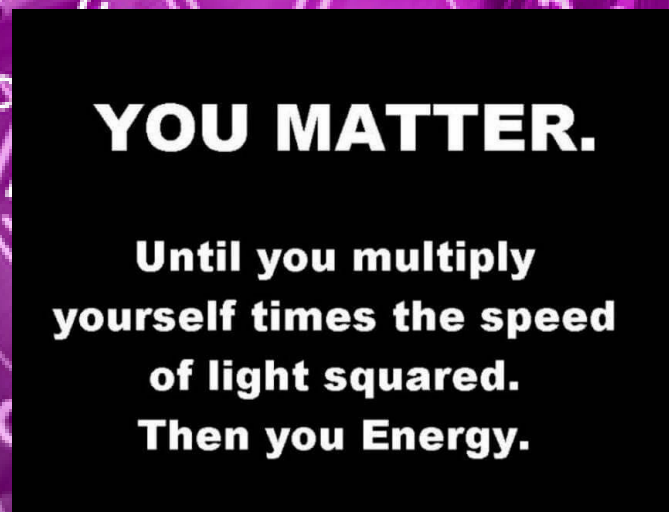
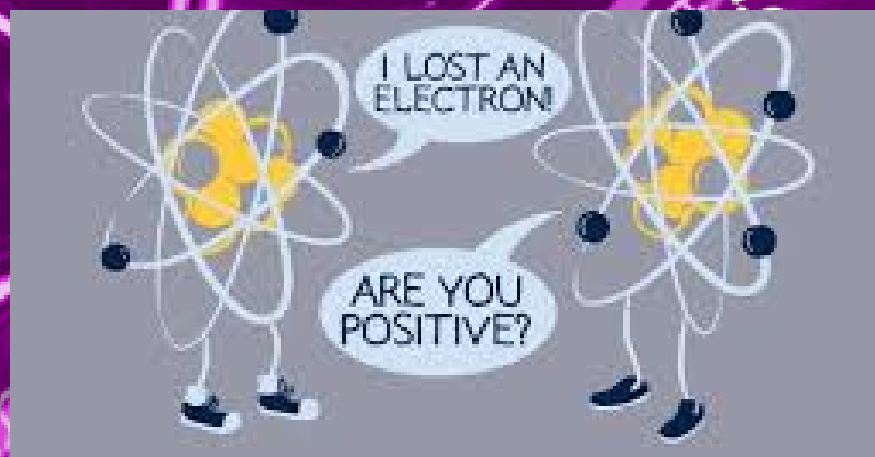
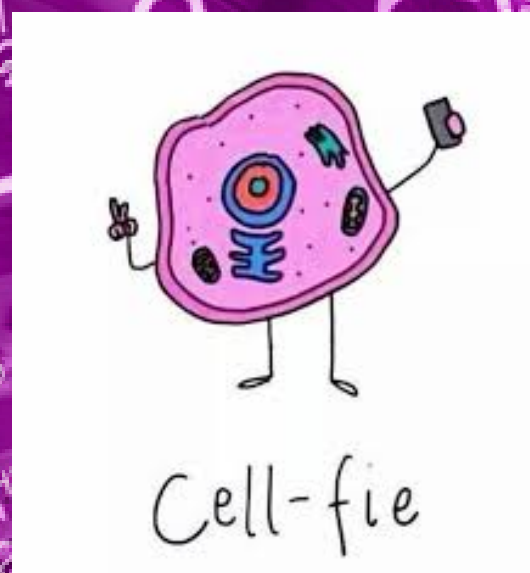
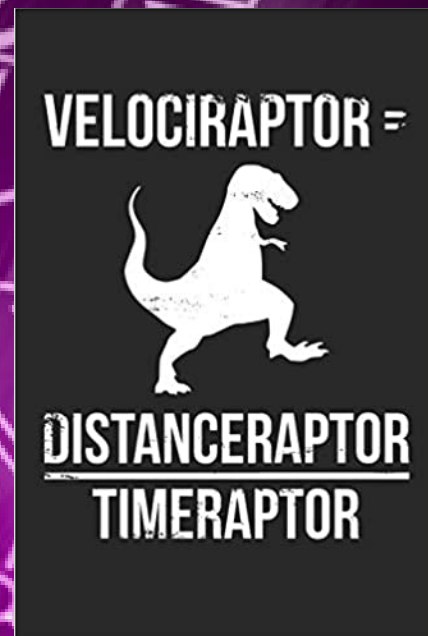
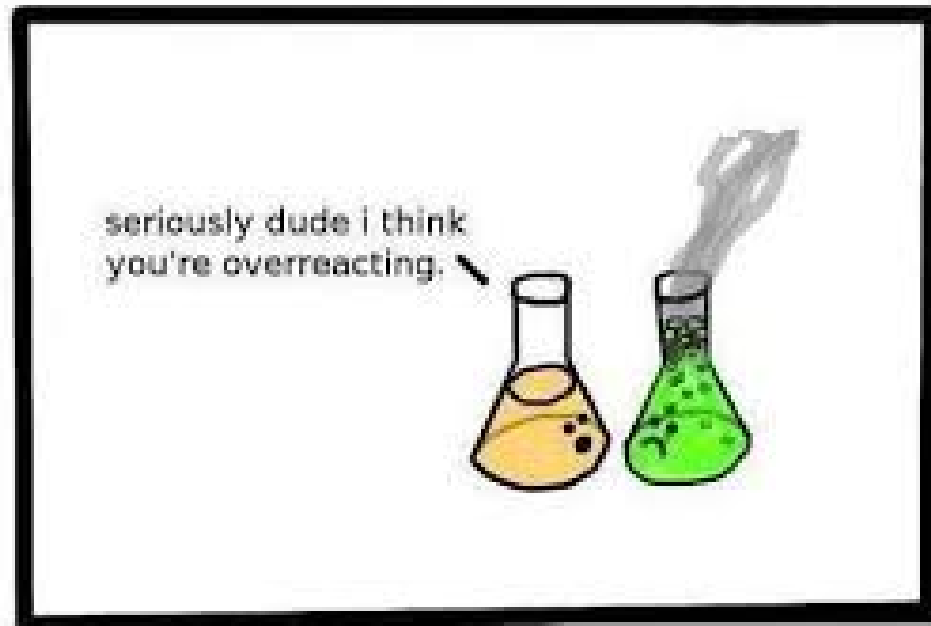
1. Iodine is used in x-rays - it essentially absorbs the x-rays to prevent radiation from passing into the tissue. This produces much clearer x-ray photos!

2. Iodine was used to create the first photographs. Iodine was placed on a silvered copper plate. The plate was then exposed to light, by doing so a photographic process was created in which the iodine is the light reactive chemical and the silvered copper plate is the base.

3. Iodine was discovered in 1811 by Banard Courtois, a French chemist, when extracting sodium and potassium from seaweed ash.

4. Iodine regulates our metabolism. Iodine contains a lot of thyroid hormones which are crucial for growth and metabolism. The thyroid gland controls cell energy and is crucial for metabolism.

5. Iodine is an amazing antiseptic. It is used in operating theatres to disinfect the skin before surgery and can be used to purify water.





# Science in daily life

## MILK

Whenever you go to the supermarket, do you always spend a long time trying to figure out which milk is best? Well, here are some tips and facts to help you choose which milk is best for you.

There are many types of milk and they each have different negatives and positives.

-**Skimmed milk** has NO fat, and is lower in calories. However, it's NOT suitable for young

children because it doesn't contain enough calories and other important nutrients they need.

-**Low fat milk** is only 1% fat and low in calories. However, like skimmed milk, it's NOT suitable for young children because it doesn't contain enough calories and other nutrients that they need.

-**Reduced fat milk** has 2% fat, and an average amount of calories, and has the same essential nine nutrients as every other type of milk.

-**Whole milk** has 3.25% fat. Although it contains more fat than the others, it's packed with important nutrients and lots of flavour.

-**Soy milk** is a plant-based drink, it contains as much protein as cow's milk, yet is lower in calories than whole milk.

-**Organic milk** comes from those cows that aren't given supplemental hormones and it is produced by those dairy farmers who use only organic pesticides and fertilisers.

-**Raw milk** is not heated by dairy farmers to decontaminate it for safe

drinking. It comes from a variety of different animals including buffalos, sheep, camels, cows, and goats.

-**Lactose free milk** as the name implies, it has lactose removed from it, making it a great option for lactose-intolerant people. Lactose is a type of natural sugar present in milk that many people are unable to digest to an extent that even a single glass can trigger digestive problems like diarrhoea and vomiting.

-**Flavoured milk** is really popular, especially for toddlers and children.

There are many different flavours of milk: Banana, strawberry or chocolate.

**-Almond milk** is a great plant-based option for those avoiding cow's milk, e.g. vegans or people who are lactose intolerant. It is made by grinding up almonds, mixing them with water and then filtering the mixture to create a product that looks a lot like milk and has a nutty flavour.

**-Rice milk** is a hypoallergenic option and the sweetest. It is a type of dairy-free milk that is created by boiling brown rice and then mixing it with

brown rice starch and brown rice syrup. It is fat and cholesterol-free, which makes it a great option for people battling with high blood pressure and cardiovascular issues. However, as a disadvantage, it contains less protein and calcium compared to whole milk.

**-Goat milk** is a great alternative for people who find it hard to digest cow milk. It is loaded with essential nutrients, vitamins, and minerals. It is easily digestible, easy on the gut, and also less inflammatory, compared to

cows milk. The main benefit of goats milk is that it has great therapeutic benefits for heart health where its fatty acids help lower cholesterol levels in the body and may even help treat conditions like coronary heart disease.

**-Coconut milk** is a variety of milk that has gained significant popularity in recent times. It is a tastier alternative to cow milk with an incredibly thick and creamy texture.

**-Oat Milk** is an excellent drink for your immune system and metabolism. Oat milk is great for all those

people who have specific dietary restrictions because it is vegan, lactose-free, but it is also soy and nut-free. It is equally rich in calcium and vitamin D, making it highly beneficial for strong, healthy bones

### **Fun fact:**

Almond milk and coconut milk are best for making hot chocolate.



# PLUTO

- 1. Since 2006, Pluto was confirmed not to be a planet, however it meets the criteria for a dwarf planet. It is also the largest dwarf planet in the solar system.**
- 2. Pluto has a range of colours, including pale sections of off-white and light blue to streaks of yellow and orange.**
- 3. The New Horizons spacecraft performed a flyby of Pluto on July 14, 2015, becoming the first and, to date, only spacecraft to do so.**
- 4. Pluto is primarily made of ice and rock.**
- 5. Pluto has 5 moons Charon, Nix, Hydra, Kerberos, Styx. They are all named after characters in Roman mythology, and all relate to the god of the underworld, Pluto.**
- 6. Pluto's radius is 1,188.3 km.**
- 7. 1 year on Pluto is 248 Earth years.**
- 8. Pluto is not considered a planet anymore because The International Astronomical Union (IAU) voted on their first official definition of a planet, and this definition does not fit for Pluto. Scientists recognized that Pluto was really one of many dwarf planets from the Kuiper Belt.**



# ROCKETS

**US entrepreneur Elon Musk has launched the latest prototype of his Starship vehicle from Texas.**

**The uncrewed rocket lifted away from the Boca Chica R&D facility on what had been billed as a brief flight of 12.5km. The 50m-tall vehicle crashed on touchdown but Mr Musk was delighted with how much the test outing achieved.**

**This was especially surprising as before the flight, the tech billionaire had dampened expectations, warning his fans that some mishap was likely. Nonetheless, Musk has big hopes for the Starship when it is fully developed and says it is the future for his SpaceX company.**

**Starship will launch people and cargo into orbit, and the entrepreneur also envisages the vehicle travelling to the Moon and Mars.**

**The plan had been to demonstrate some manoeuvres that mimicked a belly-facing re-entry to Earth's atmosphere, ending up with a flip back to the vertical just before touchdown.**

**Most of this was achieved: a clean launch off the pad, a steady climb to altitude, followed by a horizontal descent. But it was when the Starship tried to flip back to the vertical that things started to go wrong.**

**The vehicle came into its landing pad with too much speed, and promptly exploded on impact.**

**Nasa has already asked Mr Musk to examine the possibility of landing a Starship on the lunar surface in the next few years..**



# STEM Careers



**Dr Ayesha Madiha**  
**ABOUT: WORKS AT A**  
**PRACTISE IN**  
**HUDDERSFIELD**

## **Why have you chosen this field of specialty?**

I chose general practise when I first did my foundation training. I had my first post in a hospital and then in a surgery, I personally preferred it in surgery as I felt you can make more of a difference in people's lives and give some sense of continuity but in a hospital you may not see a patient again. Moreover, the great thing about being a GP is that it also gives a good work life balance.

## **What do you enjoy and not enjoy about your job?**

I enjoy working with elderly especially, as they can often be lonely, and you are often able to impact their social cycle and activities of daily living and provide different services that they may not be aware

of and refer to them to social prescribers or signpost them. When people come across with mental health issues you can also help them, through referring them to different services. The thing that I dislike, would probably be the cut down on funding for a lot of services that I can no longer offer, over the years there has been a real shortage on the amount of dermatology services.

## **What advice would you give to someone who wants to do medicine?**

I advise you to only do medicine if you're really interested in the career and want to learn and explore, but it is definitely a very rewarding career, with every day bringing a new challenge.

## **What a-levels did you take?**

Chemistry, biology, physics and english

## **What was it like to study medicine?**

Studying medicine was a lot of fun, during the course I learnt about human anatomy and then moved on to physiology about the human body, pharmacology and was involved in some very fascinating dissections. We also used to attend surgical, medical and pediatrics wards. The first few years generally involves understanding the human body before moving on to placements.

## **How has coronavirus affected your job?**

The pandemic has completely transformed daily practice. In the beginning, it was very challenging, with no longer being able to see patients face to

face and examine and observe appropriately. However, things have improved with video consultations and sending pictures, which means we are still seeing a few patients but routine referrals are on hold, leaving many patients feeling unsatisfied and a lot more mental health cases, though there has been a big reduction in cancers, as patients are no longer coming with symptoms as usual.

### **Would you recommend it as a career?**

Of course, it's a very rewarding career.

### **What is your favourite aspect of the job?**

The job satisfaction it comes with.

### **How has the job changed in the last 10 years?**

There has been a reduction in funding though there has been the introduction of primary care networks, where practices are grouped to provide services, which has helped with the provision of services. Due to new courses being introduced there is a lot more support available in terms of staff with light professions such as, advanced nurse practitioners and physicians associates, people who are roughly doing the same job as a doctor.

### **How does working in a surgery differ to working in a hospital?**

GP surgeries are smaller organisations with fixed lists of a certain number of patients, these surgeries are run by GPs and other clinical staff who look after patients on their lists. Hospitals are much bigger and they manage things that can't be done by the GP

surgery. Hospitals look after patients during their stay under hospital care, whereas GP surgeries look after patients throughout their lives.

### **Any thoughts on the rise of mental health cases?**

Yes, there has been a larger amount in the last few months due to the pandemic but generally also due to drug and alcohol use, lack of employment, social media, less interaction, especially in young people. As well as being insecure about their self-esteem, social anxiety and eating disorders.

### **What does a typical day look like?**

Typical day includes: morning clinic, where I see patients from 9-12 (each appointment is 10 minutes long), then an afternoon clinic, and then dealing with certain tasks such as: blood results, letters and occasionally home visits too, although this is not happening currently due to Covid.

### **What are your hopes for the future in healthcare?**

Personally, I'm hopeful since primary healthcare networks are being introduced, more services and local medical committees are working in association with local CCG (commissioning bodies) to help improve and sustain the NHS.





# STEM Careers



**GP- AZHAR ALI**

**ABOUT: Head GP at  
Mannock Surgery  
owns the practice  
with 5 joint  
partners**

**Why have you chosen this field of speciality?**

It gives me variety and continuity of care.

**What do you enjoy and not enjoy about your job?**

I enjoy the variety, the challenge of making diagnosis and the ability to interact with a mixed cohort of patients.

**What advice would you give to someone who wants to do medicine?**

Need to be interested in other people, need to be a problem solver, and need to have excellent communication skills

**What a-levels did you take?**

Maths, further maths, chemistry and physics

**What was it like to study medicine?**

It was great fun, probably the best experience of my life, university was amazing, I would advise everyone to go to university if they have the chance it was a fantastic experience.

**How has the coronavirus affected your job?**

It has made it really challenging as we are restricted seeing patients face to face so we have to do more online and telephone consultations.

**Would you recommend it as a career?**

Definitely, it is mentally rewarding from the feedback you get from patients and gives you a sense of fulfillment of helping others.

**What is your favourite aspect of the job?**

I don't think there's one particular aspect, it's the whole package for me, also it gives you the opportunity to do other things related to medicine.

**How has the job changed in the last 10 years?**

The job has become more challenging since there are a lot more things that can be done for patients, with increased work that has been transferred from hospital and rising patient expectations.

**How does working in a surgery differ to working in a hospital?**

GP surgeries are smaller organisations with fixed lists of a certain number of patients that are run by

GPs and other clinical staff. They look after patients on their lists. There are approximately 70 practices in our county. Hospitals are much bigger (we have 2 in our county) and they manage things that can't be done by the GP surgery. Hospitals look after patients during their spell under hospital care, whereas GP surgeries look after patients throughout their lives.

### **Any thoughts on the rise of mental health cases?**

Yes certainly on the increase and multifactorial due to smaller family units, mobile phones, social media, and generally less social interaction. Now a lot more common in General practice but we are reasonably well placed along with other community providers to tackle this.

### **What does a typical day look like?**

Usually I get to work at 7.45am where I catch up with any correspondence and blood results etc from the previous day. Morning surgery starts at 8.30am and finishes around midday. Around 12.30 I meet up with other GPs and nurses in the practices to organise home visits, and also have lunch. After a home visit PM surgery starts at around 2.30pm. This finishes around 5.30pm after which I complete any letters or referrals and go through blood results etc. Since I am a GP partner there are also other issues related to running the business that I am often involved with during the day, but this is varied. I usually get home around 7pm.

### **What advice were you given when joining the**

### **industry?**

Being a doctor, attributes such as hard work, continually trying to improve and learn and putting the patient first are things you develop during your training and carry on through your work as a GP. What I have realised is that you need to try and keep the job interesting and varied. Being a GP gives you lots of opportunities to branch out and use your skills in other areas.

### **What are your hopes for the future in healthcare?**

A sustainable NHS, where patients can still get care for free at the point of contact. Greater continuity and close working between GP surgeries, community providers and hospitals to enable smoother transition of patients between these services. Closer working between health and social care since a lot of medical problems stem from social challenges. We are extremely fortunate to have the NHS and we need to do all we can to ensure that it is fit for purpose as we progress through the 21st Century.

hard work  
commitment  
push  
yourself  
development  
interesting  
valued  
caring  
helpful  
challenging



# Home Experiments

## 1. THE LEAK-PROOF BAG

### YOU WILL NEED:

- A Ziploc bag
- Water
- Some sharp pencils



### METHOD

1. Fill up a Ziploc bag with water and seal it
2. Place the pencils through the water part
3. If you have done it correctly, the pencils will not let the water leak!
4. If you take the pencils out again, the water will rush out

### THE SCIENCE BEHIND THIS:

Ziploc bags are made of polymer. The sharp pencil point slides in between the chain of molecules that make up the polymer. The molecule chains surround the pencil which creates a seal that won't let the water out. However, the seal is broken when the pencils are removed.

# Home Experiments

## 2. GLASS XYLOPHONE

### YOU WILL NEED:

- Glasses
- Water
- Drumsticks/spoons
- Food colouring (optional)



### METHOD:

1. Arrange some glasses in a line
2. Fill each glass with a different volume of water
3. If you want to, add food colouring
4. Use the sticks to hit the glasses and play a tune.

### THE SCIENCE BEHIND THIS:

Hitting the glass creates a vibrating sound wave. Each glass makes a different sound because the sound waves travel through the water at different speeds, causing vibrations at different frequencies. The glasses with the most water produce the lowest sounds. The glasses with the least amount of water produce the highest sounds because sound waves travel fastest (causing the highest frequency vibrations).

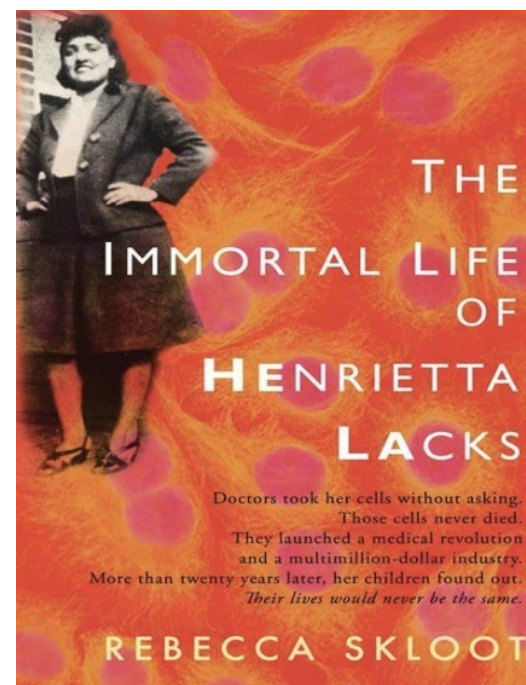


# 'the Immortal Life of Henrietta Lacks' book review

This powerful book tells the story of a black woman whose cells have changed the course of medical research since her death. Henrietta Lacks was from Baltimore, Maryland who had tumour cells taken from her body by doctors, without her knowledge, in order to study the way cells behave. These cells have helped us to advance towards things such as a polio vaccine, helping to map genes and understand human diseases, and are still alive today in science labs (known as HeLa cells).

This book is recommended for anyone interested in biology, medicine, racial tensions and ethics, although it is for older readers.

*\*this book can be found in the library to reserve!\**



# David Attenborough: A Life on our Planet Review

*"This film is my witness statement and my vision statement for the future"*

On the 4th of October 2020 David Attenborough released his new documentary on Netflix A Life On Our Planet, a warning to us all about the dangers of "The one way doors" we are walking through, in terms of global warming.



At various points in the documentary we see parameters showing the world population, carbon in the atmosphere in parts per million and percentage of the remaining wilderness left. Seeing the statistics is one of the most eye-opening parts of the documentary. I thoroughly enjoyed this documentary because of how unbelievable some of the facts are. I would recommend this documentary to everyone. This is a must watch!

# A-Z OF FUN SCIENCE FACTS!

A - In ancient times, constellations of stars were used to keep track of the calendar and for navigation.

B - Burping is impossible in space.

C - Chalk is made from trillions of microscopic plankton fossils.

D - Dogs have two different air passages, one for breathing and another for smelling. This allows them to store scents in their nose, even while they are exhaling.

E - The Eiffel Tower can be 15 cm taller during the summer.

F - The funny bone is not actually a bone, it is your ulnar nerve.

G - Grasshoppers have ears in their bellies.

H - Hawaii moves 7.5cm closer to Alaska every year.

I - Infants blink only once or twice a minute while adults average around 10.

J - Jellyfish don't have brains.

K - Killer whales are actually dolphins.

L - Lighting bolts are 5 times hotter than the sun.

M - Mules are the result of a horse and donkey breeding and are infertile.

N - Neutron stars can spin 600 times in a second.

O - Octopuses have three hearts and blue blood.

P - Polar bears are experts at conserving heat.

Q - Quartz is a crystallized chemical with one part silicon and two parts of oxygen.

R - Rain contains vitamin B12.

S - Stomach acid is strong enough to dissolve stainless steel.

T - Teeth are the hardest substance in your entire body.

U - The universe is made up of 50,000,000,000 galaxies.

V - Venus is the only planet to spin clockwise.

W - Water can boil and freeze at the same time.

X - X-rays were discovered by accident.

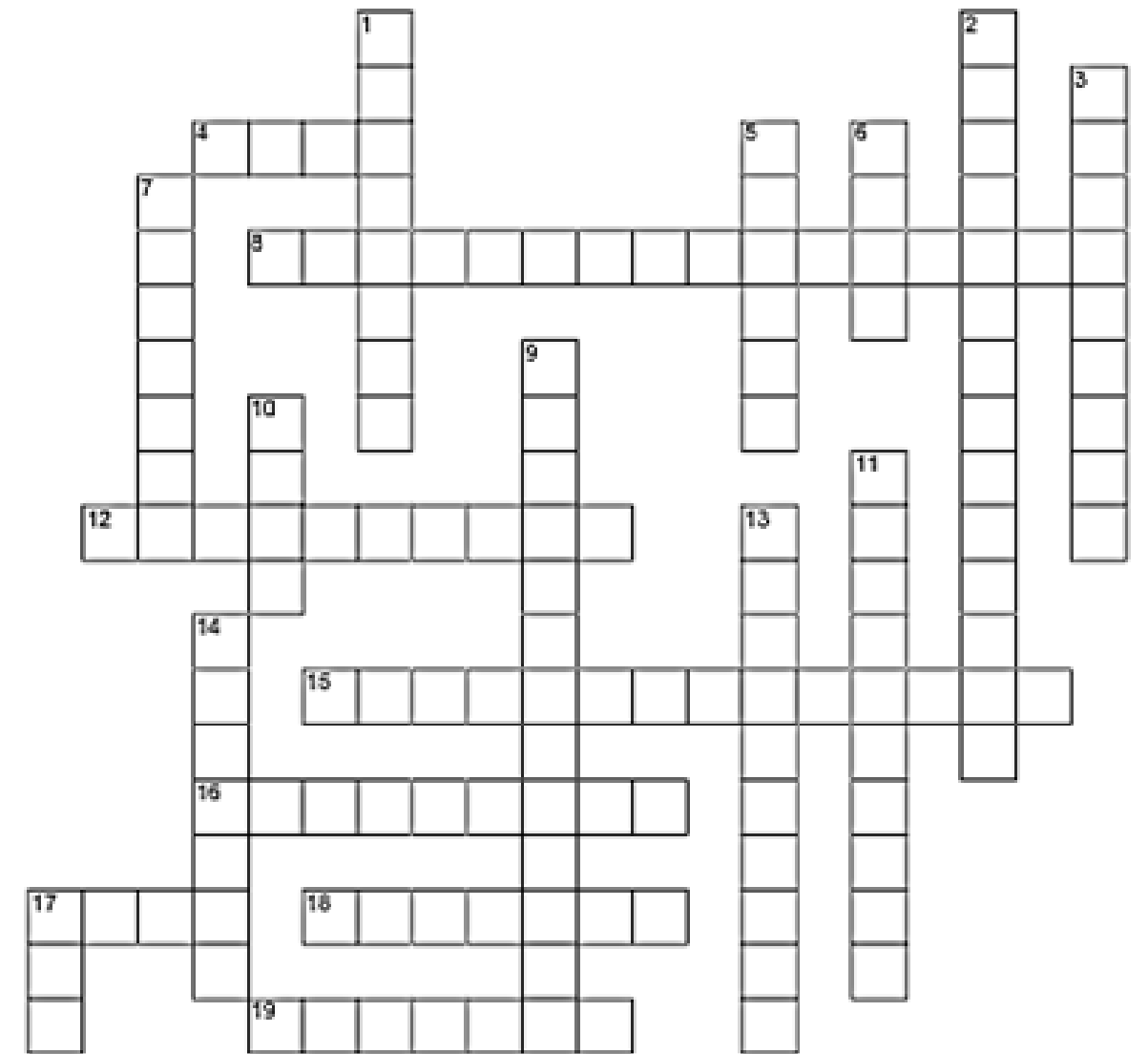
Y - Yellow is the colour between green and orange on the spectrum of visible light.

Z - There are three types of zebras: Plains, Mountain and Grévy's zebras.

# QUIZ

1. How much does the Earth weigh?
2. Why is the sky blue?
3. How do airplanes fly?
4. How many elements are on the periodic table?
5. What is the smallest bone in the human body?

*You can check your answers in the next issue!*



## ACROSS

- 4 a trait that describes you
- 8 survival of the fittest
- 12 an educated guess
- 15 changeing the shape, or phase of a substance
- 16 interaction of an organism to it's surroundings
- 17 Info on a specific subject
- 18 A factor that is likely to change
- 19 to show how different animals in the environment are connected to each other

## DOWN

- 1 the negative charge of an atom
- 2 changeing the substance entirly
- 3 has a cell wall
- 5 space inside an object
- 6 a solid made up of minerals
- 7 how closly "packed" something is
- 9 all of the elements
- 10 The "buildingblock" of nonorganic material
- 11 doesn't have a cell wall
- 13 The result of a test
- 14 diamond is one of these
- 17 all your genes globbed together



# That's all for Iodine...

*"Nothing in life is to be feared, it is only to be understood. Now is the time to understand more, so that we may fear less."*

*- Marie Curie*

## Cu again soon!



OVER  
**REACTING**