



Welcome to this bumper issue celebrating all the excellent STEM activities across the curriculum during our STEM fortnight this half term. All subjects across all year groups provided interesting and stimulating STEM activities for the students to experience. During the fortnight we were also delighted to have 3 excellent guest speakers come and talk to students about their STEM careers.

### Form STEM competition

Winning form– joint first with all 16 STEM roles and people identified- 10J and 12MCG– Congratulations and congratulations to the library teams to for excellent number of entries– Reading Club 1 the winner



### New STEM colours

This term we have just announced our New STEM colours award

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





# STEM in ART

## Colour mixing and proportions:

Shade in the percentage or fraction of each bar with the colours listed. One is shaded in from the left, the other from the right. Most of the pairs of colours overlap and lend to form a third colour – workout it's percentage or fraction as well.



A) Red 50% and Blue 50%



B) Red 50% and Blue 70%



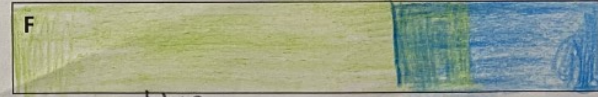
C) Yellow 80% and Blue 60%. The two colours bended make: green and is 40 % of the bar.



D) yellow 30% and Blue 95 % . The two colours bended make: green and is  $\frac{1}{4}$  of the bar.



E) Red  $\frac{2}{3}$  and yellow  $\frac{2}{3}$ . The two colours bended make: orange and is 33.33 % of the bar.

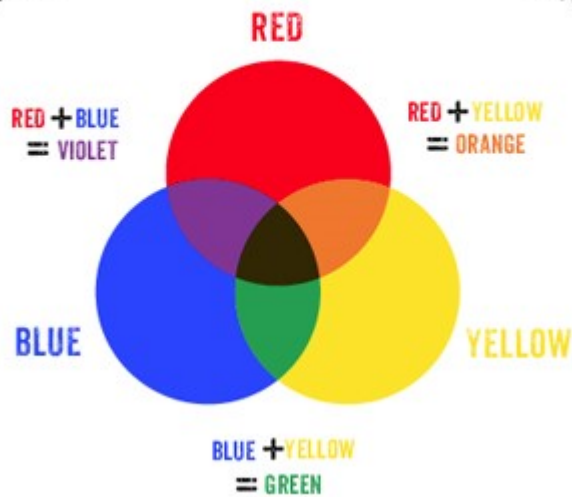


D) Green  $\frac{5}{6}$  and blue  $\frac{1}{3}$ . The two colour bended make: turquoise and is 10 % of the bar.



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## WHAT HAPPENS WHEN YOU MIX COLORS?





# STEM in BUISNESS

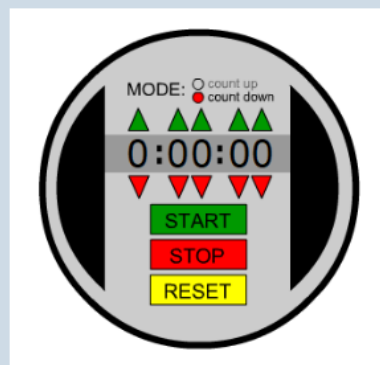
We have just worked through the topic on Technology in Business which fits in nicely with STEM. Below is the PPT slide that is used.

The questions centre around how Dominoes use social media advertising, apps to increase sales, also we discuss the links with Just Eat robots that zip around Milton Keynes autonomously delivering pizza.

- To understand the impact of the changing use of ICT and how it influences business activity.
- To understand how e-commerce provides access to wider markets.
- To understand how digital communication changes the way businesses communicate with stakeholders.

## How does Domino's Use Technology?

Answer the questions on the Domino's Case Study



For this year's Computer Science STEM fortnight project, students from Y7-9 all took part in a competition to create a brand new household product! The household products had to be unique but also beneficial to everyday life.

The students were challenged with being asked to use different software applications and incorporating different techniques to present



## BEDROOM CLEANER

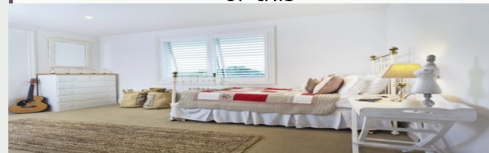
By Rhys Burns, Elizabeth Burrows, Sam Burchill and Elise Caul

Rhys , Elizabeth, Sam and Elise produced a cleaning robot idea

Do you want your room to look like this



or this



By using this bedroom cleaner robot you room can look so clean it will be jaw dropping.



# STEM in DRAMA

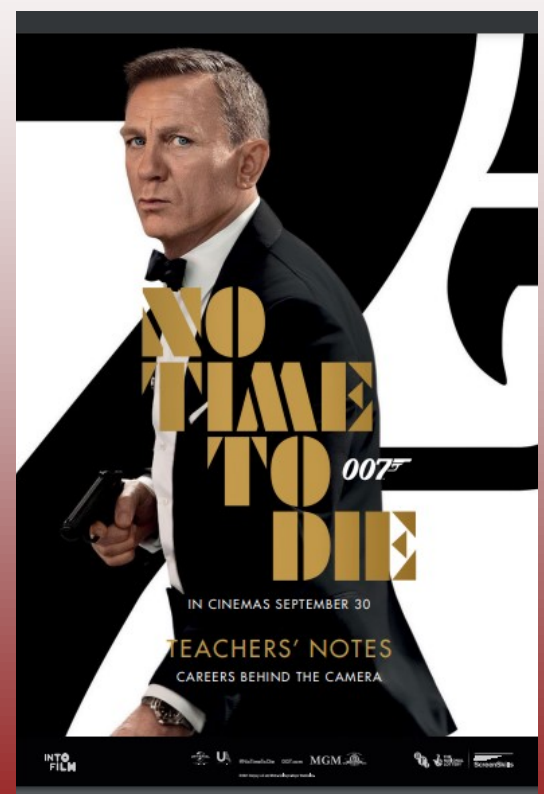


STEM lessons in drama classes, we used the new James Bond Film "No Time To Die" as our STEM stimulus, in one of the lessons we used maths to estimate the amount of cuts in a trailer sequence for the film before plotting it on a graph, we then looked at another section of the trailer to see if there were more cuts or less cuts. We compared the graphs and assessed the answer to the question "The more cuts in a film trailer, the greater the tension" - the answer is both because more cuts can create a real sense of excitement but less cuts can allow for character insights and increase the tension too.

In the second lesson we looked at the angle of reflection in a mirror and using mirrors from Science, the mirrors on the wall in the activities studio and cameras on our phones we took photos making sure we had the correct angle making sure we did not include the person using the camera, we even doubled up the mirrors and used concave and convex mirrors too. Unfortunately, we do not have any photos, as the photos taken of the students were taken using their own phones.

In some of the classes we then went onto "Decoding" - in this lesson we read through an imaginary script for "No Time to Die" and worked out what costume and make up were needed, for example "enters the scene after running up the stairs" would result in pretend sweat on their forehead. This lesson needed not only creativity but a methodical and scientific approach to the work.

Additionally, the resources from Into Film gave us short video clips from young people who had worked on "No Time to Die" as trainees. These young people gave examples of how they had used STEM subjects in their jobs. For example, the casting director had to organise the schedule to give different actors different amounts of time to audition (some live, some by Zoom) and therefore maths was essential.





## STEM Lesson – The Media

STARTER: Media simply means 'a method of mass communication'. List as many examples of this as you can think of.



Year 8 looked at the role of the media, how it has developed and how it influences their set text of 'Animal Farm' by George Orwell.

## Media and Bias

- Media in the past has shown clear and deliberate bias.
- Examples of this can be seen in the USSR's newspaper, Pravda.
- Imagine you are Squealer. Produce a front page of a Newspaper called 'The Beast of England' which shows clear bias in favour of Napoleon and his regime.



STEM related activity for a 7s reading lesson with *The Ghost of Thomas Kempe*.

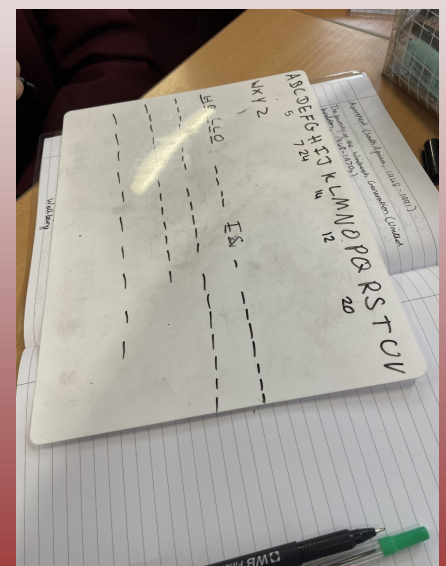
### STEM Task

How would the novel be different if it was set in the 21<sup>st</sup> Century?  
In what ways could technology affect the story?

Write a paragraph explaining your ideas.



The students' ideas included heat sensing cameras to detect the ghost and other supernatural activity, drones, how mobile phones would have affected the plot, and even acknowledged how pharmacy prescriptions can be completed online and delivered to your door (which was relevant to the chapter we had read that lesson in which the trip to a pharmacy was disrupted by the ghost writing their own remedy over the doctor's prescription!).

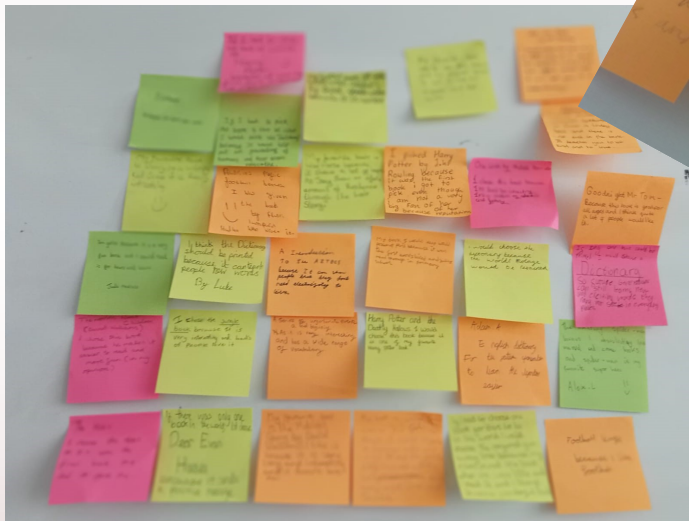
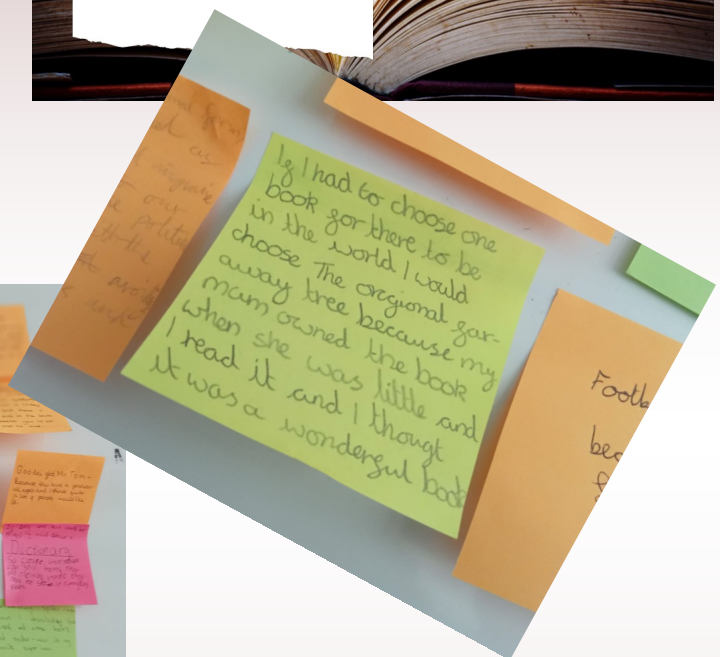
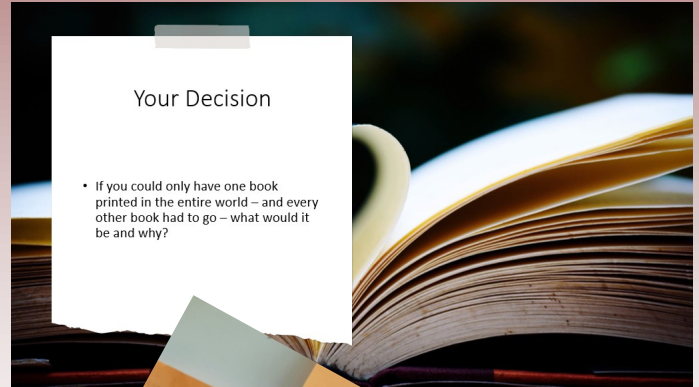
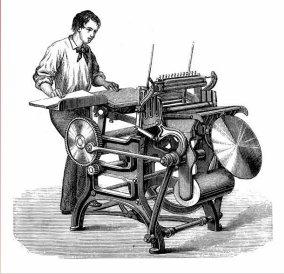




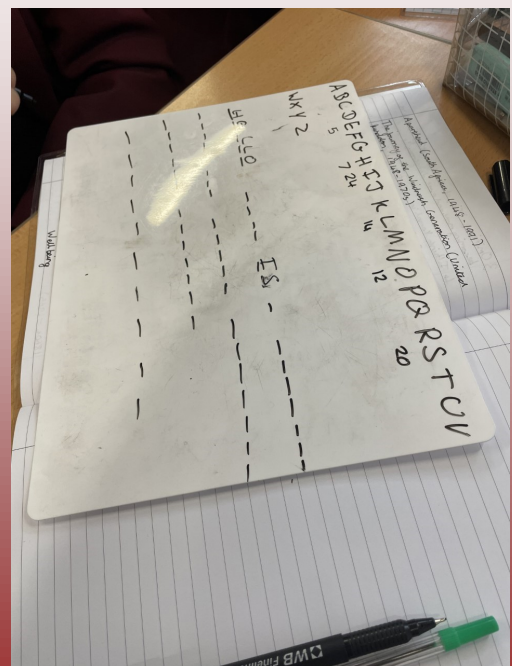
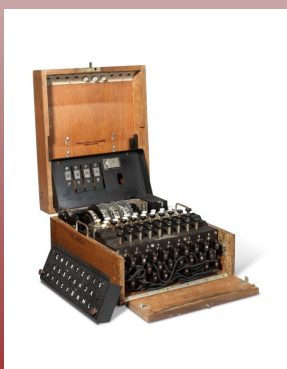
# STEM in ENGLISH



## Year 7 were treated to a lesson on the Printing Press

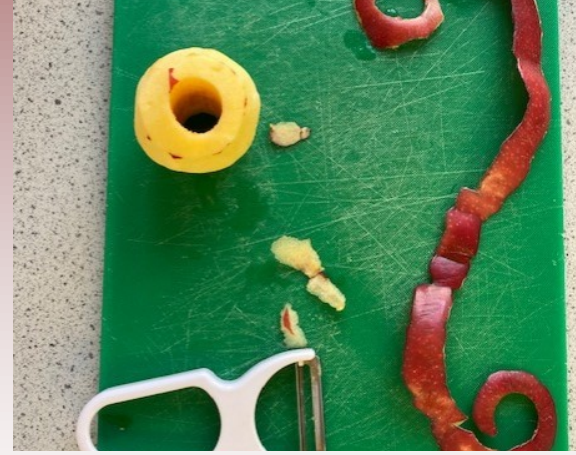
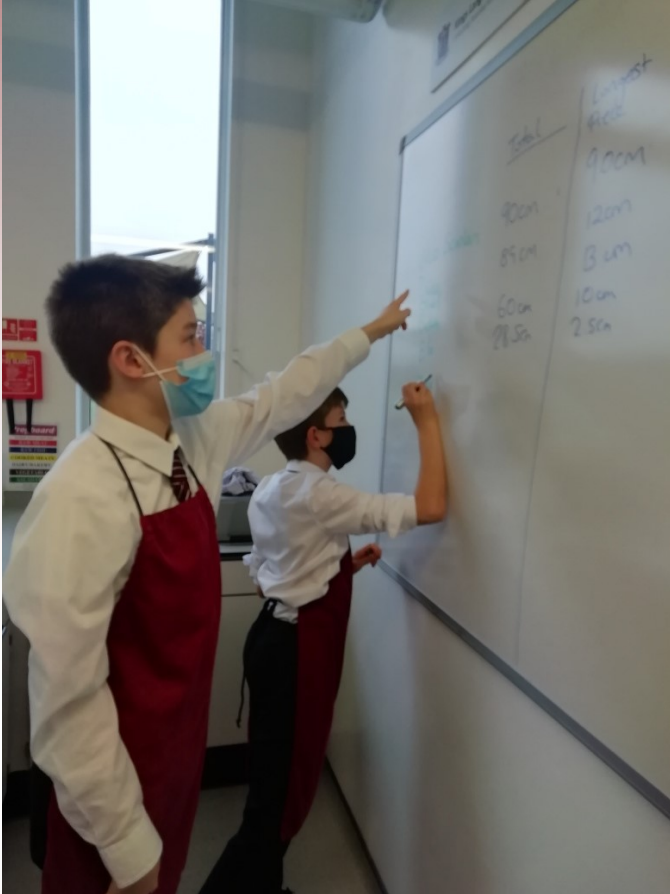


## Year 9 as part of their work on 'Outsiders' studied the life of Alan Turing, his influence on World War Two and his work on Engima. As part of this lesson they also 'broke' their own codes provided!





# STEM in FOOD

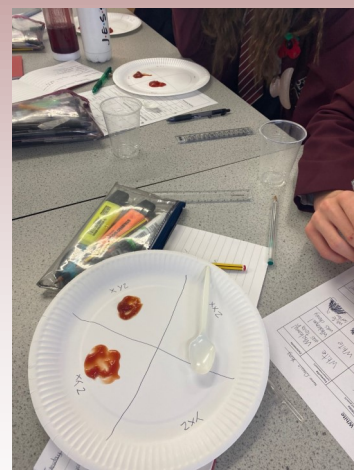
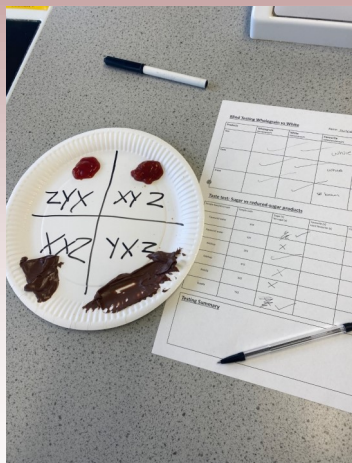


Year 7 food students did maths calculations to find the total length of their apple peel, its diameter and radius. Students had a competition to find out who had the longest length of apple peel and who could beat Miss Scanlan and Miss Froud at peeling apples.





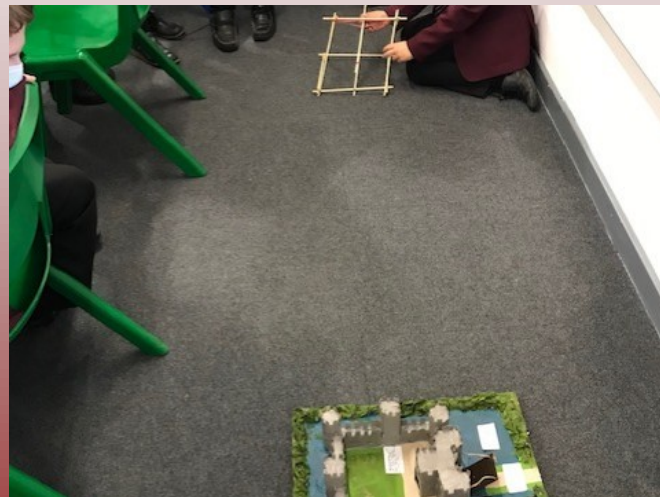
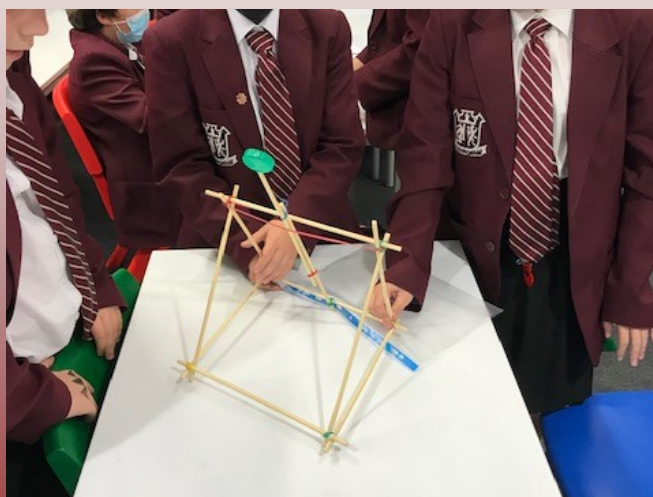
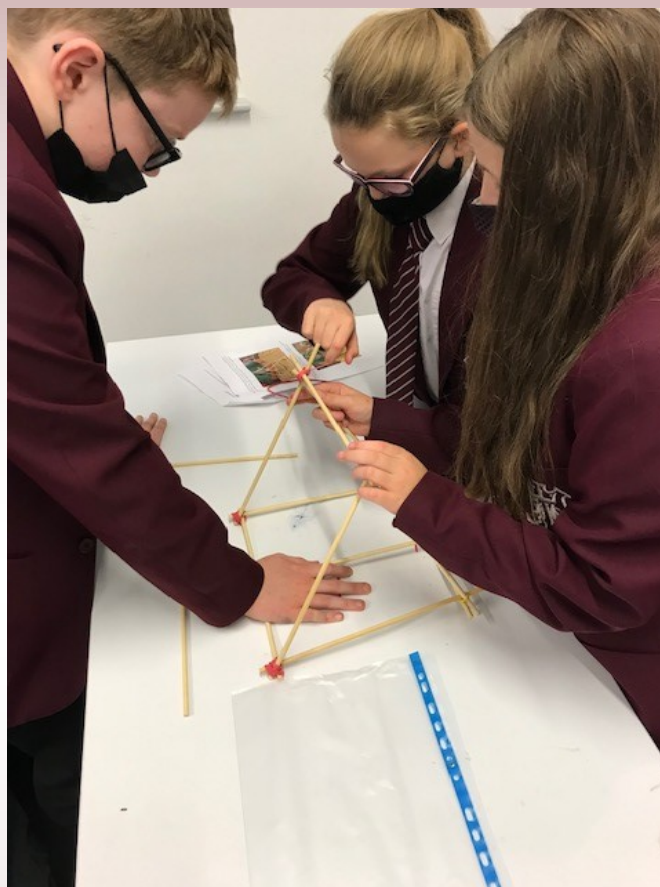
Year 10 students completed a range of Food Science fair testing tests on foods to discover the taste differences of Products V low sugar alternatives



Year 9 Food students worked in teams to produce experiments to discover the reasons for exact measurements of ingredients in food recipes using cake mixtures.



## Trebuchet Building Challenge Year





# STEM in HISTORY



**A Maths question from a Nazi textbook**

499,862 = \_\_\_\_\_ x 100 = \_\_\_\_\_

The Jews are aliens in Germany. In 1933, there were 66,000,000 people living in Germany.

Of this total, 499,862 were Jews.

What is the percentage of aliens in Germany?

How can this be considered propaganda? - Is this effective propaganda?

And the answer to the Maths challenge is?

0.757%

Your opinion

EXPLORING THE HOLOCAUST

**Maths calculations in History lesson to look at percentages**

**Creating 'Educated Eichmanns'**

Dear teacher  
I am a survivor of a concentration camp.  
My eyes saw  
What no man should witness:

Gas chambers built by learned engineers  
Children poisoned by educated physicians  
Infants killed by trained nurses  
Women and babies shot and burned by high school and college graduates

So, I am suspicious of education.

My request is: help your students become human.  
Your efforts must never produce learned monsters,  
Skilled psychopaths, educated Eichmanns.

Reading, writing, arithmetic are important only if they serve to make our children more human.

(Quotation from a Holocaust survivor)

## STEM work on the Renaissance

**Our enquiry for Y8 History over the next two weeks is designed for STEM fortnight: How far did Renaissance discoveries affect change in society?**

**How far did Renaissance discoveries affect change in society?** **LOS:**

**Time Periods:**

The Romans    The Middle Ages    The Renaissance    The Present Day

200BC-500AD    1000AD-1500AD    1400AD-1750AD    2020AD

**Keywords:** Renaissance, Rebirth, Secular, The Royal Society, Charles II, Superstition, Witchcraft, Trial by Ordeal

1. To explain how new scientific ideas, methods and technology that emerged during the Renaissance period

2. To explain the continuing impact of superstition on society

3. To weigh up the extent to which scientific discoveries changed attitudes and superstitions

**How far did Renaissance discoveries affect change in society?** **LOS:**

**What do you notice about the Renaissance?**

Scientific Progress

Year

Romans    Middle Ages    Renaissance    Industrial    Twentieth Century

1. To explain how new scientific ideas, methods and technology that emerged during the Renaissance period

2. To explain the continuing impact of superstition on society

3. To weigh up the extent to which scientific discoveries changed attitudes and superstitions

**Keywords:** Renaissance, Rebirth, Secular, The Royal Society, Charles II, Superstition, Witchcraft, Trial by Ordeal



# STEM in GEOGRAPHY



**Year 7 - will be starting the Continents, North America, where Geographical Information Systems as a concept and technique is introduced.**

**Year 8 - will be starting Resource Management - so the Carbon Footprint concept is the Maths part of STEM.**

**Year 9 - will be starting Tectonics, so it will be all about plate margins and different types of crust and actually, how the scientists built up their knowledge and understanding of the structure of our earth.**

**Year 10 - Climate Hazards - so the Global Circulation Model will be the Science, and the Maths will be the world map of extreme weather - temperature, rainfall, wind speed etc.**

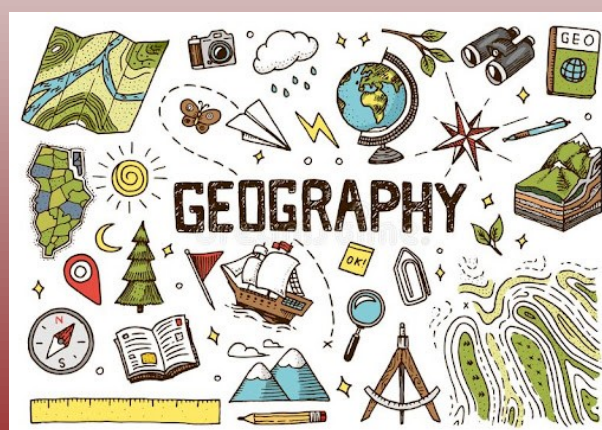
**Year 11 - The technology within the sustainability innovations of our case study cities. Plus looking at Development Indicators, Maths..**

**Year 12 –**

- Coastal defences, Engineering.**
- Globalisation and the 1978 agreement in China about opening up, Maths and the movement of people.**
- Tectonic Hazard Management, Engineering.**

**Year 13 -**

- Carbon content of trees, size / dimensions, out on the school field, measuring with clinometers and tape measures etc.**
- Superpowers, the TRIPs agreement and the role of patents to protect engineering innovations, for in the growth of TNCs.**
  - water deficits - location, and the technology of desalination plants.**





**Year 13 – STEM activity Measuring the quantity of carbon in a tree.**

**Comparing between trees and the quantity of carbon sequestered by different species, using data from the Forestry Commission and the Field Studies Council, back in the classroom. – measuring the circumference of the tree, and some points about standardisation / accuracy and precision.....**

**The Field Studies Council guidance for this measurement is ‘chest height’.**

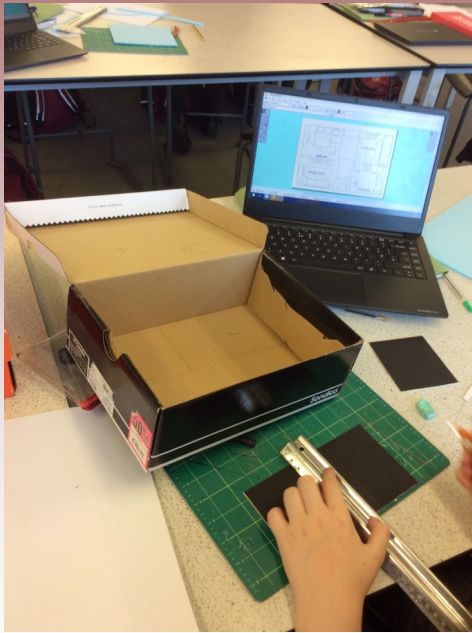


**Ben getting ready to do the circumference measurement. Tommy, Jacob and Samuel are all checking their data thus far off to the right are Max, Thomas and Callum – getting ready with the clinometer, back 10m from the trunk, ready to record the angle to the top of the tree.**

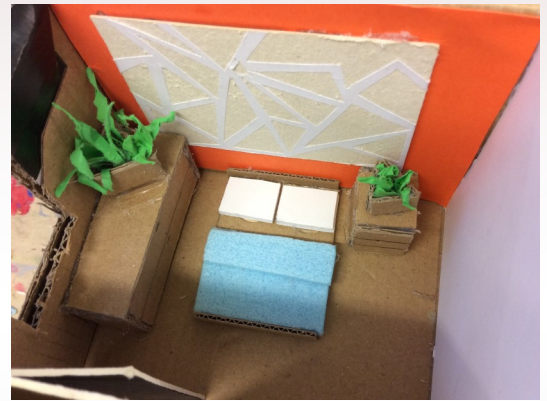
**Ben and Samuel are faced with a sampling conundrum – how to get the tape measure straight and representative, should it go above or below that large branch?? Which is more representative, the larger circumference below chest height or the narrower circumference above the branch, closer to shoulder height? All part of the learning.....**



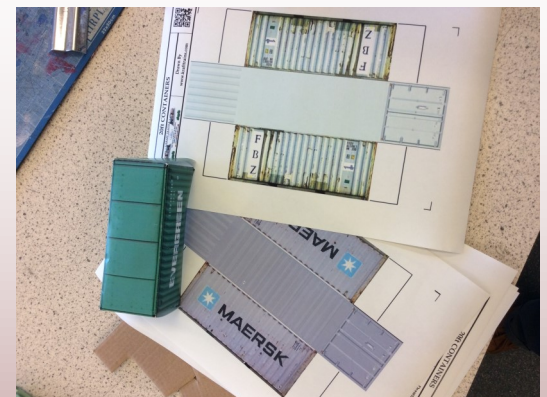
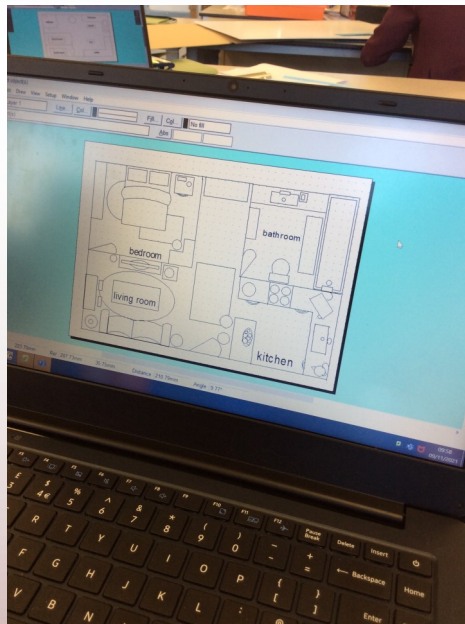
**They will enter their results into the FSC pre-released spreadsheet to work out the carbon content.**



In year 10 we explored sustainability and carbon footprint through the container living project. With the re design of shipping containers to create hous-



In year 8 and 9 Graphics we have been getting to grips with the laser cutter and discussing how production could be up-scaled using CAD/CAM.



**Year 9 Solving Equations**

Complete the code:

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
22					1									10											21

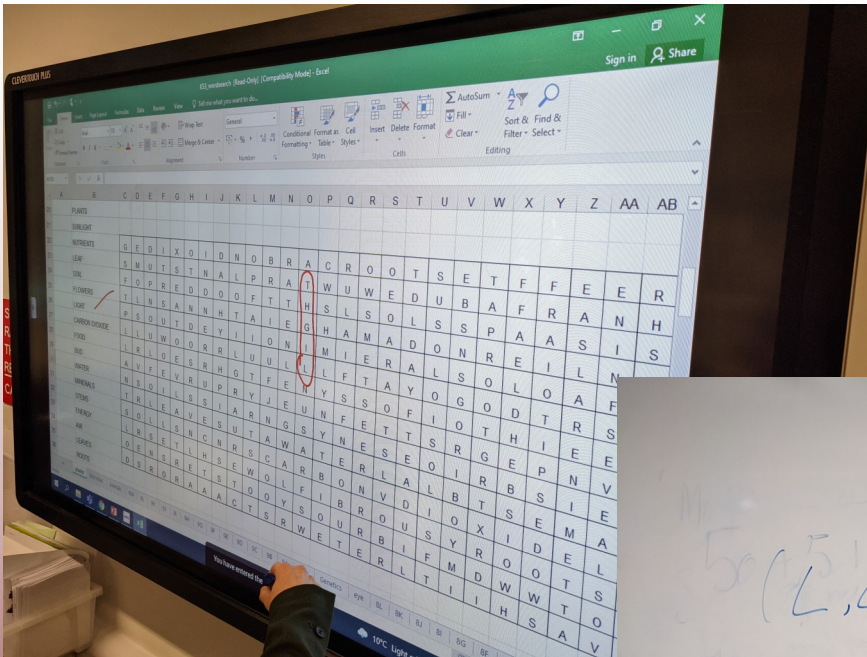
Solve these equations, then use the answers to find the hidden coded message. Show your workings in your exercise books.

Fill in your message here:

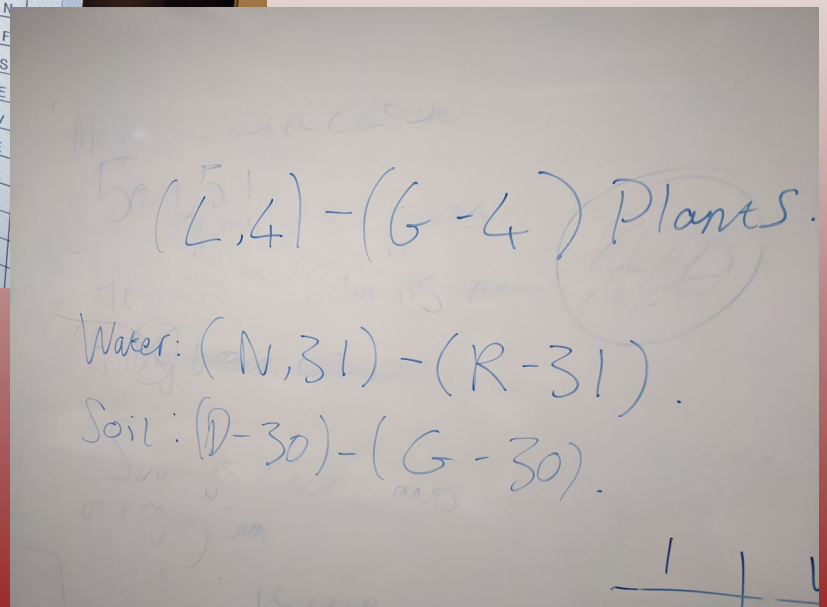
22<sup>nd</sup> November

Calculator and Non-Calculator

Once you have completed the message, stick the sheet into your book, with your workings.



Using grids and coordinates in excel to find the words in





## Les Maths!

Can you work out the numbers and do these sums in French?

- Deux plus trois font \_\_\_\_
- Douze moins quatre font \_\_\_\_
- Treize plus quatre font \_\_\_\_
- Dix-neuf moins trois font \_\_\_\_
- Sept plus six moins deux font \_\_\_\_
- Quinze moins quatre font \_\_\_\_
- Quatorze moins cinq plus dix font \_\_\_\_
- Neuf plus sept plus deux font \_\_\_\_

Plus +  
Moins -  
Font =

Add up each answer to give a total sum.



Le total \_\_\_\_

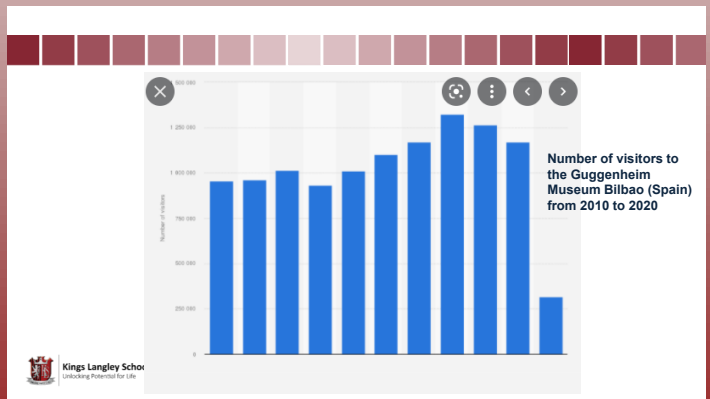
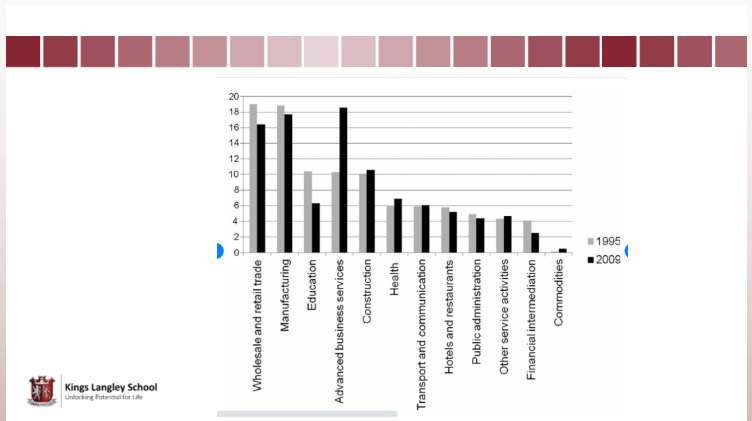
La ciudad de Bilbao miércoles el 10 de noviembre 2021

LI: vamos a conocer la ciudad de Bilbao

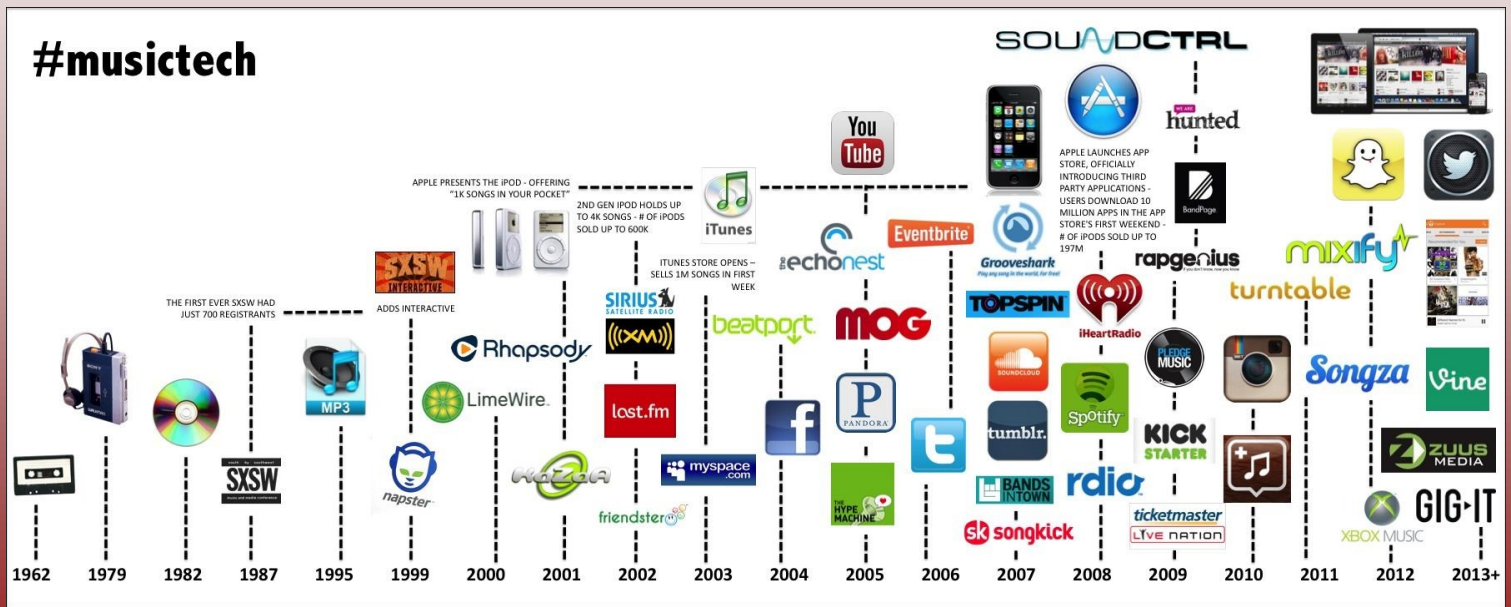



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**Bilbao es la ciudad más grande de la región española del País Vasco, en el norte de España. Es una ciudad cosmopolita y hay mucho que hacer allí. El museo Guggenheim es una galería de arte famosa que recibe muchas visitas de turistas durante todo el año. Delante del museo hay un perro enorme hecho de plantas típicas de la ciudad que se llama Puppy. Puppy es una atracción turística importante. El museo Guggenheim está al lado de la ría de Bilbao, que es la parte final de un río que termina en el mar**









The PE department were delighted to welcome Hertfordshire University to Kings Langley to work with Year 8 – Year 11 students. The University introduced students to The Ready Trial, a research programme for students with low mood and depression, to see if physical activity can improve mood ([Ready Trial – The Ready Trial Study](#)). Students experienced a range of activities and were able to use advanced technology in sport. Students used speed gates to measure their speed over 10m and 20m distances and jump pads to measure jump height and air time. The university allowed students to administer the tests so they understood how to work the technology. Finally students explored their





In their other PE lessons, the groups took part in a range of different form events. Here they looked at the flight of bean bags and the power necessary for them to land in hoops. We discussed the circumference of buckets and whether the relays we were competing in were fair as each team had a different shaped bucket. We questioned whether this would have an influence on the ball both landing in the bucket and staying in there. We also considered at our skipping technique and discussed why individuals were faster in a race. Here we looked at height, forward momentum and rhythm and the impact this had on the race.

In our other lesson we focussed on maths with a focus on mental addition of large numbers. Pupils worked for 5 minutes on a skill in small groups and then had to add their scores together. The activities varied between hula hooping, target chest passes, agility ladders, star jumps and burpees





**Year 7- The bad and good of the internet; Are social networking sites/apps like Instagram good or bad for our society? what are the positives and negatives of the internet? (LESSON 6)**

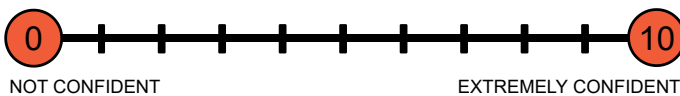
**Year 8- Body Image Lesson – key question; Has technology made us more aware of how we look (body image)? What examples can you give (LESSON 7)**

**Year 9- Trolling and Online harassment. What are some of the challenges faced by technology giants like Facebook, Instagram, and twitter in stopping trolls and cyber bullying? Are Instagram and twitter doing enough to stop online abuse? (LESSON 8)**

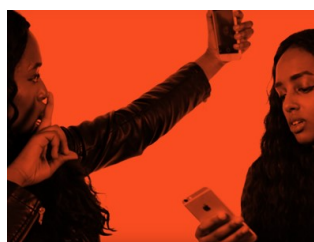
**Year 10; Peer to Peer sexual abuse and harassment; A lot of sexual harassment is done online. Do technology companies have a moral duty to help reduce incidences of sexual harassment? Discuss Has the easy access to pornography led to the increase in peer-to-peer sexual abuse? Discuss (LESSON 9)**

## BODY IMAGE SELF ASSESSMENT

- A. How confident are you about knowing the pressures relating to selfies?
- B. How confident are you about knowing the pressures relating to body image?
- C. How confident are you about knowing where to find support with body image?



## BODY IMAGE PLENARY: CLASS PLEDGE



- Create a pledge, slogan or hashtag to adopt as a class

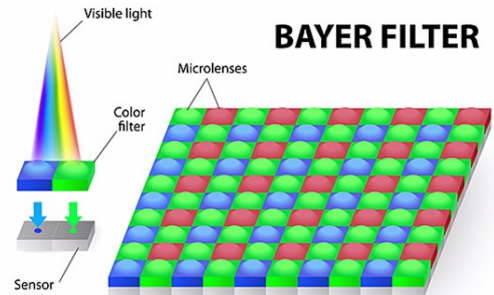
*I understand that I don't need to use filters when I post my selfies. I'm fine the way I am.*

*Difference is good*

#beyourselfie #selfieesteem



The job of the imaging sensor on your camera is to record the light that comes through the lens. This is the raw information that your camera will use to produce a picture. Your camera sensor tries to determine what is light hitting the sensor, and what may be a stray electric signal, excess heat from the camera, etc. When the subject of your photo is very bright, it's easy for the sensor to tell the difference because the signal-to-noise ratio is high. When the light is weak, the sensor has a harder time determining what is extraneous heat or electricity, and what is light. This is why the ISO makes the image brighter, but also why higher ISO photos have more noise in them.



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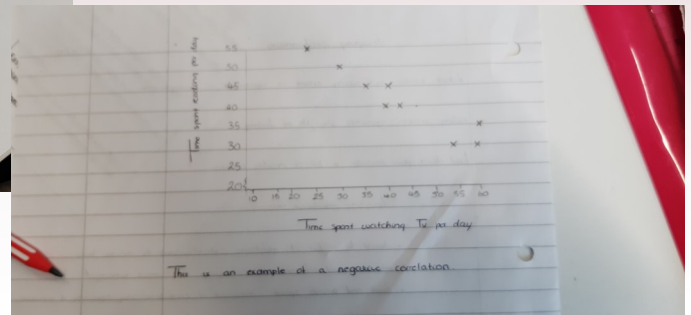
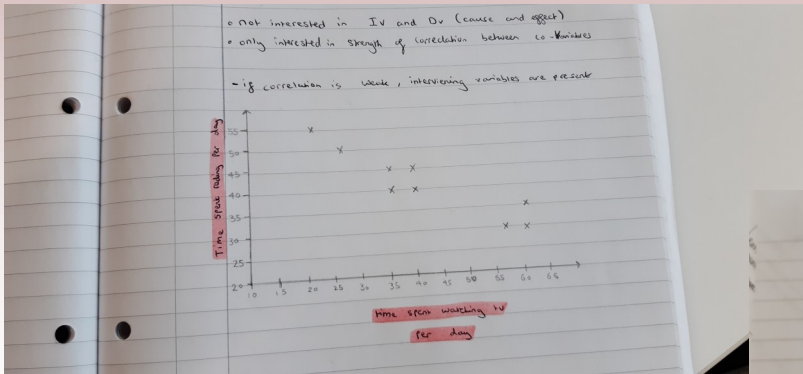


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**Low-light: high ISO**  
**Bright light: low ISO**

STEM comes into Psychology all the time because theories have to be evidenced based, empirical evidence is the standard. For that students study Research Methods and Statistics as a module but it comes into every topic.



## Apply it : Stirling et al. (2006) The Stroop test and SZ

Time	Mean	Standard deviation
SZ	123.20	65.52
Controls	58.12	11.26

### Questions

1. What is meant by the **standard deviation**? (2 marks)  
The SD is a measure of variance (spread) of scores in a test or results in a study. It tells us how far scores deviate or are spread either side of the average.
2. What do the **standard deviations** in this table show? (2 marks)  
The SD for the scores of SZs is much larger than that for the scores of controls meaning there is greater variance in their scores - they are spread further away from the average with some doing much worse and some doing much better.
3. Taken together with the **mean**, what do the **results** tell us? (2 marks)  
SZs are less able to suppress automatic thoughts as the mean score for SZs is more than twice the average score for normal controls (123.20 compared to 58.12). However, the standard deviation is much larger for SZs than the controls showing that SZs are not all as poor as each other, there is a greater amount of variance in their scores.
3. Explain one **strength** of using the **standard deviation** over other measures of dispersion. (2 marks)  
The SD is more precise than the range, includes all the scores.



## Kings Langley school Stem fortnight

Engineers worked to develop the technology for mass death. When the Soviets entered Auschwitz-Birkenau, they found records that detailed the construction of the crematoria, including precise information about costs as well as calculations of how many corpses each furnace could incinerate in a single day.

The Russians captured four of the engineers who had designed and built the furnaces for a company called Topf and Sons and interrogated all four men. The interrogation of Kurt Prüfer, one of the four, included the following exchange:

Q. How often and with what aim did you visit Auschwitz?

A. Five times. The first time [was] at the beginning of 1943, to receive the orders of the SS Command, where the "Kremas" were to be built. The second time was in spring 1943 to inspect the building site. The third time was in autumn 1943 to inspect a fault in the construction of a "Krema" chimney. The fourth time [was] at the beginning of 1944 to inspect the repaired chimney. The fifth time [was] in September-October 1944 when I visited Auschwitz in connection with the intended relocation [from Auschwitz] of the crematoria, since the front was getting nearer. The crematoria were not relocated, because there were not enough workers. . . .

Q. Did you see a gas chamber next to the crematorium?

A. Yes, I did see one next to the crematorium. Between the gas chamber and the crematorium there was a connecting structure.

Q. Did you know that in the gas chambers and the crematoria there took place the liquidations of innocent human beings?

A. I have known since spring 1943 that innocent human beings were being liquidated in Auschwitz gas chambers and that their corpses were subsequently incinerated in the crematoria. . . .

Q. Why was the brick lining of the muffles so quickly damaged?

A. The bricks were damaged after six months because the strain on the furnaces was colossal.


Q. What motivated you to continue with the building of the other crematoria as senior engineer with Topf?

A. I had my contract with the Topf firm and I was aware of the fact that my work was of great importance for the national socialist state. I knew that if I refused to continue with this work, I would be liquidated by the Gestapo

1. How do you feel towards the engineers that constructed the crematorium?
2. Do you feel that the engineers had a choice in what they did?

## Year 9: Engineers developments of ideas for mass killing

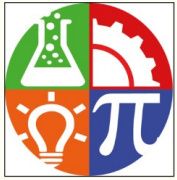
Kings Langley school  
Stem fortnight





**Questions for debate**

Can science and religion ever fit together?  
What scientific evidence would you need to prove the existence of God?

**Why is the mosque the centre of the Islamic community?**



- Do you know what this building is?
- How might the design of the building tell you what it is used for?
- Why do you think the design of religious buildings is important?


**LOs.**

1. To describe the structure and features of the Mosque
2. To explain how the external and internal features of the Mosque support Muslim prayer
3. To explain the role and function of the Mosque to the Islamic community

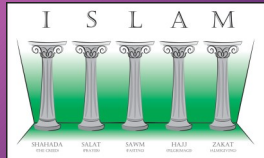
**Keywords**

Adhan  
Ka'aba  
Mosque  
Qiblah  
wall  
Dome

Kings Langley school  
Stem fortnight



The five pillars of Islam are five essential beliefs for all Muslims  
Why do you think that they are known as pillars?  
How does this fit into stem?



**How have religions developed?**


Wednesday, 08 December 2021

Correct in green pen.

**Quick Start:**  
Define the following key terms. (Tip: the end of these words may be different, but you still know them – look at the beginning of the word!)

1. Atheism **The belief that there is no god.**
2. Theism **The belief in a god or several gods.**
3. Agnosticism **The belief that there is not enough evidence to say whether or not God exists.**
4. Polytheism **The belief in more than one god.**
5. Monotheism **The belief that there is only one God.**

**Challenge: Complete in blue pen, if possible.**  
'The development of science means that religion is no longer needed.' Do you agree?



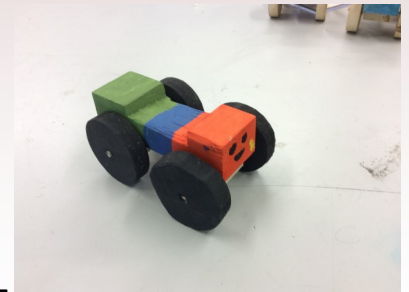
## A discussion Challenge:

'The development of science means that religion is no longer needed.' Do you agree?



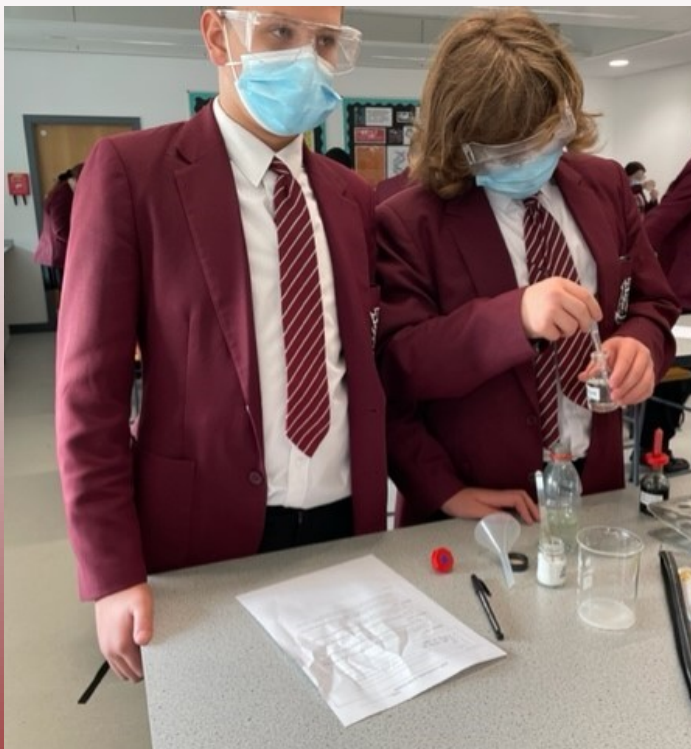
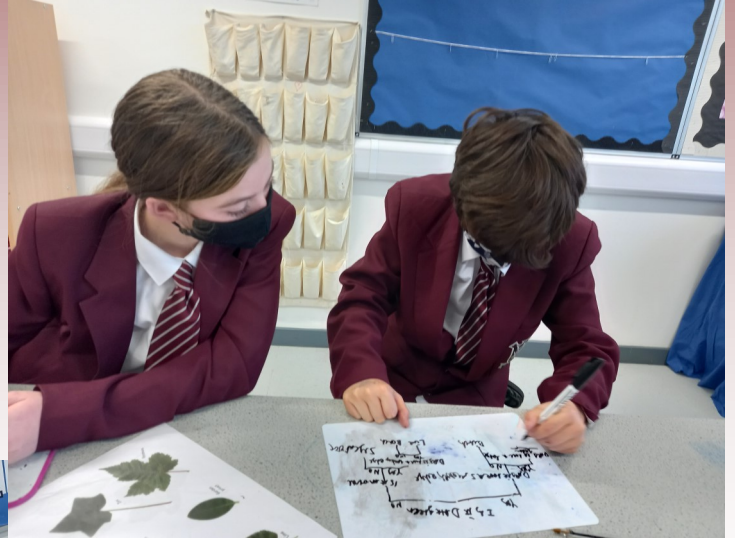
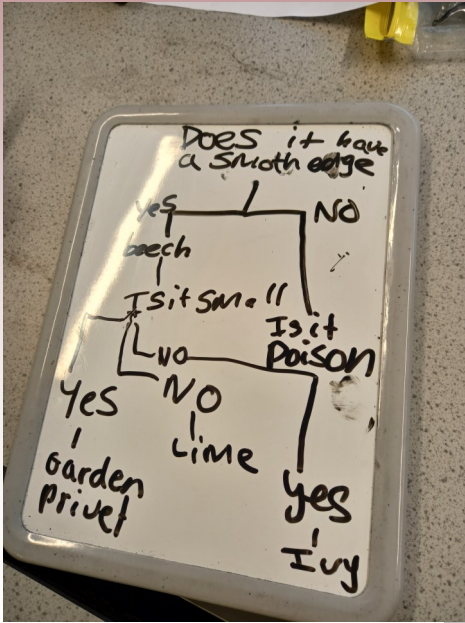
In RM STEM lesson students raced their pinewood cars. They had to think about the shape and size of the car to be the quickest down the track and how could they make their car go the furthest down the track.

After the race they then evaluated their cars to see what improvements they could have added to their car and remake it

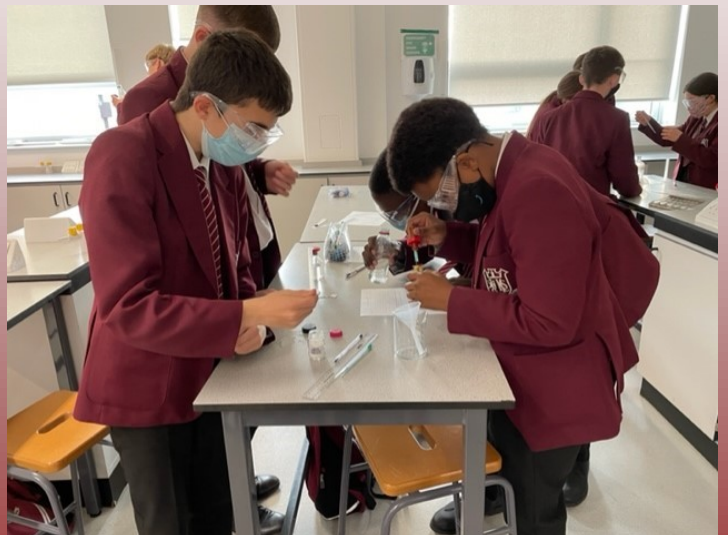




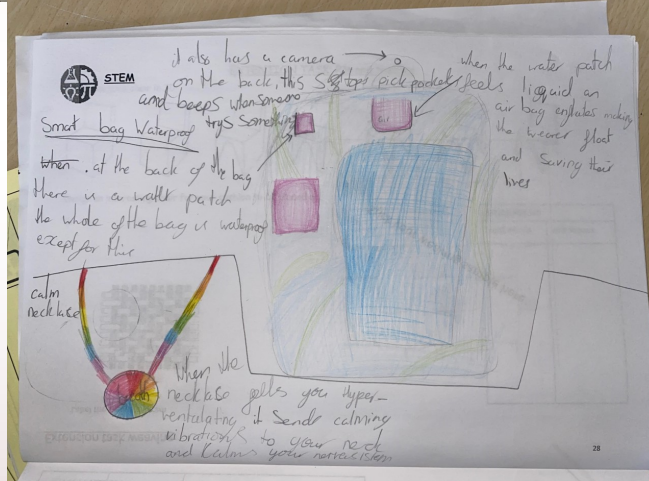
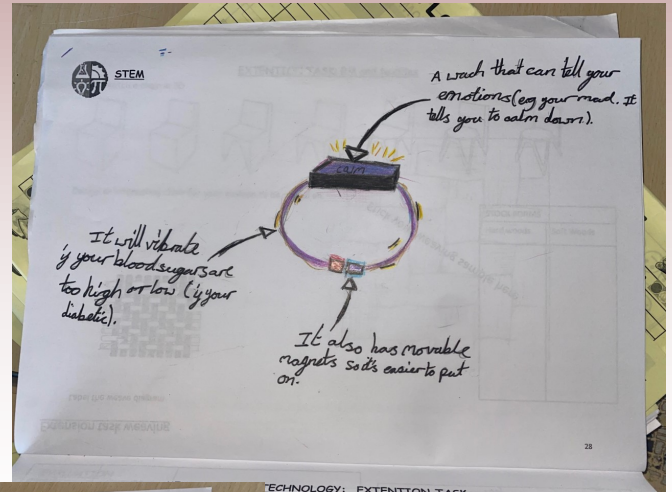
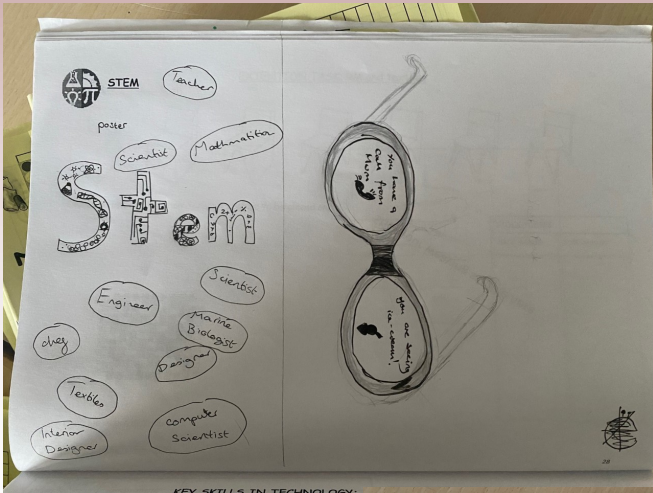
**Year 7s completing their STEM activity, which was to produce a key that scientists can use to identify trees for seed conservation.**



**Year 9's during the STEM lesson. They were modelling the acidification of the oceans and seeing the consequences on marine organisms.**



In year 7 Textiles students looked at a range of new SMART materials and then designed their own new products using these materials



In Textiles students in year 8 looked at mathematical patterns in textiles construction— weaving and then created some paper weave patterns to illustrate their findings





## Book review

### I Am An Advanced Scratch Coder

by Max Wainwright

This is a good book because it is super simple. It is easy to read for dyslexic students, and super fun!

Oliver 7J





# STEM in ASSEMBLY – GUEST SPEAKERS



## STEM SPEAKERS

16-19<sup>TH</sup> November 2021

### TUESDAY 16/11/21 – Assembly – 6<sup>th</sup>

#### Form

#### **GRAEME BERRY**

EMEA Software Business Development  
Director

#### Siemens Digital Industries Software

I work with companies that act as resellers of our software products across Europe, Middle East and Africa.

I focus on two specific products Simcenter FEMAP a Finite Element Analysis product (Stress analysis) and

### FRIDAY – 19/11/21 – Assembly – Year 7

#### **ANDRE ROY**

#### **Independent Cyber-Security Consultant**

Worked with major Hollywood studios (Disney, Fox, HBO, NBC, Paramount, Netflix, Amazon Prime), UK broadcasters (BBC, ITV) and major sports leagues (Premier League, UEFA, ...)

Ex Head of Cyber Security at BT

Worked and lived in Canada, UK, France, Germany, Japan and Turkey, travelled for work to over 20 different countries (Australia, Austria, Belgium, Canada, China, France, Hong Kong, India, Ireland, Italy, Japan, Mexico, Netherlands, Norway, Russia, Spain, Sweden, Switzerland, Taiwan, Turkey, UAE, UK, USA, ...)

Worked for 10 different companies, in 6 different countries, over 35 years, in the areas of telecommunications, broadcasting and cyber-security.

### THURSDAY – 18/11/21 – Assembly Years 8 & 9

#### **PAUL MCMAHON**

Recently retired Mechanical Engineer – Space Industry

Recently retired from working for 43+ years in the space industry for Airbus Defence & Space, based in Stevenage. Trained as a mechanical engineer, didn't go to university but did an engineering apprenticeship with an engineering company based in Luton before joining what became Airbus in 1975. As an apprentice, did sandwich courses at Luton College of Further Education – 6 months at work, six months at college. Final course was a degree equivalent but wasn't accredited as a degree level course but subsequently achieved a BSc through the Open University in 2012. Studied part time whilst working full time for Airbus. Worked on a large number of projects and have hardware that I worked on in space on over 40 different spacecraft, including both commercial communication satellites and scientific ones for the European Space Agency (SOHO, Swarm, Olympus, Ulysses, XMM, Integral). My first real project was part of the Ariane rocket that Europe started developing in the 1970s and now uses to launch its satellites into orbit and the equipment I helped design and develop was used for the first 150+ launches without failure. I visited the Ariane launch site in French Guiana in South America 12 or 13 times and saw a number of launches including L02 in 1980 which was destroyed just over 1 minute into the launch. Other projects include Beagle2 – currently inoperative on the surface of Mars; Rosetta – currently parked on Comet 67P out by the orbit of Jupiter after spending over 2 years in orbit around the comet and the ExoMars Rover – waiting to be launched to Mars to look for present or past signs of life in 2022. I've also had hardware fly on the Space Shuttle and managed to see the final Shuttle launch in 2011. I spent most of my career in the Mechanisms department where I used to develop Mathematical models that described the motion of a mechanism as it deployed or released its payload. I projected managed the development and build of the sterile clean room used to build the ExoMars Rover – due for launch in 2022 – and used my Maths skills to support the tracking and



	<b>Bronze</b>	<b>Silver</b>	<b>Gold</b>	<b>Platinum</b>	<b>Diamond</b>
<b>Extra-curricular</b>	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 setting up and leading a STEM activity
<b>Leadership</b>	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.
<b>Personal Development</b>	Submit one article to the STEM newsletter or contribute to STEM subject display board <b>or</b> 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 <b>or</b> 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 <b>or</b> 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 <b>or</b> 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. <b>or</b> Lead a team or support a primary school team to enter the STEM fair
<b>School and Wider Community</b>	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