STEM stimulator

STEM Fortnight
STEM in Action

Change lives. For good.

act:onaid

During the Spring term students were set the STEM IN Action challenge of fund raising for Action Aid.

ActionAid is an international charity that works with women and girls living in poverty. They are ending violence and fighting poverty so that all women and girls, everywhere, can create the future they want. ActionAid fights for a fairer world by encouraging the public to challenge the national and global policies and practices that keep people poor. They work alongside local communities, women's networks, governments, institutions and multinational agencies They understand the deep-rooted problems facing women and girls and work alongside whole communities to find solutions. They make sure women and girls are safe from harm, able to earn a living and to claim their rights, and prioritise their rights and leadership during times of crisis.

Students could work in teams, pairs, forms or individually. Students across the school came up with some very creative ways to raise money from bake sales, to sweets in a jar, naming an Easter bunny, football penalty shoot out, karaoke, market stalls and more. The total raised for action Aid was a massive

£1025,32

. **Well done** to all those who contributed and made such a fantastic effort to support such a worthy cause. On the next 2 pages see the amounts raised by the forms

STEM Summer Term STEM Fair at KLS on Wednesday 19th June from 4:30pm to 8pm.

This term the focus of STEM is our annual STEN fair. This event grows from strength to strength each year with more students participating from across the school and their ideas becoming more inventive. This year I have introduced two new competition challenges to the five that already exits. A creative science fiction writing challenge and a music instrument making challenge. To find out more see page 22 for details of the competitions.

STEM colours

Check out the back pages for how your son or daughter can achieve this new STEM colours and our new 50 ways to et involved in STEM at KLS

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

Beehive
£35.00

7C £37.25

Water
£16.00

8D £16.47 &

10G £16.00

Piglet
£43.00
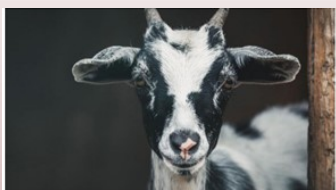
12ARN £43.80

Goat
£55.00

School materials
£9.00

8A £61.75

9J £55

Goat
£55.00

Water
£16.00

Piglet
£43.00

Baby kit
£30.00

7D £50.64

Blankets
£25.00

8G £26.04

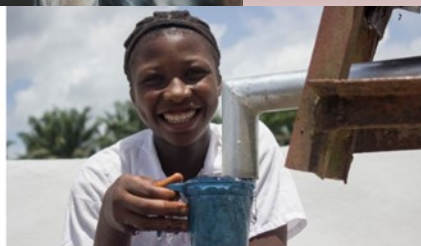School materials
£9.00

School backpack
£11.00

Water
£16.00

8T £35.80

Goat
£55.00

Water
£16.00

Year 7 £109.75

Breeding pair of goats
£110.00

Year 10 £44 3

Piglet
£43.00

Edward H £70.82

Year 9 £120.65

Emergency bundle
£112.00

Year 12 £55.50

Goat
£55.00

Period kit
£24.00

Blankets
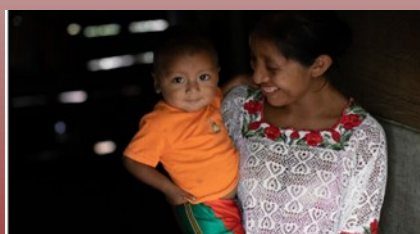£25.00

Year 13 £35

Year 11 £82.63

Seed kit
£33.00

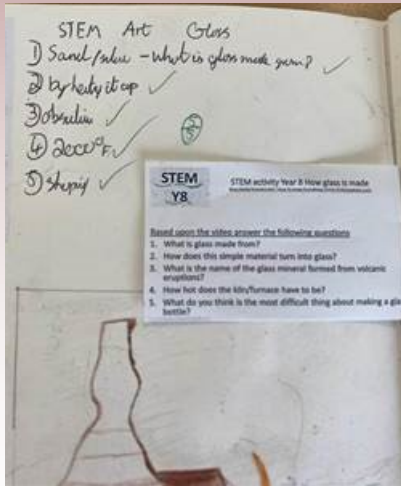Beehive
£35.00

Baby kit
£30.00

Breeding pair of goats
£110.00

Water tank
£166.00

Mrs Butt £200

We started off with a STEM themed quick start about how glass bottles are made, we watched a 10-minute video about the manufacturing of 'handmade' glass bottles .

Joshua 8A

This year's Drama STEM competition asked students to take a video of a spider trying to open a can of peas and insert their own sounds through the power of editing and/ recording. Sound informs us of many things; from locations, time of day to moods and the stages of a story. It's such an important aspect to our day to day lives. This competition motivates students to think widely and creatively about what type of sounds are important as well as engaging to hear. It's the sound design that will truly bring the action to life.

We can learn through sound as it connects us with the world around us – through the music you listen to or the sounds of our environment. In a previous competition I made every single noise from scratch vocally and it ended up sounding very chaotic, but really enjoyable. Now I'm doing it again, but this year I have put the spotlight on my little sister. She had the chance to be really loud in a cramped closet like I did 2 years ago, as I record our scene. At the end of the day, we both had fun making silly videos with ridiculous sounds and the creative process really connected us as siblings.

Well done to all who took part some fantastic entries.

Emily T - 1st Place

Clara L (joint entry) - 2nd place

Lucy G (joint entry) - 2nd place

Lily S

Filip R - 3rd place

Entrants:

Kamile S

Phoebe L

Max B

Oliver M

STEM in BUSINESS STUDIES

The whole of year 11 work over this period was in finance and the students have been looking over a lot of maths work. We have also been analysing graphs and working on different new formulas for revenue and working out profit and loss.

Year 12 Financial ratio analysis STEM lesson

Quick start: (l2pl)

What is the difference between profit and profitability?

State 3 measures of profitability.

What is meant by return on investment?

Income Statement: What it looks like: GP/IP

	£ms	£ms	Calculations
Revenue	35 400		
Cost of sales	30100		
Gross Profit		**5 300**	35 400 – 30 100 = 5 300
Expenses	720		
Operating profit		**4 580**	5 300 – 720 = 4 580
Finance income	300		
Finance cost	(260)		
Profit before tax		**4 620**	4 580 + 300 – 260 = 4 620
Interest	1 109		
Profit for the year		**3 511**	4 620 – 1 109 = 3 511

Individual: Imagine you run the local convenience store: Construct an income statement from scratch and explain each figure in a sentence to the right of the row.

Balance Sheet: What it looks like/ layout (GP)

	£ms	£ms	Calculations
Non-current assets		19 550	
Current assets			
Inventories	2 375		
Receivables	1 170		
Cash and cash equivalents	2 300		
Total current assets		5 845	2 375 + 1 170 + 2 300
Current liabilities		8 160	
Net current assets		(2 315)	5 845 - 8 160
Non current liabilities		(6 000)	
Net assets		**11 235**	19 550 + (2 315) - 6 000
Share capital		6 000	
Retained profit and reserves		5 235	
Total equity		**11 235**	6 000 + 5 235

Discuss what is the values of financial ratios when assessing performance

Interpretation of ROCE: GP/IP:

Return on capital employed

Operating profit x 100
total equity + non-current liabilities

4580   X 100 = **27%**
17235

For every £1 of capital employed in the business 27 pence is generated in operating profit.

YOU DO: Q. Why might a high street retailer compare ROCE between individual stores? 3 marks

Return on capital employed: Modelled:

Balance Sheet	£m
Non-current assets	19550
Inventories	2375
Receivables	1170
Cash & cash equivalents	2300
Total current assets	5845
Current liabilities	(8160)
Net current liabilities	(2315)
Non-current liabilities	(6000)
Net assets	11235
Share capital	6000
Reserves & retained earnings	5235
Total equity	11235

Income Statement	£m
Revenue	35400
Cost of sales	(30100)
Gross profit	5300
Expenses	(720)
Operating profit	4580
Finance income	300
Finance cost	(260)
Profit before tax	4620
Taxation	(1109)
Profit for the year	3511

Operating profit x 100
Total equity + non-current liabilities

4580   x 100
11235 + 6000

4580   x 100 = **27%**
17235

Y8 & Y9 have been taught Iteration in programming this week.

In the context of STEM week, iteration refers to the process of repeating a set of instructions or steps multiple times to achieve a desired outcome or improve a solution. In STEM fields such as engineering, computer science, and mathematics, iteration is commonly used to refine designs, optimize algorithms, or enhance experiments through successive improvements or modifications. This iterative approach allows for continuous learning, experimentation, and enhancement of projects or solutions over time.

Y10 Have been doing Logic Gates.

Logic gates are fundamental building blocks in the field of electrical engineering and computer science. In the context of STEM week, understanding logic gates is crucial for comprehending how digital systems and computers process information. These gates perform logical operations (AND, OR, NOT, etc.) on binary inputs (0s and 1s) to produce binary outputs. By combining different logic gates in various configurations, complex logical functions can be implemented, forming the basis of digital circuits and computer systems. During STEM week, exploring logic gates can lead to a deeper understanding of how information is processed and manipulated in digital technology.

During STEM week, **Y11** have been exploring the impact of computer science on the environment, culture, ethics, and the law is crucial.

1**Environment**: Computer science has both positive and negative effects on the environment. On one hand, digital technologies can enable energy-efficient solutions and promote sustainability. However, the production and disposal of electronic devices contribute to e-waste and energy consumption. Understanding these impacts can lead to the development of eco-friendly practices in technology design and usage.

2. **Culture**: Computer science influences culture by shaping how people communicate, work, and interact with each other. It impacts entertainment, art, and education. Exploring these intersections can lead to a deeper understanding of how technology influences cultural norms, values, and behaviours.

3. **Ethics**: Computer science raises ethical considerations related to privacy, security, bias in algorithms, and the impact of technology on society. By examining these ethical dilemmas, individuals can develop a better understanding of responsible technology use and design, promoting ethical practices in the field.

4. **Law**: Computer science has legal implications related to data privacy, cybersecurity, Intellectual property rights, and digital rights. Understanding these legal aspects is essential for ensuring compliance with regulations and promoting a legal framework that protects individuals and organizations in the digital age.

By delving into these aspects of computer science during STEM week, individuals can gain a holistic perspective on the far-reaching impacts of technology on the environment, culture, ethics, and the legal landscape.

Y12 during STEM week, were exploring the components of a computer and their uses was essential for understanding the foundational technology behind modern computing:

Central Processing Unit (CPU): The CPU is the brain of the computer, responsible for executing instructions and performing calculations. It controls all other components and processes data.

Memory (RAM): Random Access Memory (RAM) temporarily stores data that the CPU needs to access quickly. It allows for fast read and write operations, improving the computer's performance.

Storage (Hard Drive/SSD): Storage devices like hard drives or solid-state drives (SSDs) store data persistently, even when the computer is turned off. They hold the operating system, software applications, and user files.

Motherboard: The motherboard is the main circuit board of the computer, connecting all components, including the CPU, memory, storage, and other peripherals.

Graphics Processing Unit (GPU): The GPU is responsible for rendering images, videos, and animations. It accelerates graphics-intensive tasks and is crucial for gaming, design, and multimedia applications.

Power Supply Unit (PSU): The PSU converts electricity from the outlet into usable power for the computer's components. It ensures stable and reliable power delivery.

Uses in STEM:

Research and Data Analysis: Computers are used for data processing, modeling complex systems, and conducting scientific research in various STEM fields.

Programming and Simulation: Computers enable programming, algorithm development, and simulation of scientific processes.

Data Visualization: Computers help visualize data through graphs, charts, and simulations, aiding in the interpretation of results.

Educational Tools: Computers are essential for STEM education, providing access to online resources, simulations, and educational software for learning and experimentation.

Understanding the components of a computer and their uses in STEM fields is crucial for anyone interested in technology, engineering, mathematics, or science.

STEM in ENGLISH

9

Students in English accessed STEM over the past fortnight in a variety of ways.
In Year 7, students considered the way technology shapes and impacts our own world, with a particular lens on the reliability of news sources and 'fake news' in the modern world

In Year 8, inspired by the current work on Gothic Literature, students read a short piece on Italian scientist Luigi Galvani, considering how his own work in the field influenced the novel of 'Frankenstein'.

Finally, in Year 9, alongside the work students are doing on the 'Power and Conflict' unit, students took a look at how technology has advanced on the civilian front through warfare, from such advancements as watches to the humble tea bag.

STEM – ENGLISH

We had a task about 'imagine a scientist had found a method of bringing someone back to life.' This links to Frankenstein the book we are studying and out topic about Gothic Literature We had to make a table of advantages and disadvantaged. We had to conclude if this was a good idea to do as you could 'mix' parts of the body and you could bring back loved ones.

Joshua 8A
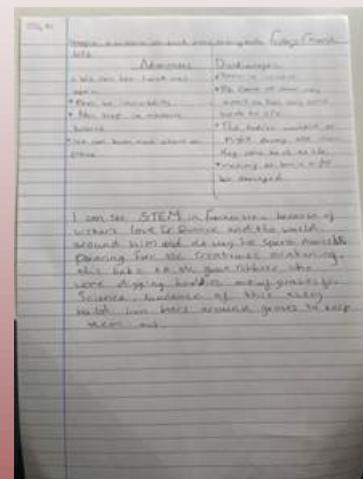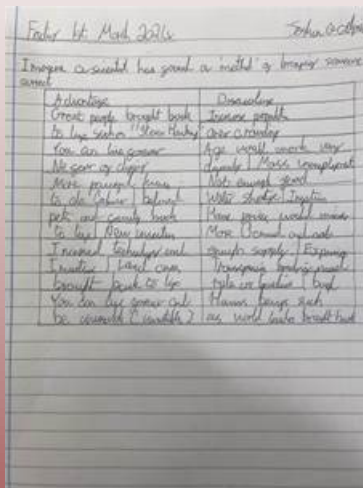
STEM in FOOD

Year 7 explored their understanding of STEM
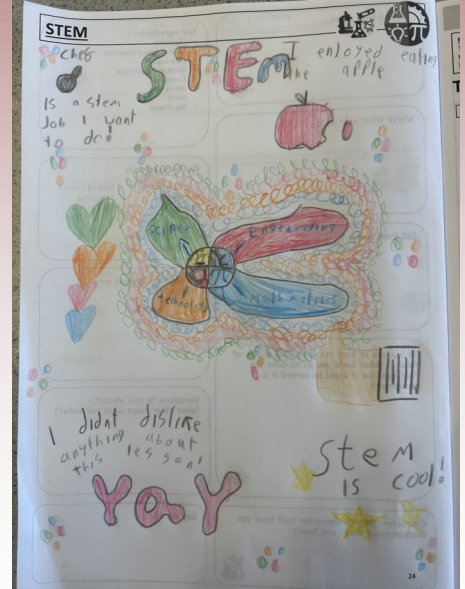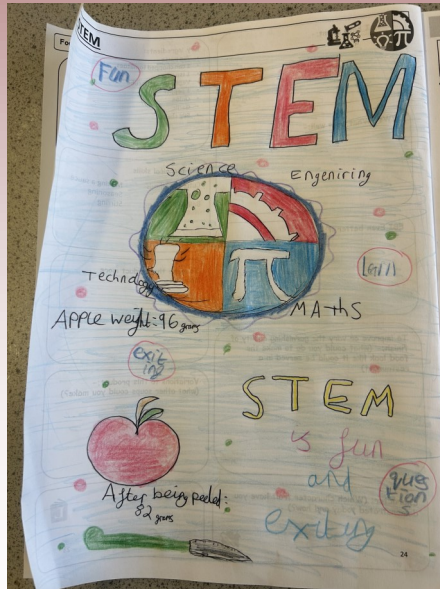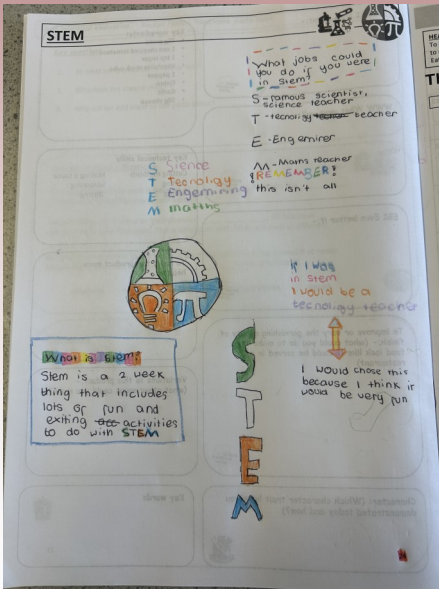
Year 10 studied colloidal systems and then made practical's to demonstrate them in action.

Main types of colloidal system

System	Disperse phase	Continuous phase	Product
Sol	Solid	Liquid	Uncooked custard, unset jelly
Gel	Liquid	Solid	Jelly, jam, blancmange
Emulsion	Liquid	Liquid	Mayonnaise, milk
Solid emulsion	Liquid	Solid	Butter, baking fat/block
Foam	Gas	Liquid	Whipped cream, whisked egg white
Solid foam	Gas	Solid	Meringue, bread, cake, ice cream

STEM in HISTORY

Was the Battle of Britain a turning point in WWII?

LOs.

Was the Battle of Britain a turning point in WWII?

Sunday, 21 April 2024

Quick Start: Recap
1. Define 'Blitzkrieg'
2. When did WWII begin [in Europe]?
3. Name three countries that formed the Allied Powers, 1939-45.
4. What was the evacuation of Dunkirk called? *Operation D_____*
5. Which British policy facilitated Hitler's expansion in Europe during the 1930s?

Challenge: Was the evacuation of Dunkirk a **triumph [victory]** or a **defeat**? Give examples to support your view.

1. To identify the aims of 'Operation Sealion'

2. To identify why the Battle of Britain seemed an unlikely victory for Britain

3. To evaluate factors in the British victory in the Battle of Britain

Keywords
The Battle of Britain
RADAR
RAF
Luftwaffe
Operation Sealion

Was the Battle of Britain a turning point in WWII?

LOs.

BLETCHLEY PARK
Home of the Codebreakers

In June 1940, the War Office at Bletchley Park intercepted German messages.

Task One:
Work with your partner to crack your code

1. To identify the aims of 'Operation Sealion'

2. To identify why the Battle of Britain seemed an unlikely victory for Britain

3. To evaluate factors in the British victory in the Battle of Britain

Keywords
The Battle of Britain
RADAR
RAF
Luftwaffe
Operation Sealion

TOP SECRET

Crack the code!

THE WAR OFFICE, (A.G.13),
32, Grosvenor Gardens,
London, S.W.1.

Lt. Col. Rawlinson,
M.I.19 (a).

July 1940

Dear code breaker,

We have intercepted the following messages from the German military. It is of the upmost importance that you decipher these as quickly as possible – the fate of the British people rests in your hands!

8 10 15 23 7 22   26 15 18   25 22 22 23   1 22 8 22 15 21 22 1,   16 22   16 15 14 2

5 17 7 21 24 10 7 24 18 14 4   21 26 10 24 13 20 26   12 15 10 17 18!

D	K	Q	Y	V	Z	C	F	J	R	M	P	U	L	A	W	I	S	X	G	T	E	N	O	B	H	&
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	27

Yours sincerely,

The War Office

Britain's secret weapon

Pixelstrich

Desperate odds in July 1940

Luftwaffe
2,600 Aircraft

RAF Fighter Command
640 Aircraft

RAF Fighter Command was supported by Bomber Command and Coastal Command

"The Few"

Nearly **3,000** RAF Pilots served with Fighter Command

20 Average age of an RAF pilot in 1940

595 Pilots were from the British Dominions, and occupied European or neutral countries

£264 Average pilot officer's annual salary, roughly equivalent to just over £30,000 today

Aircraft and men lost: July to October 1940

RAF aircraft
●○●●●●●●●○ 1,023

Luftwaffe aircraft
+++++++++++++++++++1,887

RAF Fighter Command Pilots
544 ▲▲▲▲▲

Luftwaffe Aircrew
2,600 ▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲

STEM in GEOGRAPHY

Year 13 - Hydrology

- Water systems – we looked at the water cycle and water management within river systems.
- Focus on California with analysis of different types of map and the information that they show at different scales.
- National, State and Drainage Basins.
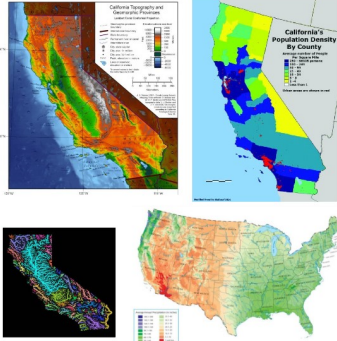
Year 12 - Tectonics

- We looked at the different types of Seismic Waves – Primary, Secondary, Love and Rayleigh Waves and the destruction that each brings through different types of sediment. We used slinkies to demonstrate the way that energy is transferred through different types of wave.
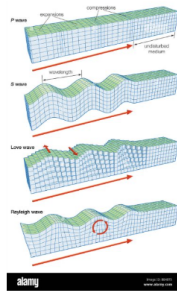
Foreground - Ryan and Max demonstrating S waves – behind them, Harrison and Adam generating P waves

Daisy and Lexie consider a new scenario

Tom and Ben get ready to respond to the new 'event'

8C
played a game to simulate population change across the world, different countries and scenarios. Having to 'trade' people from different cohorts, as represented by the pictorial jelly babies.
The maths came into the calculations of change in different cohorts from the start to the end of the game. They wrote this up in the following lesson.

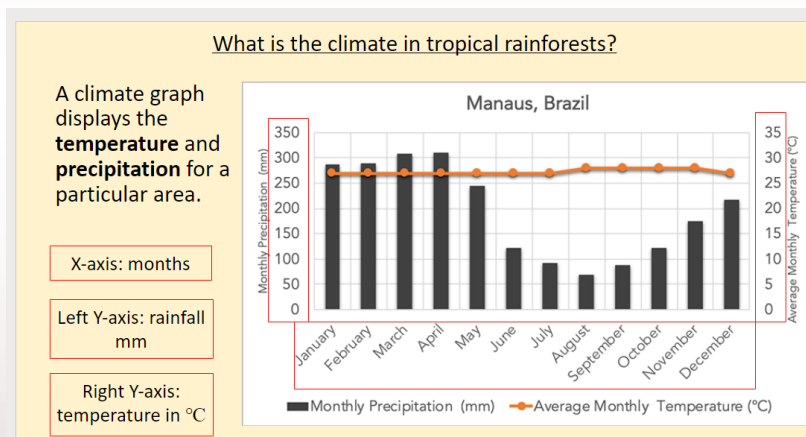Ollie and Isaac can clearly see the size of their different cohorts

Ollie reads out a new 'event' and Ruby is ready with the different population cohorts to respond to the challenge
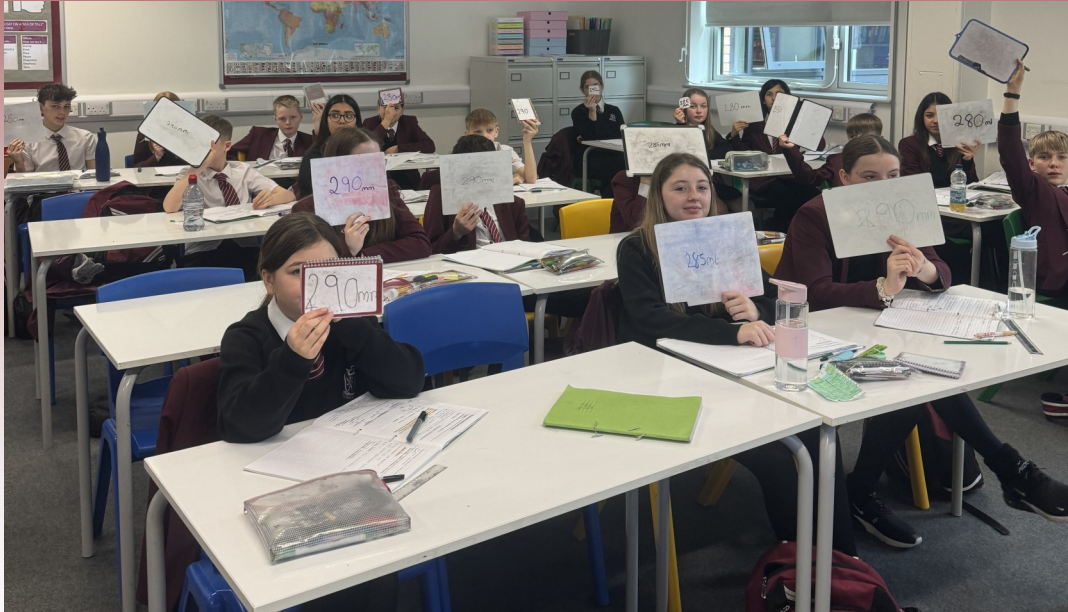
Year 7 Geography : use of data and graphs

What is the climate in tropical rainforests?

A climate graph displays the **temperature** and **precipitation** for a particular area.

X-axis: months

Left Y-axis: rainfall mm

Right Y-axis: temperature in °C

Manaus, Brazil

Monthly Precipitation (mm)

Average Monthly Temperature (°C)
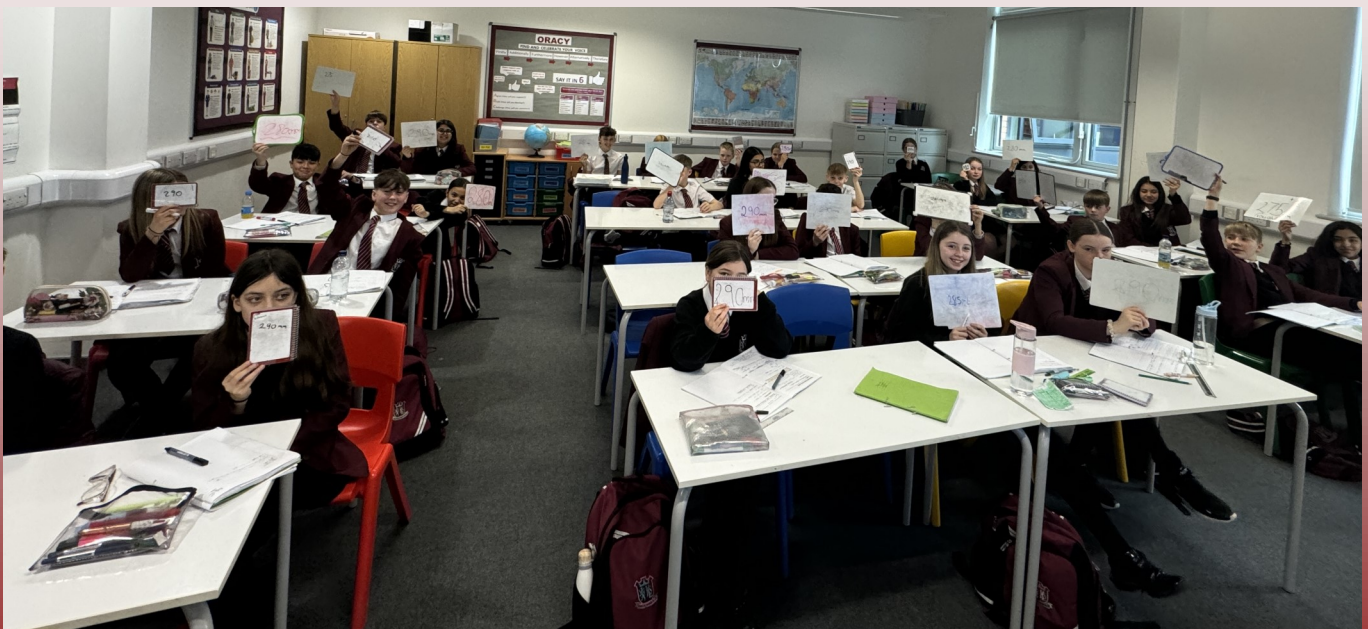
For STEM fortnight, our Year 7 and Year 10 students have been challenged with some problem solving tasks. Both Year 7 and 10 were given a set of cards that pose a problem and contain all the information required to solve it. The first problem they were given was a grid with different symbols that represented a number. Students had to find which number 1-9 represented each symbol. However, some of the cards have irrelevant information on them, therefore student's first job is to find the cards that are useful.

Year 10 then went on to solve a UK Intermediate Maths Challenge question, which required them to find the smallest fraction by using substitution. We invite you to have an attempt at this question below.

Both activities link to algebra, which both year groups have been looking at in the spring term. The purpose of these activities is to develop more logical and strategic approaches to organising information to help prepare students for problems they may have to solve in further education, but also in real life.

Year 10 UK Intermediate Challenge Question

A number x is greater than 2022. Which is the smallest of the following?

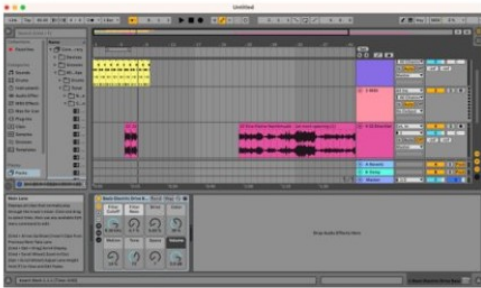A $\dfrac{x}{2022}$ B $\dfrac{2022}{x-1}$ C $\dfrac{x+1}{2022}$ D $\dfrac{2022}{x}$ E $\dfrac{2022}{x+1}$

Answer Year 10 Autumn UK Intermediate Challenge Question

		¹3	1	2	5
²4	0	9	6		

Sum of missing numbers = 7 + 8 = 15

STEM in MUSIC

Year 9 have been experiencing what it is to be a digital music composer/arranger. We have been learning how to use a digital audio workstation (DAW) to make our own classical music remixes called Ableton.
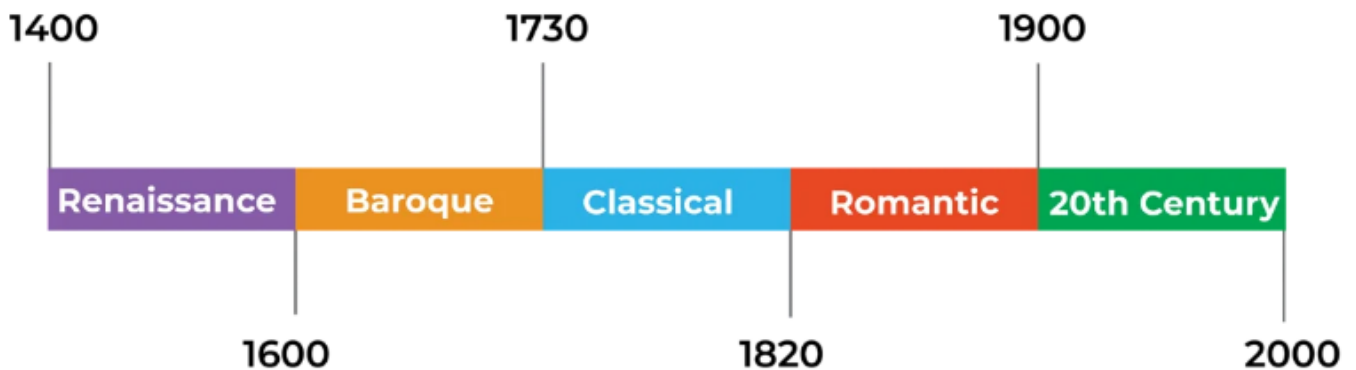
STEM Music Technology

Student have studied the history of classical music, looking at the different eras from Baroque, to Classical, to Romantic and the Modern Day. They chose their favourite classical piece from a collection studied and have dropped it as a MP3 into Ableton.

Student have learnt the differences and nuances when editing audio tracks and MIDI (Musical Instrument Digital Interface) tracks. Students are beginning to use the MIDI keyboards to create their own MIDI tracks as well as preset samples.

Music Periods

1400	1730	1900

Renaissance	Baroque	Classical	Romantic	20th Century

1600   1820   2000

STEM in PE

Year 7s were introduced some advanced biomechanics in their gymnastics lesson. The class were exploring some basic balances and through trial and error, finding ways to minimise and maximise their stability. The class discovered that by increasing the height of the Centre of Mass plus reducing the size of the base of support, a balance became less stable and therefore more challenging. To make a balance more stable, they could increase the points of contact with the ground and widen the base of support. Students then worked in pairs to choreograph a short routine which included six balances and at least one roll. The most successful routines were those which were most stable and aesthetically pleasing, not just the routines that included more challenging balances.

STEM in SCIENCE

We merged Science Week and STEM fortnight and carried out an activity that related to the British Science week of Time. Students were asked to make a device that could time for 10 seconds or as close as possible

Students could choose between a sand or water timer , a ramp or a pendulum. Our winning group made a ramp , the marble took 9.45 seconds to roll down
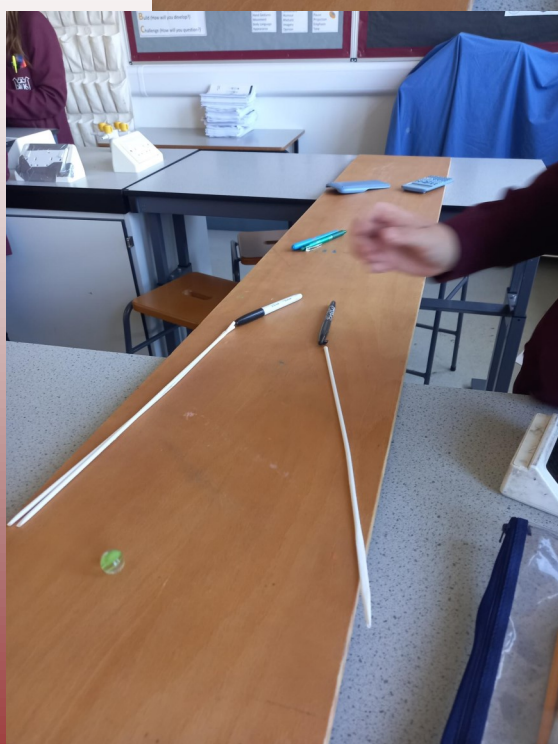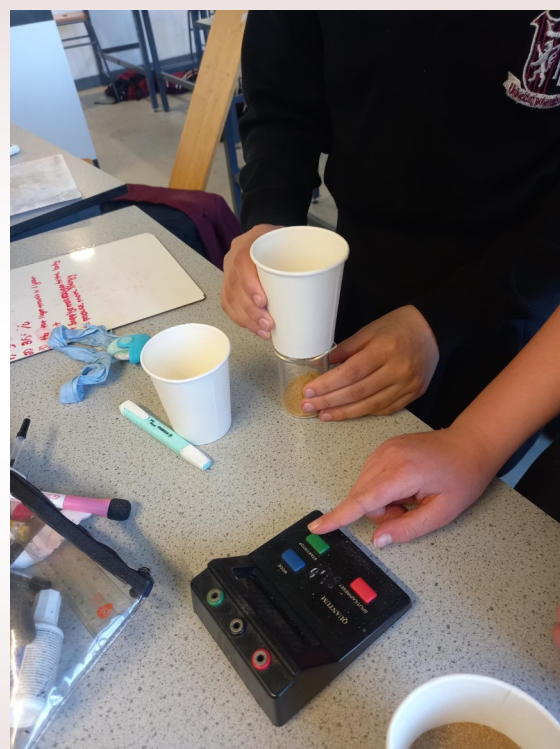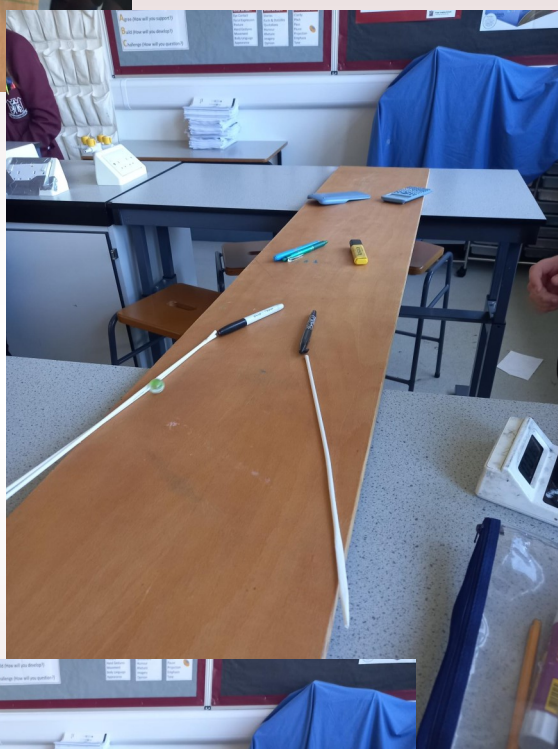
STEM in SOCIOLOGY

In Sociology, Year 13, we are studying Beliefs in Society. We have looked at statistics in religious participation across the UK and how we can question these in terms of their reliability and validity. In particular, we have studied falling church attendance which seems to suggest a decrease in faith yet at the same time competing research suggests that people are expressing their spirituality in different ways which do not always lend themselves to statistical analysis
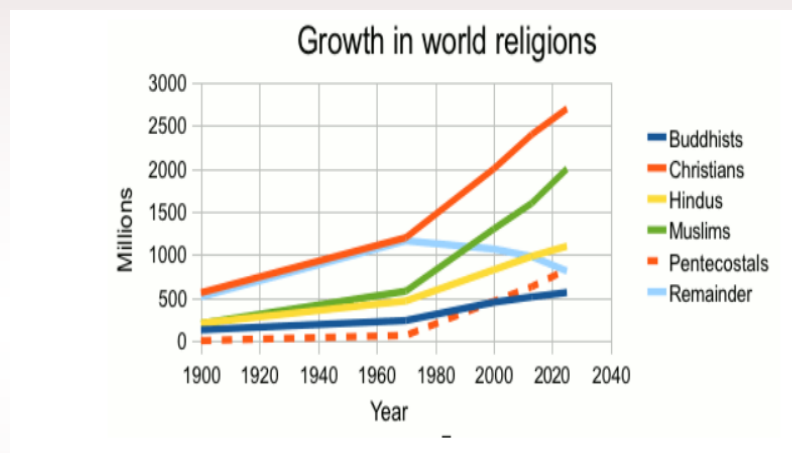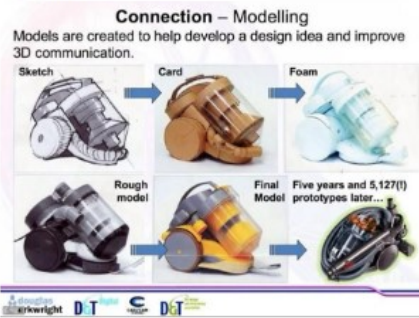

In Psychology Year 13 students have been studying mirror neurons. Brain scans show that as we watch another person perform a behaviour the same parts of our brain are activated as if we ourselves were performing the act. The leading person in the field is named Ramachandran and he argues that these mirror neurons allow human beings to empathise with others and that they are a vital part of the evolutionary process

STEM in Graphics

STEM Fortnight in Graphics and Product Design

The Design Process Dyson

Connection – Modelling
Models are created to help develop a design idea and improve 3D communication.

Sketch | Card | Foam

Rough model | Final Model | Five years and 5,127(!) prototypes later...

Students have been looking at the iterative design process over the past fortnight. With a focus on the importance of effective prototyping during the development phase.

Year 10 have been making block models of their hand-held devices. Year 13 have been clay modelling. Year 9 have been making architectural prototypes for their clothing brand stores. Year 12 have been looking at upcycling.

F24 Kit Car

The club continues to grow, and we have been looking at developing the nose cone ready for testing.
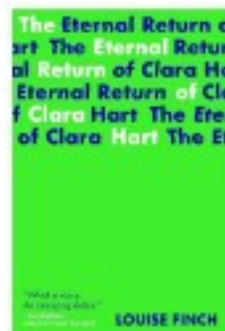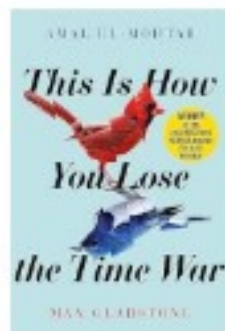
STEM in THE LIBRARY

STEM Reads

STEM in Action... in Fiction!

Celebrating the theme of British Science Week 2024 (Time), here are a selection of stories about exploring, travelling, jumping and journeying through time!

Follow Us on Social Media: @klslibrary @klslibraryuk

STEM Student Ambassadors

Last week was science week, and the theme this year was time. In my science lesson, I learned about ways people told the time in the past from ancient history to the present. For example, first only the sun was used, then water clocks and all the way to now with phones and watches. We then each designed a poster about a product now and what we think it will look like in the future. There were drawings of futuristic phones and cars and other technology. Also, we could create a poster about telling the time in history, with drawings of early types of clocks and what we thought we could use to tell the time in the future.

Jake 9G

Stem: Stem in Dance

Stem can fall under many categories, some well known and others less.

Known Stem Categories: Engineering, Maths, Computer Science, Physics, Biology, Chemistry, Geologist, Astronomy, Architecture, Economics

Unknown Stem Categories: Aquarist, Volcanologist, Nuclear engineer, urban grower, Cosmetic scientist,

Article: Harry 11C (Passion in the arts)

<u>One unknown category that Stem falls under is dance.</u>

<u>Integrating Dance with STEM</u>

In my own experience, I use STEM every week at Dance. It may not always be obvious. My dance lessons are 8 hours per week. We spend 2 of those hours a week creating our own choreography. There are simple steps to go through that involve coding, music, dance and interactive components that can transfer to the dance space. We love this activity as it allows us to work our own way through step by step instructions and be individual and creative with our own choices. A bit like a choose your own adventure in dance! Engineering and Dance shows the similarities between the engineering creative process and the choreographic process. Cool, right? The Arts need to be valued for its important cultural and artistic contribution to education and our broader society. Dance in particular should be seen as a way for students to make meaning about the human experience and not just as a physical exercise or entertainment.

<u>The Stem in Dance percentage for young people</u>

40% increase in Confidence
50% increase in Positive View of STEM Careers
80% increase in STEM Proficiency
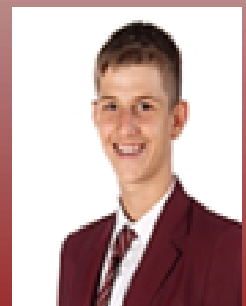
Here is an exam question?

There are 200 students in a dance school.

70 wear tap shoes on Saturdays

20 wear ballet shoes on Mondays

90 wear pointe shoes on Saturdays

Answer: 180

STEM Fair

We are delighted to announce that we are holding our 'STEM FAIR' at KLS on Wednesday 19th June from 4:30pm to 8pm.

The aim of the Fair is for students to show-case their competition entries chosen from the challenges below and all students year 7 to 10 are welcome to take part. Students will be invited to present their work for the judging panel in the hall at this event. The STEM fair will also include a range of activities to do, refreshment and business/careers information in the canteen. During the evening event, there will also be the opportunity to talk to a range of STEM industry experts.

The competition requires students to complete one or more of the seven challenges stated below:
To carry out the work during half term, build and test out their models, record their results and present their findings on a sheet of paper no bigger than A2 size. Models and presentation boards to be displayed at the STEM fair for judging.
Students have the opportunity to compete in the STEM competition independently or as part of a team.

If you would like to take, part in the challenge book your table for the STEM Fair, please complete and return the reply slip to Miss Scanlan no later than 20th May 2024. - do not forget to include which challenge or challenges, (you may enter more than once), you are taking part in and if you are working alone or as a group.

Challenge 1: STEM INVENTION Create a challenge of your own invention- build your model and bring to the fair with a presentation board to explain your invention

Challenge 2: LEGO MASTER design challenge- Build a model in Lego that represents an aspect of STEM
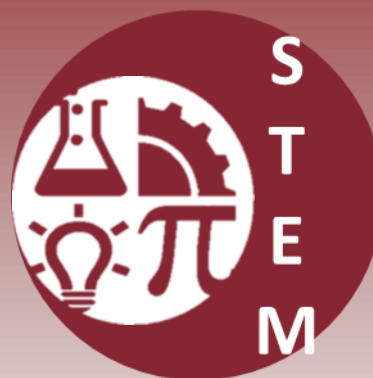
Challenge 3: FOOD Create a decorated cake or set of cupcakes with a STEM theme of your choice- present the cakes and or photograph of the cake and a copy of the recipe sheet.

Challenge 4: DT recycled item challenge- design and make challenge-create something new out of something old or items you would usually throw away.

Challenge 5: ART create a STEM Sculpture

Challenge 6: MUSIC create a unique musical instrument

Challenge 7: ENGLISH write a piece of science fiction creativity either a poem or short story.

STEM Colours

	Bronze	Silver	Gold	Platinum	Diamond
Extra-curricu-lar	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
Leader-ship	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 Devel-opment	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 Commu-nity	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

STEM Colours: KLS 50 ways in STEM

1. Write an article on a STEM lesson in school during STEM fortnight
2. Become a STEM subject leader
3. Design and build a construction to withstand earthquakes
4. Use recyclable materials/waste to repurpose to a new use
5. Build an architectural model of an eco-house
6. Design a lamp with a laser cut design shade
7. Use Graphic to design a poster campaign for an event
8. Design and make a STEM cake
9. Nutritionally analyse and make changes to your diet
10. Explore colloidal systems in food practical's
11. Experiment with fermentation of yeast in bread making
12. Use recycled clothing to make a new item
13. Produce an account of a designer's body of work
14. Design an eco-garden to save water
15. Build and launch a rocket
16. Design and build a bridge
17. Design and build a stage set for a new play
18. Use a 3D printer to create a new game
19. Build a pin hole camera
20. Create a stop motion film
21. Demonstrate the varying colour's and impact of light in an artworks
22. Create a sculpture from recycled materials
23. Make a study of sound waves from different musical instruments'
24. Design and make a new musical instrument
25. Investigate the physics of sound with experiments on resonance and vibration
26. Construct a simple electric circuit.
27. Conduct experiments with chemical reactions.
28. Program a robot to perform a task
29. Create a new code for an activity
30. Create a solar-powered device or experiment.
31. Build a Lego model of the solar system
32. Make a study of costal erosion
33. Build a weather station
34. Create clouds in a jar
35. Create crystal sun catchers
36. Analyse and interpret weather data to make predictions
37. Explore the principles of buoyancy by designing and building a boat.
38. Demonstrate the Fibonacci sequence in nature
39. Explain through demonstration that Pi is the same no matter how big or small the object
40. Investigate the effects of different forces on objects.
41. Experiment with DNA extraction from fruits or vegetables.
42. Study the anatomy and physiology of animals or plants
43. Explore the principles of aerodynamics by building and testing paper airplanes.
44. Create a simple water filtration system.
45. Investigate the properties of different materials for insulation.
46. Experiment with different types of renewable energy sources.
47. Design and build a model of the human respiratory system.
48. Explore the principles of robotics by building and programming a robotic arm.
49. Design and build a model of a sustainable city.
50. Study the principles of optics with experiments on reflection and refraction.

STEM Fair application letter

We are delighted to announce that we are holding our 'STEM FAIR' at KLS on Wednesday 19th June from 4:30pm to 7:30pm.

The aim of the Fair is for students to show-case their competition entries chosen from the challenges below and all students year 7 to 13 are welcome to take part. Students will be invited to present their work for the judging panel in the hall at this event. The STEM fair will also include a range of activities to do.

The competition requires students to complete one of the five challenges stated below: to carry out the work during half term, build and test out their models, record their results and present their findings on a sheet of paper no bigger than A2 size. Models and presentation boards to be displayed at the STEM fair for judging by STEM industry experts. Students have the opportunity to compete in the STEM competition independently or as part of a team. We have some excellent prizes donated by the KLS Friends.

If you would like to take, part in the challenge and book your table for the STEM Fair, please complete and return the reply slip below to Miss Scanlan . Do not forget to include which challenge or challenges, (you may enter more than once), you are taking part in and if you are working alone or as a group.

Miss Scanlan: KLS STEM Coordinator.

Return to Miss Scanlan by 20th May 2024 Tick which challenge/s you wish to take part in

Name_____ Form _____

- ☐ **Challenge 1: STEM INVENTION** Create a challenge of your **own invention**- build your model and bring to the fair with a presentation board to explain your invention

- ☐ **Challenge 2: LEGO Master** design challenge- Build a **model in Lego** that represents an aspect of STEM

- ☐ **Challenge 3: Food** Create a **decorated cake** or set of cupcakes with a STEM theme of your choice- present the cakes and or photograph of the cake and a copy of the recipe sheet.

- ☐ **Challenge 4: DT recycled item** challenge- design and make challenge-create something new out of something old or items you would usually throw away.

- ☐ **Challenge 5: ART** create a STEM **Sculpture**

- ☐ **Competition Challenge 6: MUSIC** create a unique **musical instrument**

- ☐ **Challenge 7: ENGLISH** Write a piece of **science fiction** creativity either a **poem or short story**

I WILL BE WORKING INDEPENDENTLY	I WILL BE WORKING AS PART OF A TEAM Team members include:

Parent/Guardian signature_____

I give my permission for my son/daughter to be involved in the STEM fair and attend the event on the 19th June 2024. I would also like to attend the event- Number of adults_____