



Stem stimulator



Rotary Young Chef Competition 2022

On the 16th November Kings Langley school were delighted to once again be the host's school for the Rotary Clubs of Berkhamsted and Hemel Hempstead's annual Young Chef competition. 12 students from across six schools entered into the competition to cook a two-course meal costing no more than £20 for two people in two hours. The judges this year were Nic Leon, executive Chef at Leon Catering and Grant Young Executive Chef at Fine Dine In. The competition was amazing with some incredible dishes being made to an extremely high standard. The rotary judges chose Dylan and Amrit year 10 to represent Kings Langley School. Amrit made sun dried tomato and chilli rigatoni with garlic bread and three flavours of dark chocolate truffles. Dylan made beef burger with potato fries and lemon drizzle cake. Both students produced excellent quality dishes and we are delighted to announce that Amrit came second overall in the competition just beaten by Jasper from Hemel Hempstead school. Congratulations to all for a superb evening and thanks to the Design and Technology staff team for their support in this event.



STEM colours

Check out the back page for how your son or daughter can achieve this new STEM colour

For more information please contact Miss Scanlan—
scanlanc@kls.herts.sch.uk

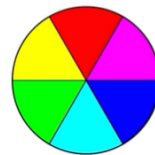
Winning form for the
STEM quiz Film and Tv
logos is 13MCK

Year 7 The difference between PAINT colour and LIGHT colour

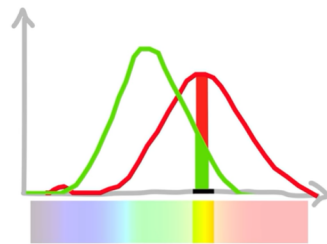
<https://thekidshouldseethis.com/post/how-do-your-eyes-see-color-physics-girl>



Light Color Wheel



Paint Color Wheel

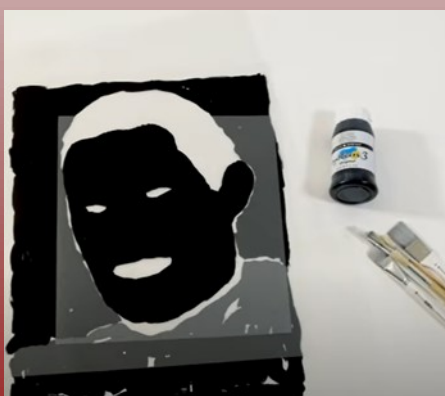


Year 8 CLIMATE CHANGE

Hundertwasser was a passionate campaigner for the environment

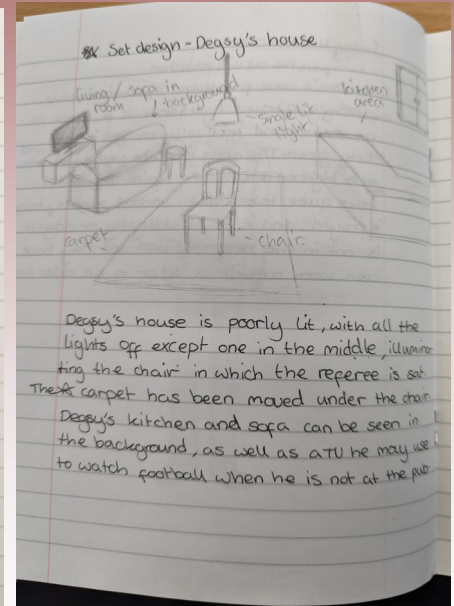
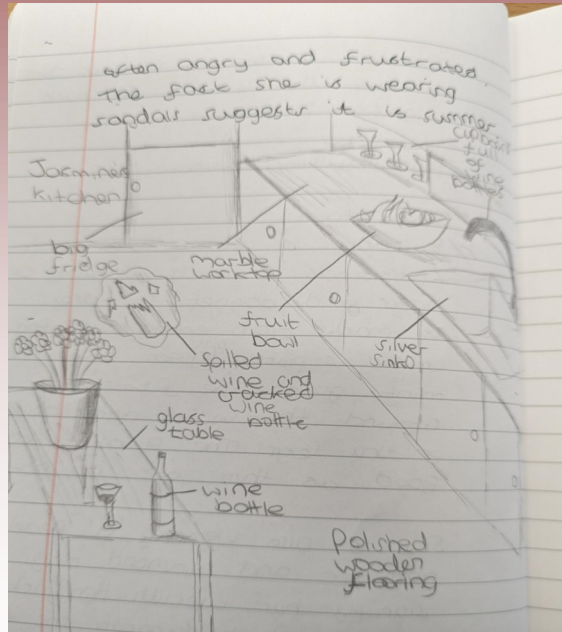
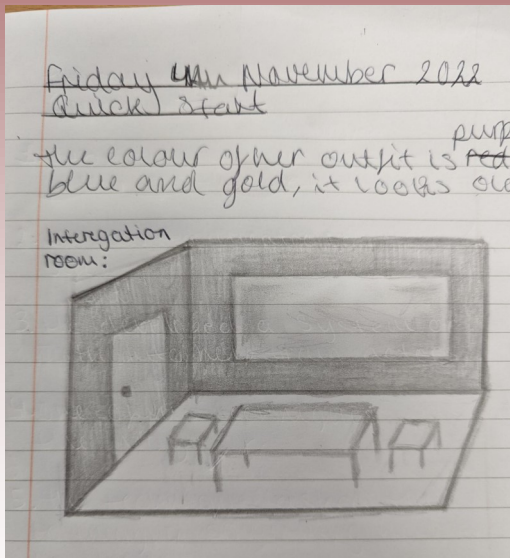


<https://www.youtube.com/watch?v=S7jpMG5DS4Q&t=107s>

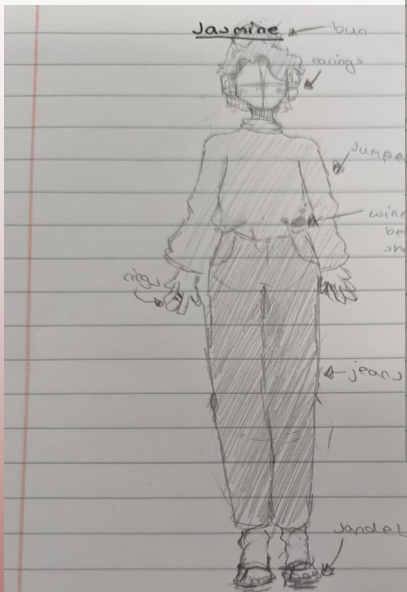


Year 9 Photo - emulsion screen printing is a technical process used by the artist Any Warhol in much of his work. It allowed him to produce multiple pieces of work quickly and cheaply.

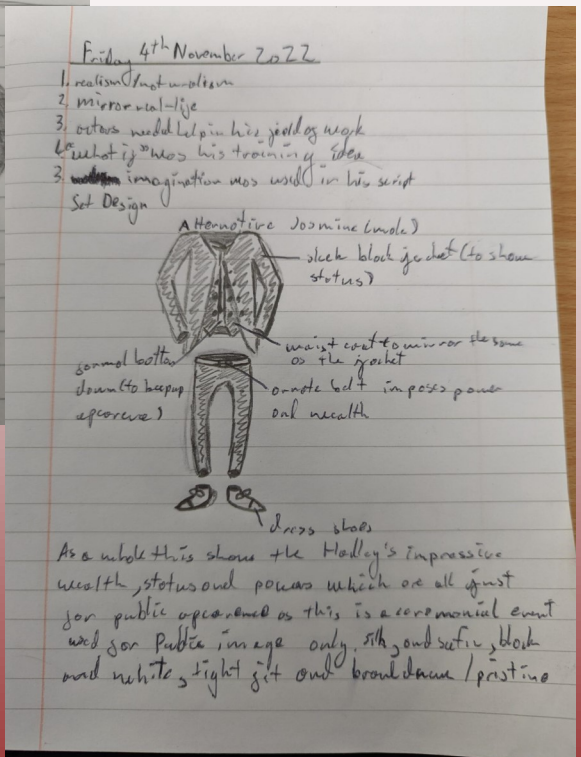
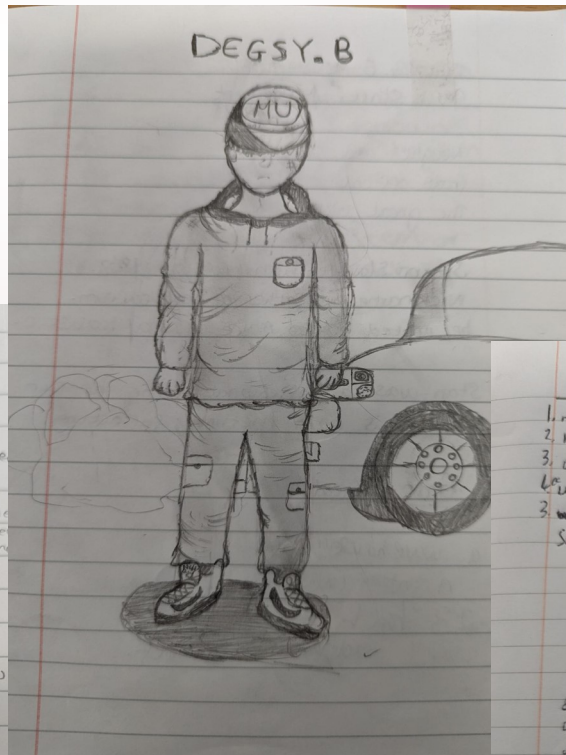
https://www.youtube.com/watch?v=O8HB2cQm_Ag



Sets and costumes designed in Drama

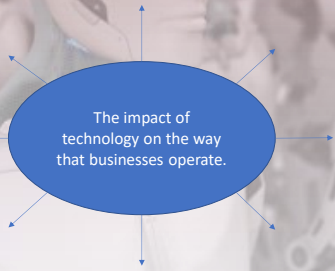


she wears a jumper with jeans, and sandals because she lives by her beach, rings and earrings because she is rich and wears her hair in a bun.



Influences on business activity
Guided practice:

Complete/ brainstorm to identify the ways in which technology has changed the way that businesses operate (Give detail).



CLUE:
Think of different areas and functions of Business:
-HR
-Marketing
-Sales
-Brand image
-Profitability
-Economies of scale
-**Homogenisation (KT)**

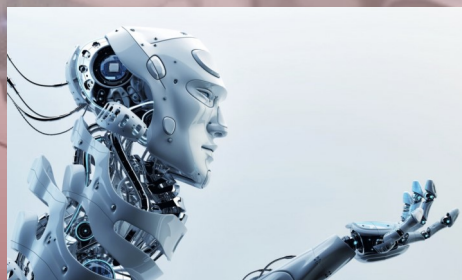
Do now: New tech can make or break a business: Which do you believe was the most successful 'new' (at the time!) technology? Which was the least successful?



Plenary: Talking point: Rise of the robots:

LO: To understand the influence of technology in business

- **'Robots are the future'...**or are they?
- List down the jobs you believe will **not** be taken over by robots.....90 seconds....





STEM in Computer Science



Year 7

Year 7 Computer Science students will work on a group project at the end of each 9 week rotation to create a futuristic household product. The teams work together to create a product portfolio using various applications in the Computer Science lab. They will also use collaborative software to complete work simultaneously on the same applications.

Year 8

Year 8 Computer Science students used Microsoft Excel during their STEM lessons to complete different Mathematical functions using formulae. The students were able to complete complex sums using the different formulae and functions learnt in previous lessons. They will work on a group project at the end of each 9 week rotation to create a futuristic household product. The teams work together to create a product portfolio using various applications in the Computer Science lab. They will also use collaborative software to complete work simultaneously on the same applications.

Year 9

Year 9 Computer Science students created their own basic websites during their STEM lessons using a programming language called HTML. The students combined learning from prior lessons and were able to create basic websites independently. The students were challenged to complete a range of tasks from changing colour of text to adding their own image using HTML.

KS4

In KS4, Computer Science students created their Python programs using a range of learnt skills from creating variables to manipulating strings using techniques they had learnt in previous lessons. The students were given the opportunity to code independently and freely investigate the powers of Python.

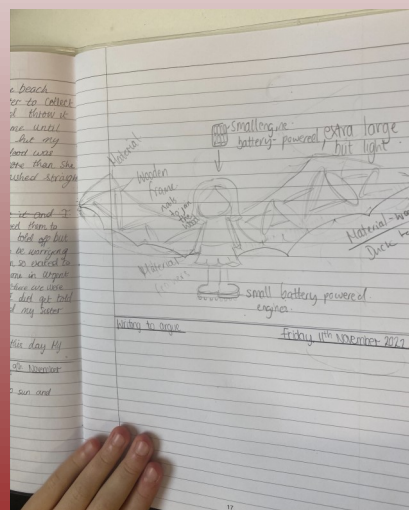
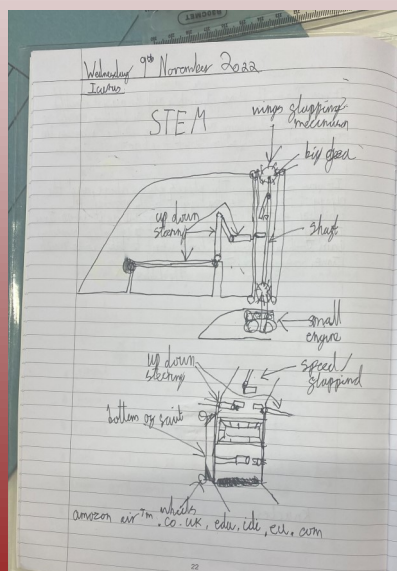
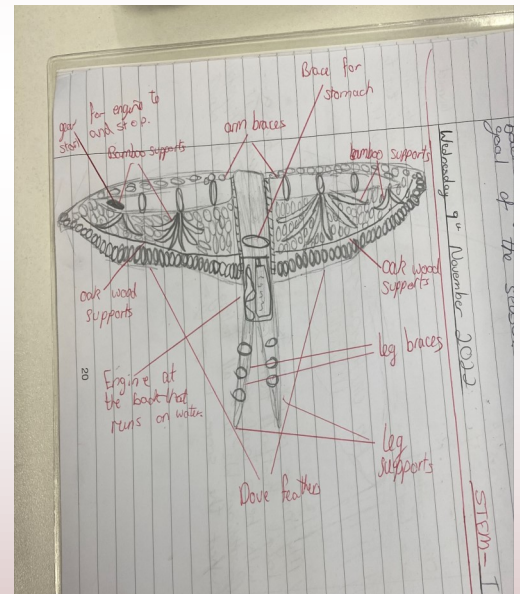
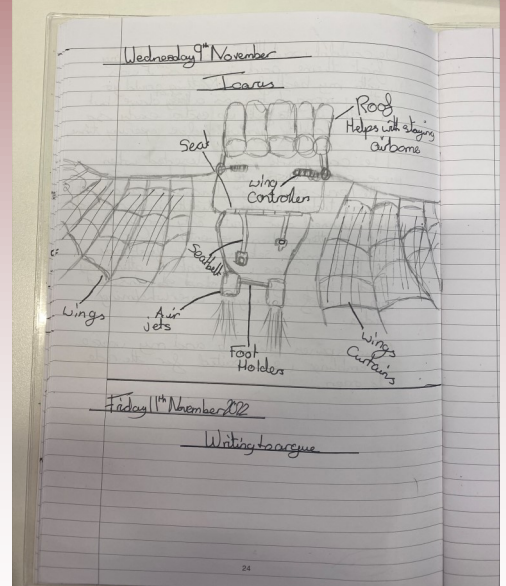
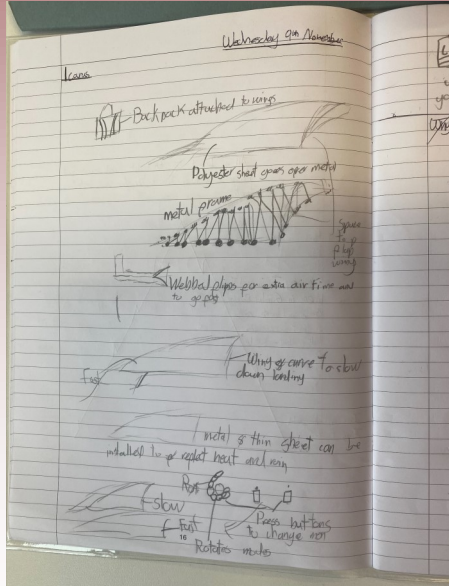




STEM in ENGLISH

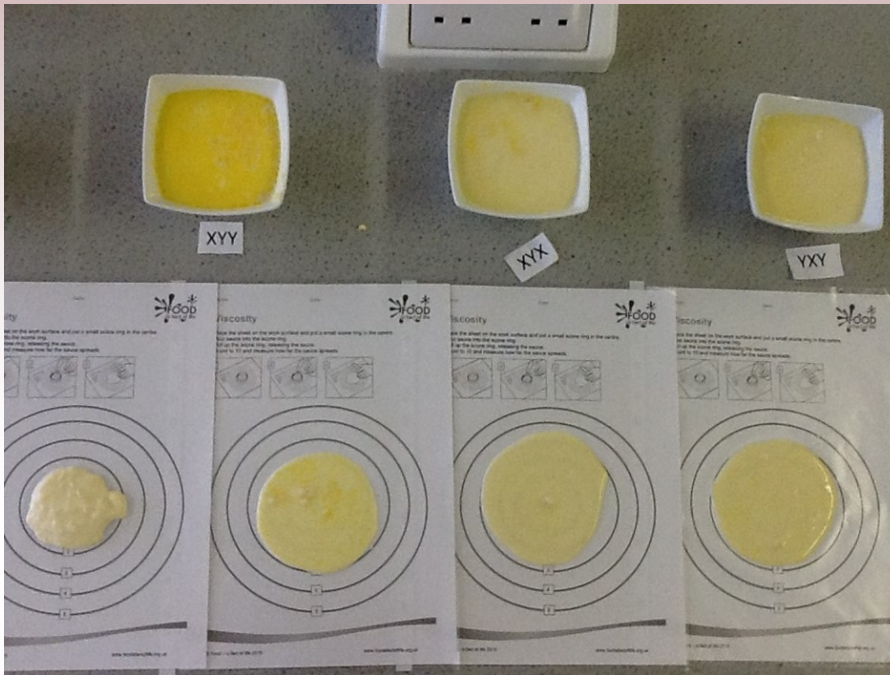


In English Students designed new wings for Icarus.





Viscosity experiments with sauces

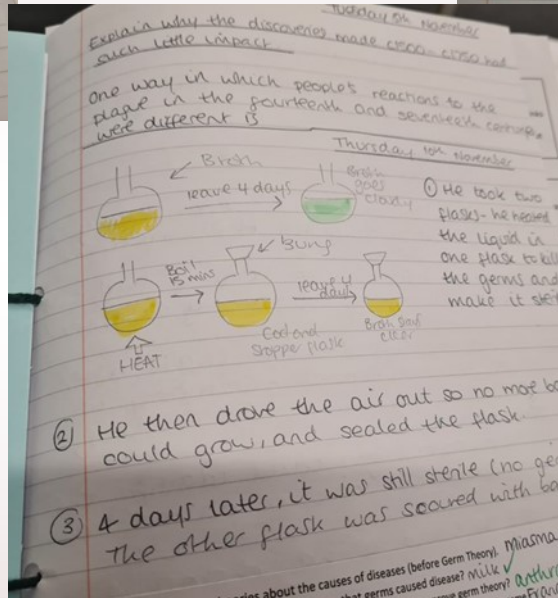
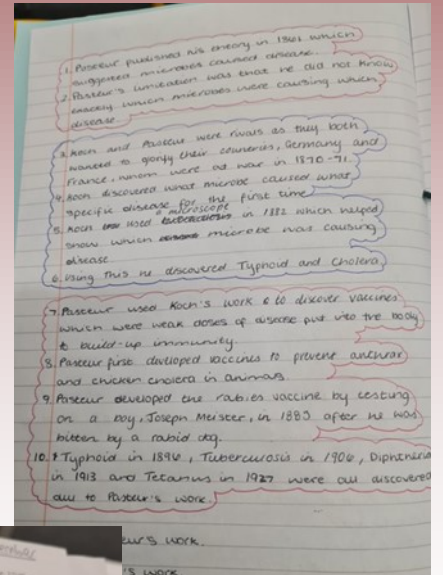
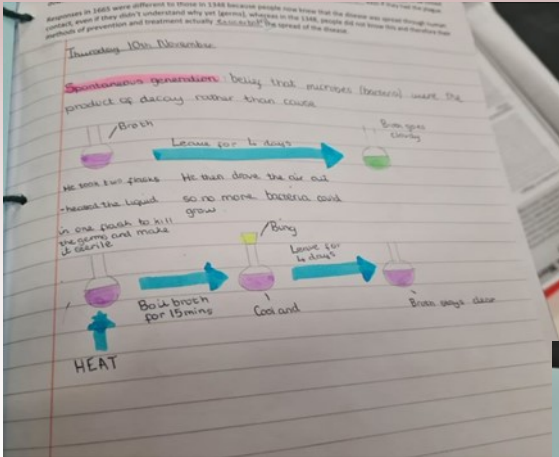


Year 9 Pastry modelling
– experimenting with
cutters, shapes and
fillings



Year 10

Germ Theory: Pasteur and Koch



Year 9 Russia

The Renaissance Science V superstition Year 8

How did Russian society change, 1861-1905?

LI:

- To identify the problems caused the size and scale of the Russian Empire
- To identify the features of Russian society
- To explain Russian inequality

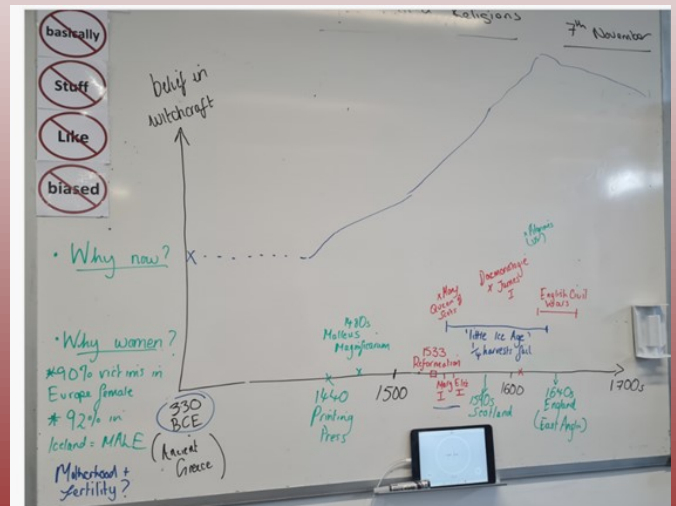
Keywords

Tsar
Nobility
Capitalists
Middle Class
Industrial Workers
Peasants
Serfs

Transport and communications were challenges.

- 128m people
- 2 month delay on communication, 78 days to walk

What would be the impact of the building of the Trans-Siberian railway?



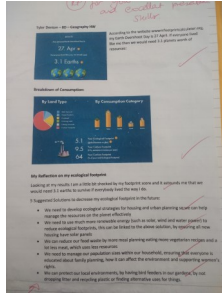


STEM in GEOGRAPHY

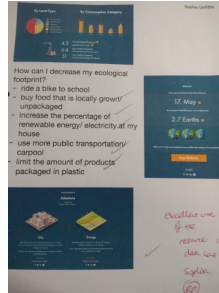


Year 8 – investigation into the concept of our Ecological Footprint and 'Earth Overshoot Day'

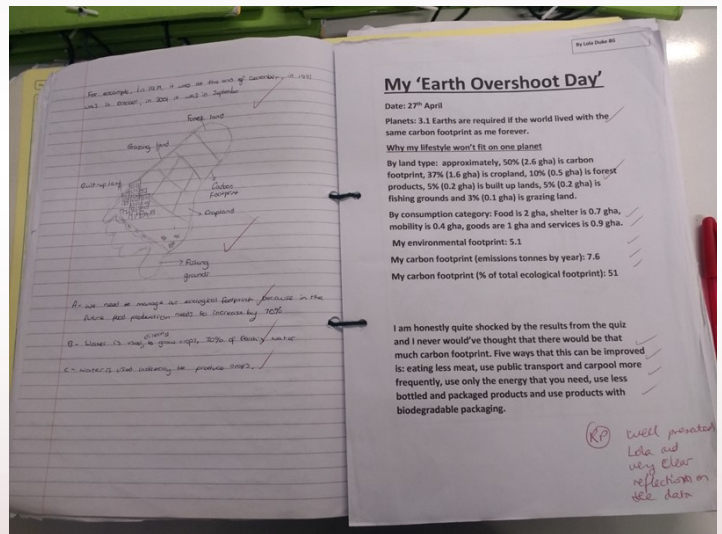
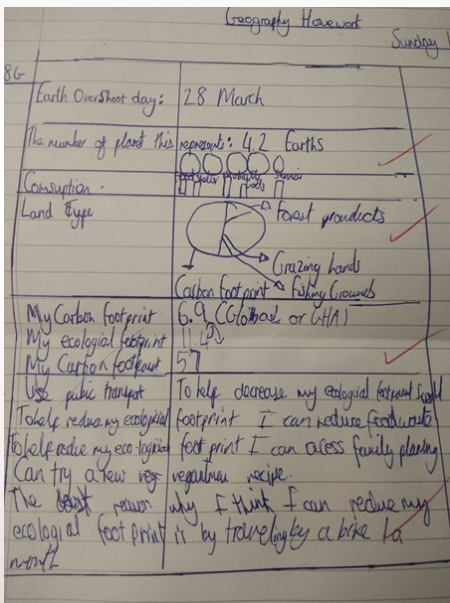
Tyler 8D



Sophia 8J



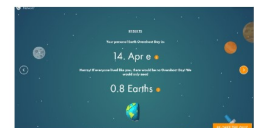
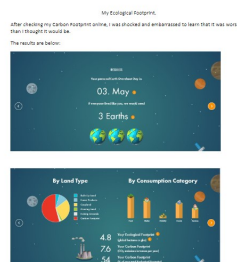
Lola 8J



Brendon 8J

Year 8 – investigation into the concept of our Ecological Footprint and 'Earth Overshoot Day'

Zain, 8D



Affections:

Checking my carbon footprint made me feel very surprised because I didn't think that I was that bad of a person. I didn't think I was doing that bad of a job. There are ways that I can improve my carbon footprint.

- I am always trying to reduce the amount of plastic I am using and being more aware with recycling things. I think this will make a good impact on my carbon footprint.
- I will talk to my parents about solar energy. My granddad has solar panels on the roof of his house and I think I can talk to him and see if there would be a good way to use renewable energy.
- I think I will try to use the car less and maybe try to walk or cycle to places if I can, this will make a difference to my carbon footprint as well.
- If I changed my eating from eating meat to often to occasionally this might help as well. Currently, I eat meat 3-4 times a week but I could change to 1-2 times a week.
- Changing to LED lights can also help my carbon footprint.

If I made all of the changes mentioned above my carbon footprint would go from 3 Earths to 0.8 Earths and my personal Earth Overshoot Day would change to next week.



Year 13 – Assessing the carbon content of a range of trees near to school

Olivia is able to make out the top of the tree in the fog – Albie is recording the angle from her clinometer reading



All three needed to measure the circumference of this oak!



Mission accomplished, all readings taken – Olivia, Albie and Carli

Year 9X1 answered a question about the length of paper stuck in a loop

Loop

A length of paper is 20 cm long.
It has a 1.5 cm sticky strip at each end.

Not drawn accurately

Four strips are stuck together, with the sticky parts overlapping exactly, to make a loop of paper.

Not drawn accurately

What is the circumference of the loop?

Answer cm

Thursday 10th November 2022

Quick Start: 20cm

Stem problem solving: what is the circumference of the loop? 74 cm

$$\frac{18.5}{4} = 4.625$$

$$18.5 \times 4 = 74 \text{ cm}$$

Example: $3a(x+y) - 4b(x+y)$
 $(3a-4b)(x+y)$

5. (a) $8a(x+y) - 4b(x+y)$

Quick Start

1. Circumference = (4 white) + (4 sticky)
 $= (17 \times 4) + (1.5 \times 4)$
 $= 68 + 6$
 $= 74 \text{ cm}$

$20 - 3 = 17 \text{ cm}$

Factorising

e.g. a) $3a(x+y) - 4b(x+y)$
 $(3a-4b)(x+y)$

b) a

Year 7 answered the question on the ages of Female Mathematicians.

Mathematical Ages

Here are the dates of three pivotal female mathematicians:
 Sophie Germain (French) 1776-1831,
 Sonja Kowalevsky (Russian) 1850-91,
 Emmy Noether (German) 1882-1935.

Arrange them in order with the shortest-lived first.

We discussed what STEM is and how important it is for younger people to be involved in STEM subjects and careers. We discussed how it was especially important to celebrate females in STEM and that we need more women and girls involved in STEM as the numbers are still low.



Year 7 set 4 answered a question on making a decision on which



UNWISE LANDLORD?

Think about this statement, that my landlord said to me when I moved into my house at university:

"I don't mind if you pay £50 rent per week or £200 per month, just so long as I get the rent in time!"

Is there a difference? Can I save myself any money?
Be prepared to discuss your answer, with evidence!

We discussed what a landlord was and what rent is. They struggled to make a start so we broke the question into parts.

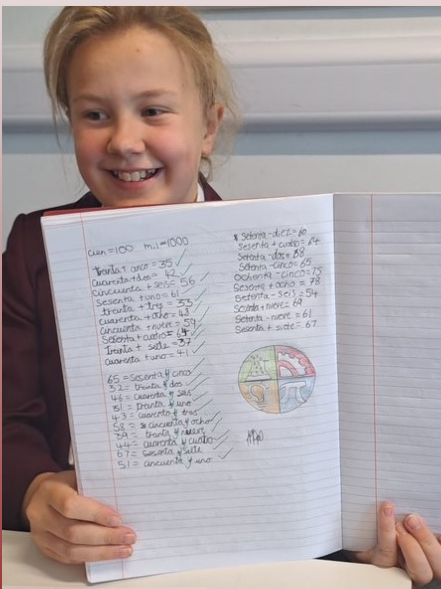
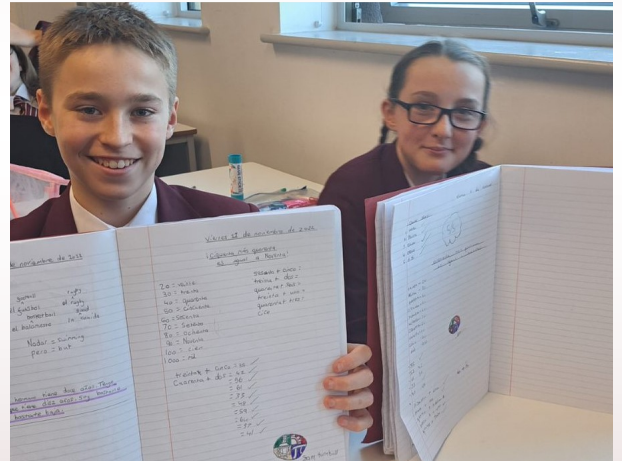
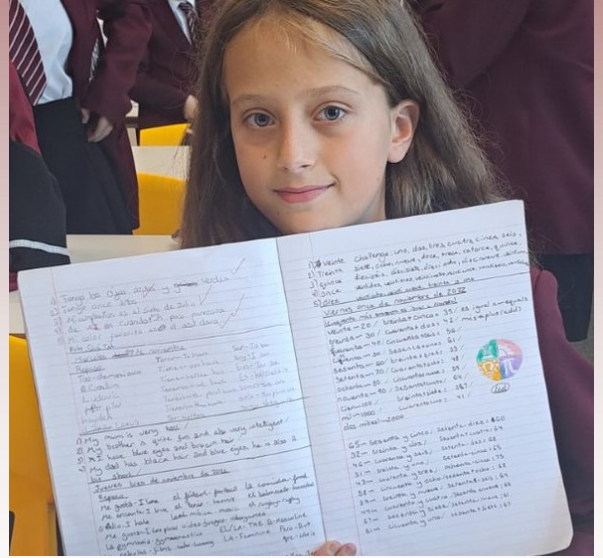
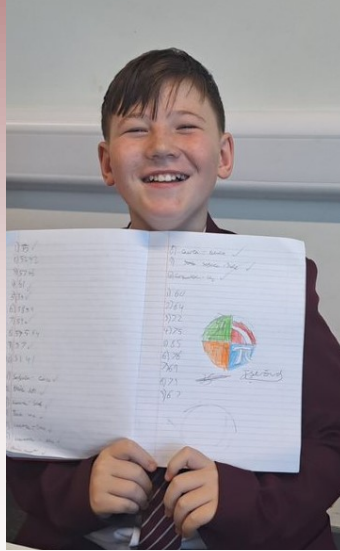
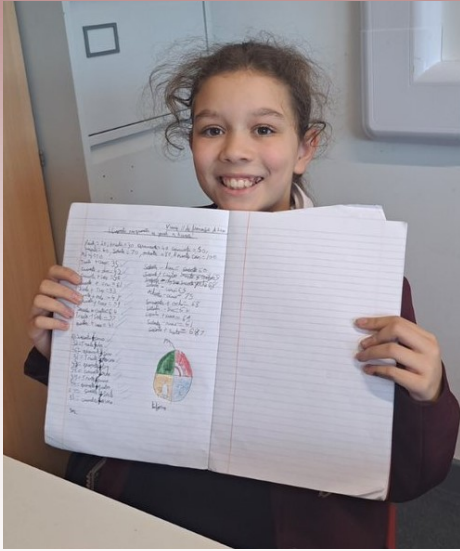
How many weeks are in a year? (We eventually got to the correct answer of 52), and then they calculated the total amount for the yr.

Then how many months in a year? Then they calculated the annual amount.

Finally I asked them to compare and choose which amount they would thought was best to pay Gracie's calculations are in the photo below. Well laid out and she worked out the amount saved and concluded that it was a whole month's rent.

$$50 \times 52 = 2600 \text{ Weekly}$$
$$£200 \times 12 = 2400 \text{ Monthly}$$

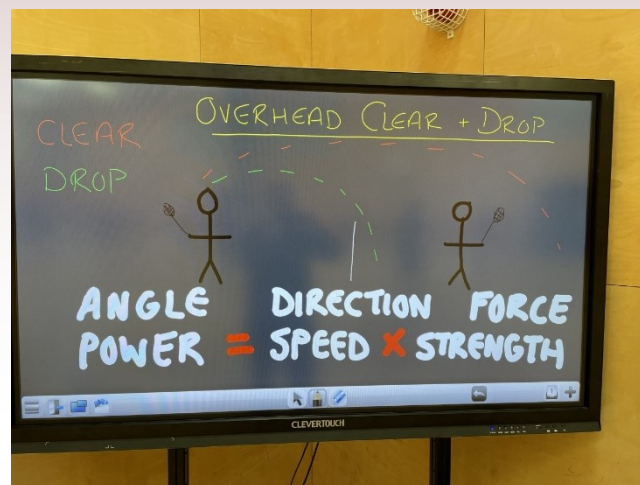
Saving 200
B





This year STEM has been taught within the practical lessons. We have hoped to show how applying science and maths to sport can add to the performance and improve skills. Here are some of the activities we completed.

In Mr Annett's badminton lesson they looked at how the angle of the badminton racket could affect the direction of the shuttle and then by applying different levels of power to the racket different shots could be played. Pupils were able to apply this to both the overhead clear and the drop shot.



In trampolining Miss Donovan applied the processes of imagery and mental rehearsal when trying to learn a new routine. Pupils had the opportunity to work through the moves on the floor creating the shapes before transferring them to the trampoline. This process is used by Olympics skiers, formula one drivers and gymnasts before they compete.

In football lessons the girls focussed on the power and accuracy needed when shooting. They looked at the foot and why it was best to use the laces to apply power to the shot whereas the side of the foot would gain more accuracy. They also tried lifting the ball into the top corners, here they had to not only strike the ball with their laces but lean back as they did in order to apply the power under the ball to lift it into the air.

In Mr Higgins rugby lessons they looked at applying spin to the kick of the rugby ball. They then compared the direction and distances the ball travelled. This was then used in the game when taking a conversion





A-Level Photography

Students in Yr12 A-Level Photography conducted a photoshoot in the style of photographer Bruno Metra, where cuttings of celebrity faces are taken from magazines and then taped over a model's face.

In a world where people are obsessed with social media and the fact that the idea of beauty imposed on us by imagery which is constantly presented to us, this photoshoot challenges the notion of beauty.

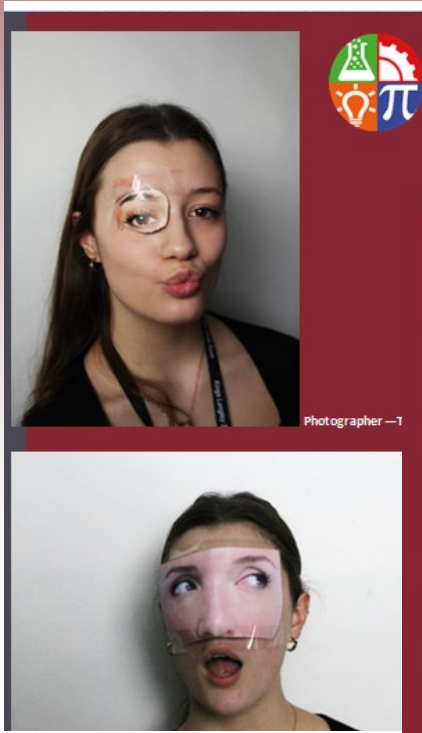
As part of STEM fortnight, this photoshoot prompted students to consider whether the development of digital technology is always used in a positive way? Does the increase use of digital manipulation and editing, take away an aspect of social acceptance of individuality if we are forced to conform to aesthetic standards promoted on social media?



Photographer — Woody

Photographer — Ruby





Photographer —1



Photographer— Louis

A-Level Photography as a subject, enjoys the benefit of a wide range of technology, whether this is digital cameras, specialist photography studio equipment, or digital software packages such as Adobe Creative Cloud.

Our A-Level provides students with the opportunity to use industry standard and industry quality equipment to prepare them for the technology used in today's world.

Photography as a subject provides our young adults with the ability to use technology to explore themselves and the world around them, creating images that make an impression on others.

Photography can help students support their interests in many other areas of the curriculum as well as a wide and diverse range of professions.





Y12s who are studying research methods and did a class project on questionnaire design. Some of them went a step further and interviewed other 6 formers on their own initiative. The results were quite interesting for both staff and students. But it was a small sample. As part of STEM fortnight, I suggested to them that they might like to extend it to the whole 6 form as an exercise.





Year twelve physicists have been studying forces and motion with me, which include masses in equilibrium, centre of mass, moments, density and pressure and the Archimedes principle.

For STEM week we dedicated four lessons to the creation of boats to test the pupil's understanding of the entire topic. They were given a list of equations they had used throughout the chapter and were instructed to "think outside the box".

The aim of the game was as follows:

The boat must hold as much mass as possible without sinking.

The boat must withstand a wave test with the masses.

The boat must have a mast and flag because it isn't a boat without them.

Year twelve had to think about the practical applications of the equations they had been using in class and design their boats to ensure that it remains balanced during the wave test (moments and centre of mass) whilst making their vessels hold as much extra mass as possible through the Archimedes principle (upthrust from water = weight of water displaced).

There were some very creative designs, with the winner being a quality street box by Sam and Kian, which had a tube in the middle to store the weights towards the centre of buoyancy (an idea they had to research, not in the A level spec), ensuring the weights do not slide around during the wave test, which could have caused tipping due to the moments of the weight from the centre of mass (moments are turning forces, how levers work. The larger the distance, the more effect the weight has).

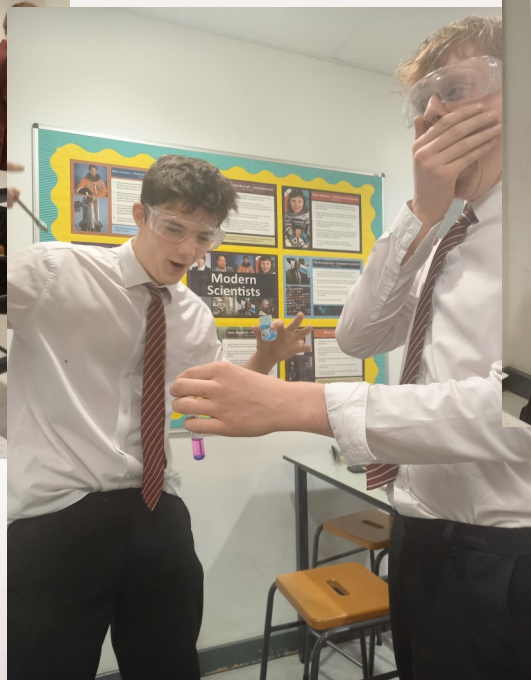
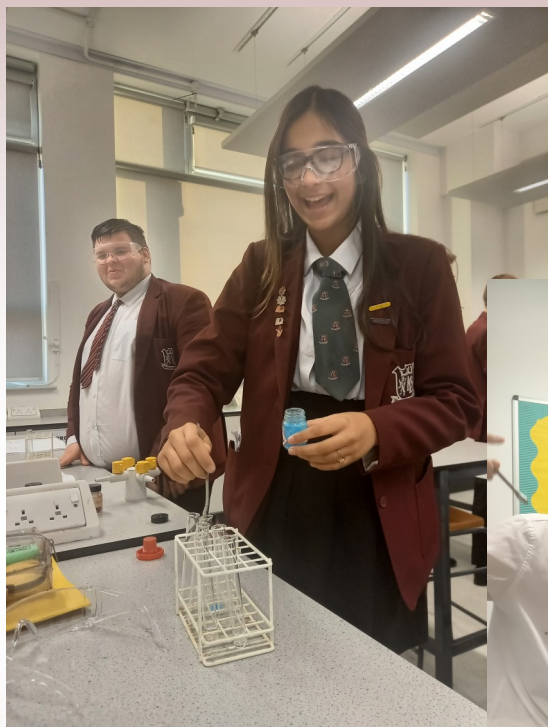
There was also some deviousness involved when the class realised that the density of the fluid affected the upthrust directly, and my rules didn't specify they could not add anything to the water. Raman et al. decided to buy 2.5kg of salt, whilst Elie and Dylan ransacked the food tech classrooms for corn starch.

The year 12 physicists were designing and making boats, then competing to see who's held the most weight. There are many factors to consider, mainly, the distribution of weight (moments) and surface area, how to maximise upthrust through the shape of hull (water displacement) and the density of fluid it was submerged in.

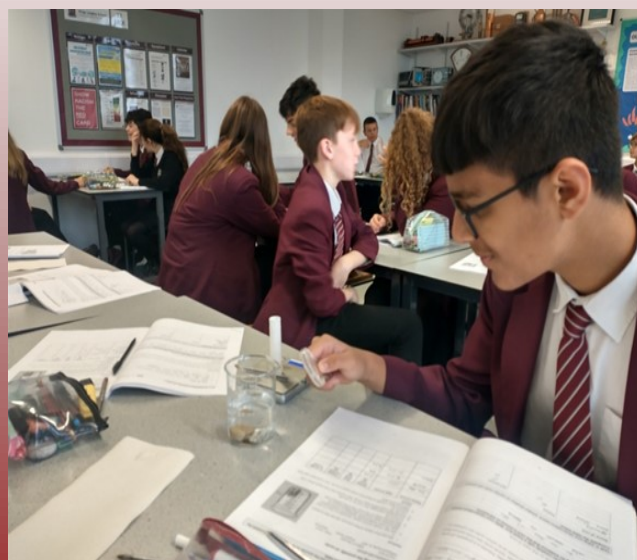


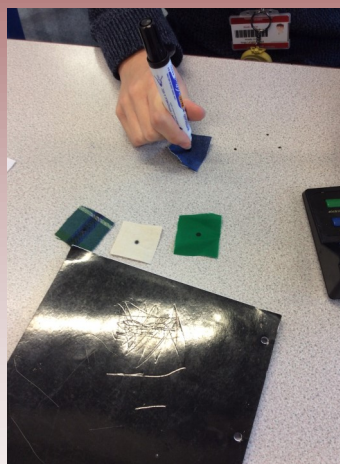


Students were using Chemistry knowledge to identify which positive ions were present in different ionic compounds. The different colours indicate different metal ions present. These are the same colours are used to create the colours we see in fireworks!

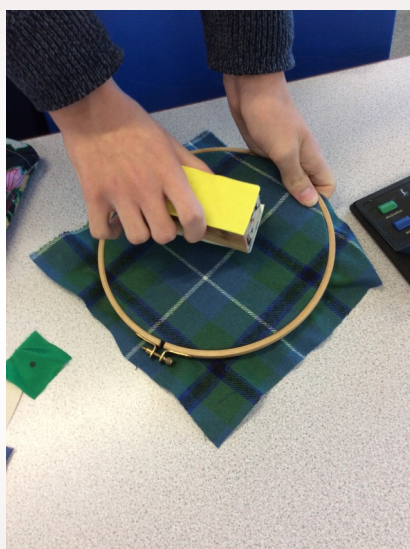


Year 9 pupils were investigating the porosity of rocks during STEM week. They did this by measuring the mass of the rocks when dry, then submerging them in water and recording their mass after. Porous rocks have tiny holes in them which allow water in, like a sponge. If their mass after being submerged was significantly different to when dry, then the rock is porous. We also took this opportunity to look at percentage change and significance. The pupils correctly predicted that only the sedimentary rocks would be porous due to the way they are formed, whereas igneous and metamorphic would not.





Year 12 Textiles
investigating
materials properties
and functions



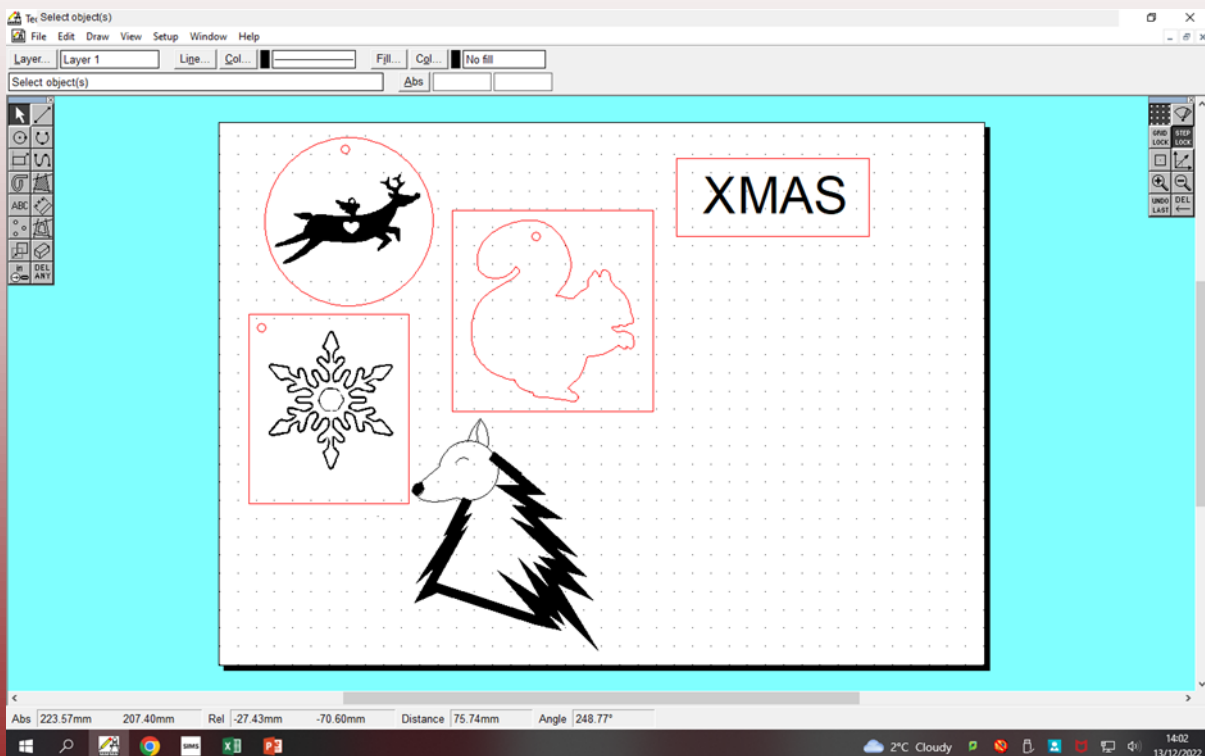
For our final lesson of the textiles rotation, we did a STEM lesson in each year. In year 7 we learnt about the structure of fabrics and created our own piece of weaving with paper. Some students were able to come up with creative ideas of how to create patterns in their woven work whilst others practiced different woven structures. In year 8 we learnt about the lifecycle of a plastic bottle, its impact on the environment and how it could be used to make clothing. We also looked at the environmental impact of a cotton t-shirt and designed our own range of charity t-shirts. In year 9 we looked to the future of textiles and learnt how 3D printing could be used to design and make clothes at home without a sewing machine and designed our own range of 3D printed fashion.





In KS3 we have been looking at CAD/CAM and the advantages and disadvantages of these in the production process. Students have been using 2D Design to create Christmas decorations that will be cut out on the laser cutter.

At KS4 students have been learning about stadium 974 and how shipping containers could be used as a platform to create a sustainable living solution.





STEM Reads

Brand new Computing books in the library!

Mr Ali and Ms Hill have added lots of new books about computing, coding, and computer science to the library's STEM collections. These books are all available to borrow, and cover topics including gaming, algorithms, AI, and coding in Python. Check them out!



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STEM Student Ambassadors



Student Ambassador: Jake 8G

Food tech:

I really enjoyed this lesson as it was very creative and fun. Our task was to make bread and shape it into STEM related food.

My group created the Solar System out of bread - including all 8 planets, the Sun, a rocket and many meteors. Altogether, our class had created a plethora of wonderful STEM related bakes. This lesson really brought out creativity in our class and was a very enjoyable STEM lesson.



Geography:

Our geography STEM lesson was about endangered species and what scientists are doing to help conserve them. For example, a scientist in Costa Rica had recorded the sounds made by animals in the rainforest now and a few years ago. The difference was very clear, years ago, the sound consisted of lots of animal calls and was loud, whereas now there are less noises, and it is quieter. Another scientist was searching for Franklin's bee which miraculously disappeared years earlier. This lesson was very interesting, and it is shocking how rapidly species are declining.

Student Ambassador Joshua G 7A

Over the course of 2 weeks year seven had multiple stem activity lessons

Math

in math classes we discussed all about Careers which involve Math and the other parts in STEM which was interactive and enjoyable.

English

We did some STEM activity's such as designing wings based on the Greek myth Icarus in lesson two we had some disagree or agree to do with lesson one

French

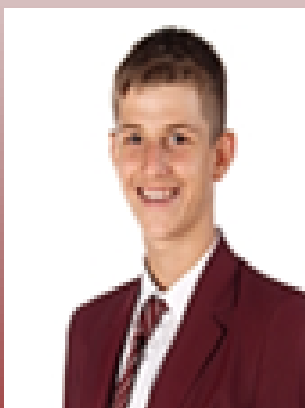
We partook with a mathematical approach with a number quick start and a friendly bingo.

Technology

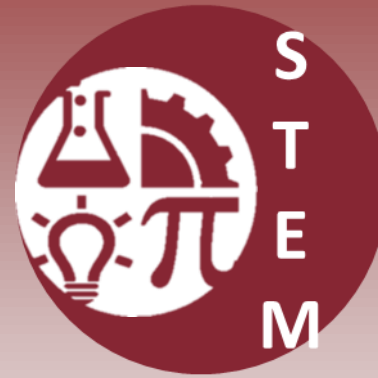
STEM activity which was to design a label for a soup can after the stem activity we had a revision lesson then the assessment.



Augmented Reality Surgery (Part of STEM Education):



Surgeons at St. Mary's hospital in London are pioneering the use of AR (Part of STEM) in the field of surgery and are using it to make skin grafting operations safer and faster for patients. Augmented Reality headsets are being used to help with skin graft surgery. The headset projects multiple images of CT scans over the surgeon's real world view to help give them a better picture of the anatomy of the person they are treating. The scans are being used to identify the blood vessels that will supply the skin grafts and help the reconstructive tissue to heal properly. Doctors in London are not the only ones that are pioneering the use of Augmented Reality Surgery. In Netherlands they are also using the technology to identify brain tumours. This astounding invention in the STEM field is based on the technology used in a Virtual Reality Microsoft video game. Harry 10C



	Bronze	Silver	Gold	Platinum	Diamond
Extra-curricular	Attend one extra-curricular STEM club for two terms.	Attend one extra-curricular STEM club for at least a further two terms	Assist a member of staff in the running of an extra-curricular STEM club for a year term, assuming a role of responsibility.	Plan and run an extra-curricular STEM group for a year.	Take an active role with specific responsibilities for STEM such as setting up and leading a STEM activity
Leadership	Become a student leader within an area of STEM, for a minimum of two terms.	Become a student leader within an area of STEM, for a minimum of three terms, taking responsibility for a specific activity/event.	Become a student leader within an area of STEM for at least three terms, assuming a specific role of responsibility where you contribute to the running of events.	Become a student leader within an area of STEM, for at least two years, assuming a specific role of responsibility where you lead others.	Lead a student group/club within an area of STEM, taking responsibility for its planning, design, content and delivery.
Personal Development	Submit one article to the STEM newsletter or contribute to STEM subject display board or Enter at least one STEM form competition	Submit two articles to the STEM newsletter or contribute to STEM subject display board within a school year or Enter at least two STEM competitions over the year	Submit one article to the STEM newsletter each term or contribute to STEM subject display board each term or Enter at least three STEM competitions (one per term)	Via the STEM newsletter, write an article to be included in local press about a positive aspect of your school or Enter the STEM fair individually or as a team	Produce a STEM student magazine for a STEM subject area of the school over a year. or Lead a team or support a primary school team to enter the STEM fair
School and Wider Community	Take part in a STEM school or community fundraising event	Contribute to a STEM school or community fundraising event assuming a role of responsibility	Lead a STEM school or community fundraising event assuming a role of responsibility	Organise a STEM school or community fundraising event assuming a role of responsibility	Lead on, or assist the support of students in a STEM fundraising event across the school