



High Flyers

To seek, to learn, today...to shape, to lead, tomorrow



Easter 2022 Highsted Grammar School Issue 10

National Careers Week 2022

07-12
MAR 2022



National Careers Week



Also inside this issue:

Fascinating Creatures:

Amazon Milk Frogs.



Competitions:

Natural Forms

DIY:

Careers Activities





Contents



Welcome to our tenth issue of High Flyers. This term the Highsted Virtue we have been looking at is 'Ambitious'.

Which subject inspires you to unlock your potential?



Pages 3-4: Feature Article Science: Fascinating Creatures: Breeding Amazon Milk Frogs

Pages 5-10: STEM: Careers

- **Page 11 STEM:** Activity
- **Page 12 Sport:** Sport all around the world
- **Page 13 Art:** Year 9 Plaster Casting

Page 14 Art: Competition: Natural Forms

Page 15 Music: The Secret Musician

Page 16 Food Technology: Easter Egg Cookies

Page 17 Recommended reads: Ted Hughes and the Iron Man

Page 18 Maths Challenge: Answers to issue 9

Page 19 Acknowledgements



Biology – Breeding Amazon Milk Frogs



Discover



© These pictures courtesy of the author

These are very personable frogs

Highsted Grammar School has been home to a variety of different species of animals over the last decade, including these Amazon Milk Frogs. An agile and inquisitive species that are easy to keep and handle. Students at Highsted set up a large Zoo Med glass terrarium for the frogs, which were kept in the Biology department for the students to study and learn how to

care for them. Amphibians require a humid environment, generated by spraying daily with water and an enriching diet, dependent on their development stage. As arboreal frogs, the vivarium consisted of different climbing levels, as well as an area for the frogs to soak and spawn if they were to breed. Two months after their arrival during the Christmas holiday, the male frog began the mating call. To encourage the frogs to spawn, abundant food was supplied, followed by a few dry days, in which the vivarium was not sprayed. Then through regular water changes and an increase in humidity the frogs were triggered to spawn. The eggs have a black circular centre and a gelatinous coating around them. Within 24 hours the centre of the eggs started to change shape from a circular structure to a kidney shaped structure. Demonstrating they were fertile!



The developing spawn.
Rapid removal was important

Adults are not as
distinctly marked
as juveniles

Biology – Breeding Amazon Milk Frogs

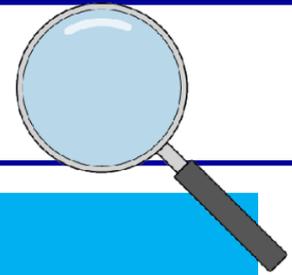


Then finally the eggs transformed into the recognisable tadpoles, moving around in their eggs, before they emerged out and started swimming freely. This whole process took 48 hours. At this point frequent water changes were needed to prevent the build up of toxic material, released from decaying unfertilised eggs, and the remaining material after the tadpoles had emerged. Ammonia leads to the death of tadpoles so it is important to remove it. For the next 6-7 weeks the tadpoles continued to grow, feeding throughout the day, until they metamorphosed into froglets. The hind limbs developed first with a distinctive striped pattern, then came the forearms, closely followed by the tail gradually being absorbed, forming the shape of a frog. At



this point the froglets began to climb, exploring their habitat. The dorsal side of the froglets was silver and over the next few weeks it began to develop its patterning into the recognisable Amazon Milk Frog.





Career Ideas

Marine Biologist



This involves studying the sea and its complex ecosystem, is not only a popular and rewarding career, but is also vital for the continued challenges facing marine environments under threat from human activities.

This includes marine plants, animals and other organisms, both vertebrate and invertebrate, in deep oceans, shallow seas and the laboratory. The main aims of marine biology are to improve understanding of the marine world and to understand and predict changes in ecosystems affected by human and natural disturbances.

If you're interested in this career, why not consider doing the marine biologist for a day event that London aquarium run?

This involves studying microorganisms (microbes) in order to understand how they affect our lives and how we can exploit them. By understanding microbes, microbiologists aim to solve a range of problems affecting our health, the environment, climate, and food and agriculture. This can include the prevention, diagnosis and control of infections and disease, as well as ensuring that food is safe, understanding the role that microbes play in climate change, and developing green technologies. As a microbiologist, you'll focus on the biology of microorganisms at both the molecular and cellular level, as well as their ecology, including viruses, bacteria, archaea, fungi, algae and protozoa.

Microbiology is a vast subject which overlaps with other areas of life sciences, such as molecular biology, immunology and biochemistry.

Microbiologist





Career Ideas

Geologist

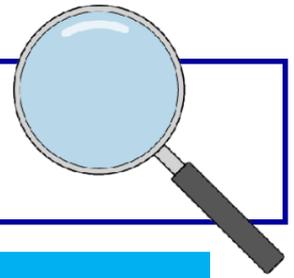
This career involves the use of geophysical techniques, such as seismic and electromagnetic methods, to forecast where mineral deposits may be located for extraction purposes. Geologists are responsible for identifying and assessing the location, quantity and quality of mineral deposits. Their work can be office based, although fieldwork is necessary to collect and test site/borehole samples.



Astronaut

Astronauts are trained to pilot and/or travel in a spacecraft, work in space, and do activities related to human space exploration. While space flight may now seem routine, every trip into space can be a walk between success and disaster. They work in mission control (the 'voice' that communicates with astronauts in orbit), check out procedures and the checklists the crew in space will use, help verify the space station and vehicle software, develop procedures and tools to be used during spacewalks or robotic operations, help scientists in developing experiments that will be run in space and perform other jobs in support of ISS and vehicle flights.





Career Ideas

Finance and Banking



Finance is the most obvious use for mathematics and usually the first one that people think of when they consider maths careers. The industry covers personal and private banking, insurance protection and pensions, investments, the financial markets, accountancy and financial advice and management.

Students that go into finance can expect the chance to work in a challenging and high achieving climate, travel to and work in the most exciting financial capitals and of course, earn quite a bit of money.

Try describing the world around you in an accurate and coherent way and you'll soon find that the language of maths is indispensable. There are opportunities to work throughout the world in a wide variety of environments. The range of careers in this area is immense and expanding at a rapid rate.

The population is changing and it is estimated that by 2050, 15 million people in the UK will be over 65; in 2008 it was just 8.5 million. This means that the need for medical developments will be greater than ever and mathematicians will be essential.

Another expanding field relates to climate change. The UK government has a target of reducing carbon emissions by 60% by 2050.

The Natural and Life Sciences

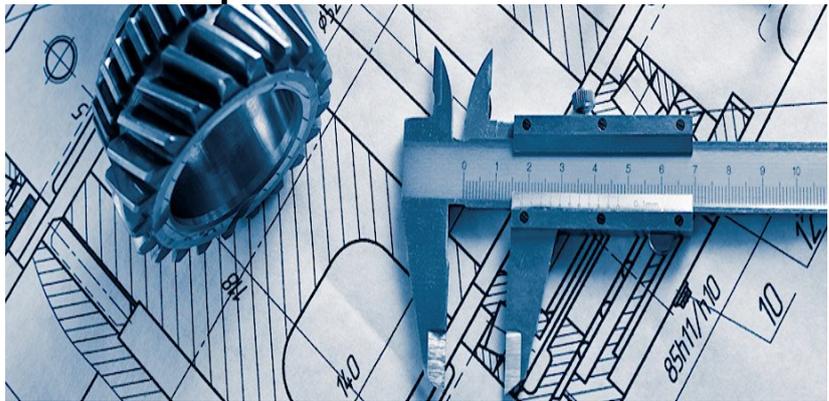




Career Ideas

The term 'engineering' covers an incredibly wide range of things: there's engineering in building and construction, engineering to do with anything that flies, swims or moves on the roads, engineering in the electronics and communications sector, engineering in the utilities sector - you name the area, there'll be an engineer in there somewhere. Engineers are responsible for the Olympic park, space satellites and exploring the bottom of the ocean. Engineering is based heavily on maths and many engineers come from a maths background. There remains a crippling shortage of engineers and only a small percentage of engineers are female.

Engineering



Medicine and Health

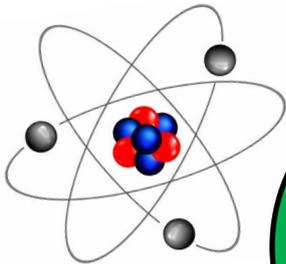


The National Health Service and the pharmaceutical industry rely heavily on maths and statistics. It's vitally important that clinical trials are set up safely and accurately and that new treatments are safe for general release.

Medical statisticians play a vital role in this process and currently there is a big shortage of suitable people. After doing a maths or statistics degree you can access this career by doing a masters degree or by on the job training.

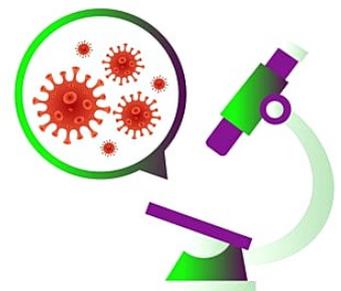
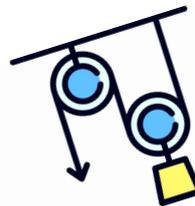
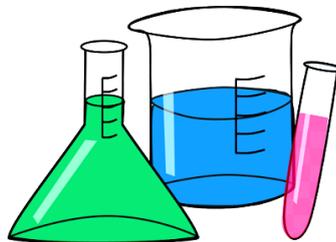
Mathematical modelling techniques are also important in modelling the growth of cancer or the spread of a drug through the body. Many people access this route by doing a PhD or masters course after a maths degree.

Careers: Science

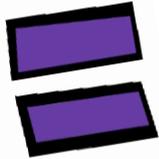


When I grow up I want to be...

- Motor Vehicle Apprentice
- Metallurgist
- Archaeologist
- Biomedical Engineer
- Research Biologist
- Medical Physicist
- Geologist
- Forensic Scientist
- Archi-
- Marine Biologist
- Microbiologist
- Environmental Officer
- Glacial Geologist
- Astronaut
- Astronomer
- Research Chemist
- Glaciologist
- Sports Engineer
- Design Engineer
- Physiotherapist

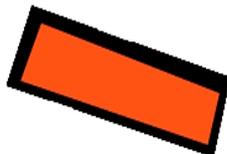
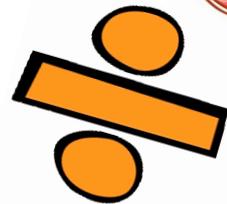


Careers– Maths



When I grow up I want to be...

Insurance Broker	Operational Researcher	Auditor
Management Consultant	Pharmacologist	Geneticist
Designer	Stock Broker	Technical Brewer
	Musician	Oceanographer
Computer Game Designer		Structural engineer
		Physicist
Data analyst	Meteorologist	Aerospace Engineer
Multimedia Specialist	Design Engineer	
Credit Manager	Geophysicist	Climatologist
	Accountant	





Careers: Activity



This personality test will tell you what STEM subject would suit you best based on your personality trait!

Select a or b and count how many of each you have at the end of the quiz! This will decide what job you should have!

When working on a school project I prefer:

- A) Working with a group
- B) Working alone

At school I prefer:

- A) Doing activities
- B) Listening to the teacher

The subject I like more is:

- A) Science
- B) Maths

I'm more likely to describe myself as:

- A) Someone who likes to stay indoors
- B) Someone who likes going outside and playing with my friends

The hobby I find more enjoyable is:

- A) Reading
- B) Working with puzzles

I would say I am more:

- A) Creative
- B) Practical



MOSTLY A- SCIENCE
MOSTLY B- MATHS

For jobs suited to your subject see pages 9-10





Around the world with sport



Have you ever thought where sports originated? Think of a sporting activity you participate in, do you know where it was first played and the history behind that sport?

There are many traditional sports and then even more alternate ones that are based on customs, traditions or the culture of that country. Did you know that in England there is a cheese rolling competition that takes place in Gloucester each year where people chase a ball of cheese down a grassy bank?



Also that football did not look quite the same when it started out as mob football in medieval times. Mob football is a type of medieval football, originally played during ancient times, and is believed to be the ancestor for all codes of modern football that we see today. Originally this sport was contested between two neighbouring towns with as many participants as can be on each side. The objective of this game was simple, to carry an inflated pigskin ball to the end of the opponent's town! Can you imagine the FA Cup final being played like that today?

Here are some sports that originated

EUROPE

The ancient Olympic Games were a series of athletic competitions for competitors from cities in Greece, held in honour of Zeus. The ancient Games included running, long jump, shot put, javelin, boxing, and equestrian events. The first written records of the ancient Olympic Games date to 776 B.C, when a cook named Coroebus won the only event—a 192-meter footrace to become the first Olympic champion. This event is the foundation of athletics competitions and the modern Olympic Games



NORTH AMERICA

Skateboarding was first invented in the 1950s in California. It's tricky to pin down the very first skateboard, but it was a sport created by surfers who wanted something to do when the waves were low. Skateboarding entered the Olympic Games for the first time at Tokyo 2020. Britain did really well gaining several medals in the Olympics this summer. This is Skye Brown a British skateboarder who won bronze at Tokyo 2020.



ASIA

Kabaddi is a contact sport that began in India. It is played between two teams of seven players. A single player on the attack team, called a "raider", runs into the opposing team's half of a court, and tries to tag as many of their defenders as possible, and return to their own half of the court, without being tackled.



SOUTH AMERICA

Capoeira (pronounced cap-wearer) is a Brazilian martial art form, combining self-defence, acrobatics, dance, music and song. It was developed by slaves who used it to disguise the fact that they were practising fight moves. Capoeira is 'played' in a circle and accompanied by music and singing. Only the hands and feet touch the floor.

AUSTRALIA

Australian rules football, or Aussie rules, is unique to Australia. It is a contact sport played between two teams of 18 players on an oval field, often a modified cricket ground. Points are scored by kicking the oval ball between the central goal posts (6 points), or between a central and outer post (1 point).





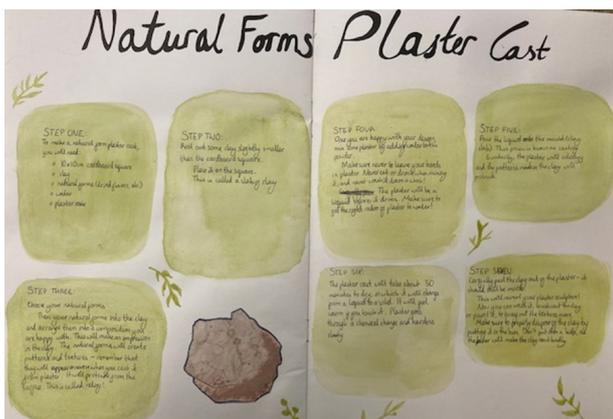
Year 9 are working on a project based on the theme of 'Structures' as a starting point. They have created mind maps to explore a variety of different ideas ranging from natural forms, time, daily routines and schedules as well as the more obvious buildings and landscapes. They have been introduced to a huge array of artists,



designers and craftspeople, all who have used structures in some way, shape or form in their work. They have created their own copy transcripts of the artists work to understand how the work was put together as well as experimenting with lots of different materials and techniques along the way. One of these techniques was plaster casting. The students learnt how to create a plaster cast, understood the health and safety aspects of doing so and then created their own, using a range of natural

forms. As you can see we were all extremely happy with the result. The students then went on to create a range of initial ideas for a final piece for their project, they developed their ideas and were able to create either a two dimensional or three-dimensional outcome, using whatever materials and techniques, or combinations of which they feel were best suited to their project, in the same way that a real artist would.

We are busy completing coursework in Years 11 and 13 for their final examinations and we are hoping to display this work in the summer term – keep an eye out for this in the future issues!



Students also created a step by step guide for their homework showing how to create a plaster cast.



Art: Natural Forms



Design and make your own sculpture based on the theme of natural forms. You can use anything that you can get your hands on, twigs, sticks, pinecones, leaves, plasticine, be as creative as you can!

Here's some Inspiration to help!



Send your entry to:

ks3@highsted.kent.sch.uk by the end of term
Place in the subject box: **Natural Forms**

Include:

Your name
Your age
Your primary school





Musical notes

Secret Musician

How would you describe your job?

Primary school music co-ordinator

Which instrument do you play? Piano and of course, ukulele!

How old were you when you started learning? I have played the piano since I was 7

What did you enjoy most about learning to play? I have always enjoyed feeling a sense of achievement learning to play a new piece

How did you train for your career? Took grade exams during school then studied for a music degree before training as a teacher later in life.

What is your favourite piece of music? Faure Requiem

Your top tip for young performers? Practice every day and you will soon make progress!

Can you find a recording of Also Sprach Zarathustra?

This piece famously features the timpani.

Could you use the information below to create your own rhythm pattern?

Have you considered learning to play an Instrument?

Welcome to the Music page. Here you will learn about careers in music, unusual instruments and some of the signs and symbols that enable musicians from around the world to communicate through the universal language that is Music.

Lesser spotted instruments....

Timpani

Habitat: found in the percussion section of the orchestra

Played: by hitting the skin with sticks

Looks: Sometimes called Kettle drums, these are large and distinctive instruments

Sounds: a low, rumbling sound

Claim to fame: Although the timpani is a percussion instrument, it is able to play melodies



Rhythm-rests

Sign	Name	Relative Length	In 4/4 Time	Rest
	Semibreve	Whole note	4 beats	
	Minim	Half note	2 beats	
	Crotchet	Quarter note	1 beat	
	Quaver	Eighth note	1/2 beat	
	Semiquaver	Sixteenth note	1/4 beat	

Did you know...

Rests represent silence in music

Rhythms have an equivalent rest to indicate when not to play

Always use the longest rest value possible, rather than combining many short rests, the sound will be the same.

Musical signs and Symbols





Ingredients

- 115g butter
- 90g brown sugar
- 50g caster sugar
- 1 teaspoon vanilla extract
- 1 large egg
- 175g plain flour
- 40g cocoa powder
- 2 teaspoons cornflour
- 1/2 teaspoon baking soda
- 75g dark chocolate
- 150g mini Easter Eggs



Method:

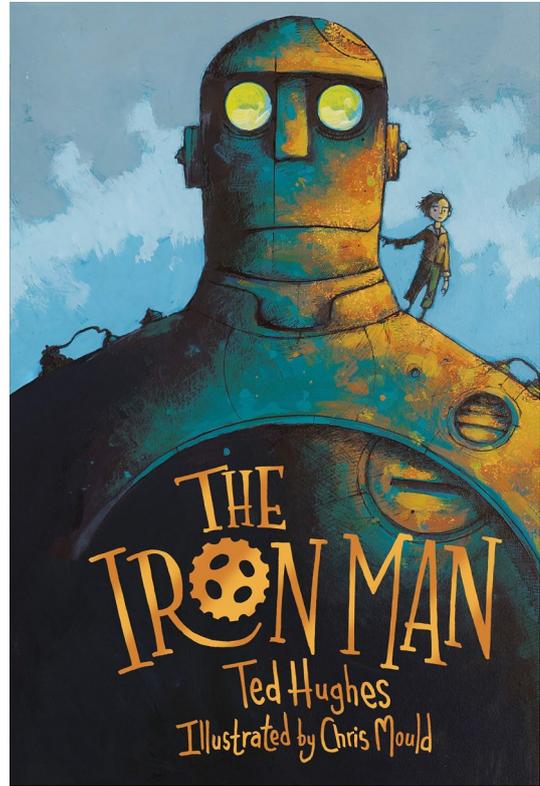
1. Preheat the oven to 180 °C Line two baking trays with baking paper.
2. In a large mixing bowl, add the butter and sugars and beat with an electric mixer until combined. Add the vanilla and egg and beat for a minute or so until smooth.
3. Sift in the flour, cocoa powder, cornflour and baking soda into the mixture, and stir until combined and forms a dough.
4. Roughly chop the dark chocolate into small chunks. Add chocolate and Easter eggs to the chocolate batter and stir.
5. Roll balls of the dough until smooth using your hands and pop onto the prepared trays. Place in the oven and bake for approximately 10 minutes. Remove and press a few extra Easter eggs on top of each cookie.
6. Take out of the oven and cool on a cooling rack.

Enjoy your cookies!

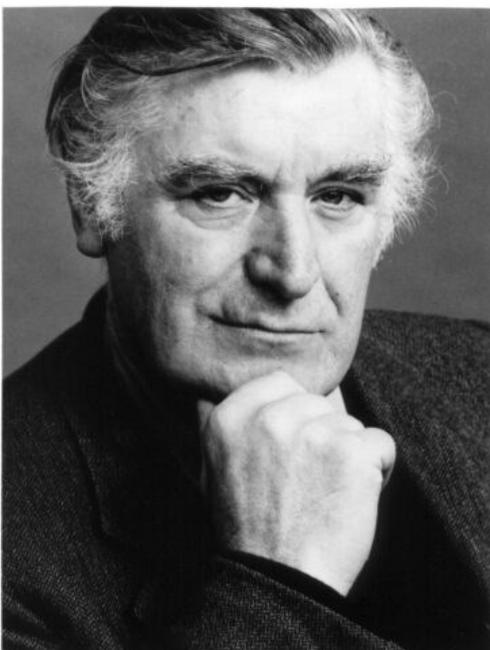


An adventure story about friendship and finding yourself

Immerse yourself in the Ted Hughes's sci-fi novella about the unexpected arrival of a "giant metal man" who befriends a boy called Hogarth. In just five short chapters, read as Hogarth and the giant battle tractors and a dragon from outer space! The movie "The Iron Giant" is based on this story and is just as great!



"The Iron Man would go out, as the champion of the earth, against this monster from space."



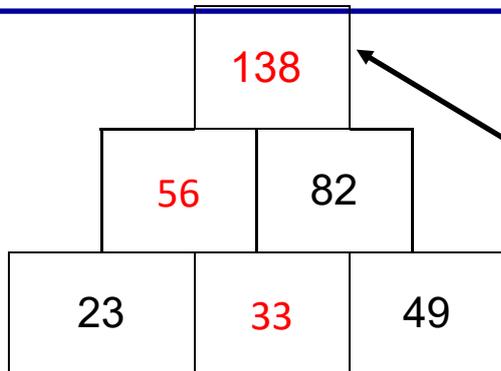
Ted Hughes was born on the 17th August 1930. Famous for his poems and novels Hughes was appointed the UK Poet laureate in 1984 and held this title until his death in 1998.

DID YOU KNOW?

Before Hughes became a poet- Hughes worked as a rose gardener, a night watchman, and as a washer at London zoo.



Answers to Challenge 9— Featured in Issue 9 of High Flyers



Reach to the Top

Each block is the sum of the two blocks it sits on.
Work out the missing values.

Crack the Code— Answer the questions below. Match your answer up with a letter to spell out two words.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26

- | | |
|--|--|
| <p>1. Four squared. 16 (P)</p> <p>2. A prime number whose digits add to make 3. <i>Error— Question should have been 'a multiple of 7 whose digits add to make 3.'</i> 21 (U) [Note 21 is <u>not</u> a prime]</p> <p>3. A two digit number where the second digit is triple the first digit. Both digits are even numbers. 26 (Z)</p> <p>4. Halve the number of weeks in a year. 26 (Z)</p> <p>5. One fifth of 60. 12 (L)</p> <p>6. 50% of 10 5 (E)</p> | <p>7. A prime number whose digits add to make 10. 19 (S)</p> <p>8. A quarter of 60. 15 (O)</p> <p>9. The total number of legs on 3 horses. 12 (L)</p> <p>10. 20 x 1.1 22 (V)</p> <p>11. The number of angles in a pentagon. 5 (E)</p> <p>12. The number of sides in a trapezium. 4 (D)</p> |
|--|--|

Mathdoku

1-	6×	2×	
			2+
3+	7+		
	12×		

Mathdoku Challenge: Complete the four by four grid so that the numbers 1, 2, 3 and 4 appear only once in each row and only once in each column. The grid is divided into outlined regions called 'cages' which have a given operator and target number. The numbers in the cells of a cage must produce that target number using the given operator. For example, if a cage of three squares has '12x' in the corner of one of the squares, it means that the three numbers in that cage multiply together to make 12.

4	3	2	1
3	2	1	4
1	4	3	2
2	1	4	3





Acknowledgements



High Flyers was produced by Highsted Grammar School to inspire Key Stage 2 students in local primary schools to develop a passion for learning across the curriculum.



With thanks to Miss L Baker, Mrs S Appleton, Mrs H Rennie, Miss K Gardiner, Mrs A Reed, Miss G Springhall and Mrs R Ndlovu for sharing their enthusiasm for their subjects.

