Issue Number 29

Stemstimulator

STEM Fortnight **STEM** in Action

unicef @ for every child This years STEM in Action fundraising event in the spring term was for UNICEF.

UNICEF Are a leading organisation working for children. They ensure more of the world's children are vaccinated, educated and protected than any other organisation. UNICEF was established in 1946, protecting and promoting children's rights for 78 years . A donation to

UNICEF means we are making a difference to children's lives. Donations enable a range of items to be purchased to transform children's lives from a life saving vaccine, footballs, shelter, water purification tablet to school books in a rural village enabling children to grow up safe and healthy. UNICEF receives no money from the UN budget so relies solely on charitable donations. Students and staff at KLS rose to the challenge putting on a variety of activities last term from raffles, collection jars, football tournaments, Lip-sync battle and pie the teacher– see the next few pages for the students fundraising activities and individual form amounts raised. The total raised by the school was a fantastic;-

£1625.07 Well Done

Thank you to everyone involved in being so supportive with organising the events and contributing to this worthy cause-We have been able to buy a wide range of items to help children see the next few pages for the items each form purchased.

Well done to all: Miss C Scanlan

If you would like to donate to this worthy cause please visit their website https://www.unicef.org.uk/donate



Summer Term STEM Fair at KLS on Wednesday 18th June from 4:30pm to 7:30pm 2025 This term the focus of STEM is our annual STEM 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 seven that already

exits. A creative design challenge for the library and a Textiles challenge. To find out more see page 22 for details of the competitions. Check out the back page for the information for the STEM competition. scanlanc@kls.herts.sch.uk





Movie at lunch time- Oscar, Noah 7J

In school we did fund raising for UNICEF (a charity to help children in need) every form in every year did their own thing. One form let people throw pies at teachers (with their consent) for £2.50, some forms did a raffle, other forms asked people to donate spare copper coins left at their house. My form did a guess the mini eggs in the jar to win the mini eggs. To do this the teacher asked people from our form to bring mini eggs into class and donate them. We got approximately 380 mini eggs , however, our form didn't know how many mini eggs were in the jar so we could still guess. Every day 2 people would go around forms to ask people if they wanted to donate 50p to guess how many mini eggs were in the jar. We raised a total of £52. The winner of the mini eggs was a boy in my form. Toby 7D

My form 7D fundraising project was called 'Guess the number of mini eggs in the jar.' This helped us to raise money because if you played you have a chance to win all of the mini eggs on offer, whilst still helping charity. It cost 50p a guess and you have as many guesses as you wanted, as long as you had the right amount if money for those guesses. Everyone in my form was encouraged to purchase 1 packet of mini eggs, some people brought in more than 1, and both my form tutors had bought many packets to top up the end product. The only person who knew the number of mini eggs was Moss Abbott, my form tutor. I do not know the total amount of money that we made but I think last time we checked it was around £20 -£30. Anneka 7D

Easter Egg Lambola

UNICEF Article by Daniel

Before Easter, 7C, and the rest of the school, were asked to come up with a fundraising activity, to raise money for UNICEF. UNICEF, is a worldwide charity, helping young children and protecting their rights and well-being. As a form, we arranged a "Try Not to Laugh" session. Mr Kemp-Robertson, Ms Ndlovu, Mr Hashman, Mr Dilks, Miss Little, Miss Carr and other members of staff, generously gave up their lunch break to tell jokes to an audience who had paid £1 to attend. G102 quickly ran out of seats and the total raised was in the region of £50.The teachers, and jokes we had written for them, were so funny, everyone was laughing from the beginning.





Monday 24th March – Friday 4th April We will be coming round to your forms for you to buy raffle tickets with the chance to win our Easter hamper!

> 1 ticket = 50p 1 strip (5 tickets) = £2

£1 entry GET YOUR SWEET REVENGE! 8D are hosting a "PIE A TEACHER" fundraiser for their STEM week. Which of these lucky teachers need a pie in the face? Donate £1 to pie two of these 6 teachers. Deware, it will be a raffle for which teacher you pie o it won't make the teachers feel targeted. Join us on the tennis courts at lunch on Wednesday (19th march) to pie one of these lucky teachers. Rules are that there is a three metre throw line. no eating the whipping cream and to get the teachers as messy as possible, good luck! Think you can Come on at tim g hit this foce, bring it on!

If will be coming toward during block down

Guess the name of the monkey!





Win the monkey and an easter egg if you guess correctly 1 guess = 50p 3 guesses = £1

unicef®

FORM	RAISED	
7A	27.28	
7C	52	
7D	51.9	
76	32.77	
71	8	
7P	6.59	
8A	31.3	GINOOT
8C	33	
80 8D	110.18	
86	47	C 1.91 0
81	5.6	tor avery child
8P	10.5	
9A	114.28	Include and a sub-section of the second
90	31 33	
9D	63.14	
9G	34.07	
91	15	
9P	16.46	
9T	15.5	
10A	77.95	
10C	5	Tatal
10D	52.19	IOTAL
10G	43.67	
10J	40.1	
10P	16.33	
11A	0.5	
11C	5	+10/5.0/
11D	26.16	11010101
11G	12	
11J	10.1	
11P	20	
12LIY	32.68	
12BRY	35	
12HAD	10	
12ANE	80.43	
13ARN	58	
13WES	41.55	
13MOY	23.26	
13DLK	3.33	
SIXTHFORM	225.92	THE C STANDS FOR CHILDREN
STAFF	100	
Total	1625.07	



On Friday 28th March, 8C hosted a fun set of activities at lunchtime. In the Sports Hall they offered students the chance to 'beat the goalie', either of the Year 8 boys goalkeepers – Austin W and Clarke S, just happen to be in 8C and so they took it in turns at one end of the Sports Hall, defending the futsal goal as people took shots. At the other end of the Sports Hall there was an open goal for people to be volunteer to 'be the goalie' and some of our students took shots at the volunteers. Special praise must go to Joel (Year 7), Willow and Izzy C (Year 8), Louie O and Kairo (Year 9) who demonstrated great skill at this. Outside of the sports hall in the lobby area, we had Lily, Morgan and Elise running a spin the wheel competition and this was very popular – nearly all the prizes went! Particular thanks go to Austin T and Roman, who helped to encourage custom to both Spin the Wheel and the Beat the Goalie / Be the Goalie activity in the sports hall. In all, 8C raised £26.95., so we are very nearly at our £30 target, to buy an emergency shelter supplies for a family from the UNICEF brochure.



unicef			Num	
for every child			her	
tor over perma			re-	
	GIFT ITEM UNICEF	соѕт	quired	FORMS
	WATER PUMP FOR A SCHOOL OR COM-		-	
	MUNITY	432	1	SIXTH FORM
	SCHOOL IN A BOX	172	1	KS4 10 AND 11
	SAFE DELIVERY FOR MUM AND BABY	53	2	13ARN, 10A
	EMERGENCY WATER SANITATION DIG-			
	NITY SUPPLIES FOR A FAMILY	50	3	MRS BUTT, 9D
	EMERGENCY SHELTER	30	6	7C 8C, 8D, 9A
	LIFE SAVING VACCINES	30	2	8D, COMBINED
	100 BARS OF SOAP	29	1	COMBINED MONEYS
	FIRST AID KIT	29	1	COMBINED MONEYS
	WARM BLANKETS FOR 5 BABIES	23	1	7A
	SUPPORT A CHILD TO LEARN AND PLAY	20	2	10J, 8D
	100 HIGH ENERGY BARS	19	1	9A
	100 VACCINES TO PROTECT AGAINST			
	DEADLY DISEASES	18	4	11P, 10A, 9A, 8G
	REUSABLE MENSTRAL SUPPLIES FOR 5			
	GIRLS	17	2	8G, 9A
	MEASLES VACCINES FOR 20 CHILDREN	15	1	9C
	100 POLIO VACCINES	15	5	SIXTH FORM, 11G, 7C, 9C,8D
	5 SCHOOL BAGS	12	4	9A, 9D, 8G, 8A
	BAG OF FOOTBALLS	10	4	10J, 9A, 9T, 8D, 8A
				13ARN, 7C ,10J, 10A,9A, 9T,
	1800 WATER PURIFICATION TABLETS	5	15	9G, 8D, 8A



100 Polio Vaccine Doses £15.00



A Bag of Footballs for Children £10.00



Warm Blankets for Five Babies £23.00



Emergency Shelter Supplies for a Family £30.00



1800 Water Purification Tablets £5.00

STEM Fund raising for UNICEF Aid





Water Pump for a School or Community £432.00

£506.84

The **sixth form** with their Lyp-sync battle and individual donation jars for each form have managed to gift a water pump for a school or community at £432 and safe delivery kit for mum and baby at £53, water purification at £5 and a 100 polio vaccines at £15. Well done a tremendous effort by all in the sixth form

Combining the money raised by some forms at ks4 years 10 and 11 we have been able to gift a village a school in a box at

£172

Thankyou to 10C,D,G,P AND 11A,C,D,G,J,P



School in a Box £172.00

8

STEM Fund raising for UNICEF Aid



unicef



A Bag of Footballs for Children





First Aid Kit









Warm Blankets for Five Babies £23.00





100 Polio Vaccine Doses £15.00



Safe Delivery for Murn and Baby £53.00





5 School Bags for Children £12.00

9A 9D 8G 8A

9 STEM Fund raising for UNICEF Aid





Measles Vaccines to Protect 20 children





00 Packs of High-Energy Biscuits £19.00



Support a Child to Learn and Play £20.00









Emergency Shelter Supplies for a Family £30.00



100 Vaccine Doses to Protect Against Deadly Dises £18.00



Emergency Water, Sanitation and **Dignity Supplies for a Family**





Reusable Menstrual Supplies for Five Girls £17.00









In Economics this year, for STEM, we have discussed how mathematics is used to create economic models and statistical analysis - therefore, STEM is embedded in much of what we teach in the subject. Over the fortnight, with Year 12, we have looked at 'externalities', which in economics refers to consequence of an industrial or commercial activity which affects other parties. We discussed possible benefits and costs to society of a number of different scenarios, and analysed them diagrammatically, as shown below with a negative externality diagram. We also discussed steps that could be taken to reduce the welfare loss, in this instance we showed the impact of the government imposing a tax on the product - which increases cost of production and therefore a decrease in supply. This ultimately leads to a reduction in the welfare loss (green triangle). Students were engaged in discussion and brought many articulated arguments to the conversation, referring to limitations of the theory, a skill that is a critical part of their course.







With Year 13, we have looked at the labour market and presented a number of different s cenarios diagrammatically. The slide attached, shows the impact of teacher funding being cut, leading to a decrease in the supply of workers (teachers). This would result in the supply curve shifting (S2), meaning that there would be an increase in wages required to balance the labour market at W2. In turn, there would also be a shift in the demand for teachers (vacancies) which would further increase the wages to W3.



Furthermore, we carried out analysis of the government's National Minimum Wage (NMW). The NMW serves as a 'price floor', meaning that it is a set price above the market equilibrium. We discussed how this is in place to protect employees; however, it also leads to a surplus of supply as the price is set above what firms are willing to pay - this has the unintended consequence of unemployment, as shown in the below diagram.







Y8 STEM lessons - students have been writing speeches to explore the ethics around bringing the dead back to life, in relation to Frankenstein.

- 17 th Marsh 201e
As a Chizen og forces Smuld use a
1 is angul and some one in your grant and
free intro of you brought them have a street
2 (Edity I bolice that & marine depression of
100 See the grant and the I may we have
3 Point 25 dead gamily member. Imagine never sing one
Tigesthat how it works again?
A Gung S
Sandly it's not noticed. Their net advising since
S Rich (Faller ening? Skilling Show 80% og publi
time speaking to a faire thing.
land Jasth it considers the human hair security
Child Spectra to a past gamily member and a
duniter? I know you mught miss them but just he
port 3 of You need to mare on. Hould you want you want
(is,
conclusion about change technology
What you go which from a lite
and type you have

- H	Monal Internation Name
OK STUDIO	1 FionMensien / 2 Electristiq i buinding people book is with Youtus 3 penicipites / buildy sives / Collects ender Youtus 4 Proud./ 5 footwining is possible / 6 Froukensien Decourse the Oregies a monsile time
Official Contraction	Advantages Disadvantages A durentin way to creat March the Oren poters whom to his value pelapie + Copyration Support + Spenchinges au wen money Mailes men nappy With Rept (conservation apositive Disadantic mone was line tacking good by Disadantic money was the concernity good service disadantic money was the concernity of the service disadantic money was the concernity of the service disadantic
NICUA LIPERINE IS DI UNI	Thursday 13th March 2025 Convic Intercence and STEM Doctor who whenligt the open of birth the area burg - Involucion - Concerct Chizen who threads the open interaction Stretchard and the
uan	Point 1 - Reconded with loved calls Prescricat Too Isonistry Point 2 - Doni logel the pason command, dued oddier Point 3 - Support Donebore, Enrowe Longia
NUM	- anausion - This is the belt third, trighing recomment var people unto strugge to gieve summarie ideas Recover Buellio Speech erro about the product Operion
1	and biomore anobrance in

	Hele todaes and Generican. I can here sodau, to tour allowing the sense and the assures should use it. How would use it to a you mission deep and near set them agains 7 well into the constrained with the deep and near set them agains 7 well into the constrained with the sodae set them agains 7 well into the constrained with the AGA/ to the set them agains 7 well into the constrained with AGA/ to the set them agains for the constrained with the AGA/ to the constrained with the to the constrained with the constrained to the constrained with the constrained of the constrained to the constrained with the constrained to percent specific even to over the course of chickers the constrained to the constrained of the theorem to be the constrained with the course of the constrained with the course of chickers the course of the course of the constrained with the course of the course of the course to the course of the course of the course of the course of the course of the theory to be the course of the cou	
	To and the estimate swapped to those a period dis and the war in end, but refer that a growth water as the thin had dired within him well, waiting and to the knowled table a house deviced that and the left to that within togeter. House deviced that and the war softer may no oper with what in disting that the three distributions to people who have med this would recommend and house the togeter was have med this would recommend and house the modeling in appoint the more med that well the well it	Table Parts I had
14103125	To summarise this Product is highly recommended with people incu- au over the giote wing Hoseacd. And with the Power of technologi incling is industrial. Thom you for having mit-oday and usering in roy with version and even in you don't cap done with mit, just help the re thought in the side of you had, beading. You think it i deare it	





10



Think about;

- The layout of the board
- How many squares
- Design in the background
- Questions to be asked .
- Question card designs .
- Type of dice/spinner Rules for the game .
- Shape of the counters
- Number of players
- Box design and insert











STEM in HISTORY



STEM is a feature in all History lessons, all year round. We use STEM fortnights to make this explicit, as well as show students the history behind many of the concepts and ideas they learn in other subjects.

Year 7 have been learning about changes in Medieval life this half term. As part of their enquiry, students have explored medieval scientific knowledge, and the impact of this on the accelerated spread of the Black Death in 1348. Our enquiry has also provided an opportunity to compare responses to the Black Death with that of Covid-19; students have been able to explain both similarities and differences in scientific understanding compared to the modern era. Students have also explored the consequences of the Black Death, for the feudal system and the increase in spending on education and literacy as a result.





Year 9 have been studying WWII this half term, which is timely given the 80 year anniversary of VE Day this year. Whilst STEM is integral to all of our lessons about WWII, we specifically explore the role of Alan Turning, Bletchley Park and the importance of RADAR in the Battle of Britain.







At GCSE, Year 10 students have been studying the political and moral impact of advances in nuclear technology, namely the use of atomic bomb in 1945, the development of the arms race and military alliances and the impact of nuclear threats to daily life during the Cold War.



In Year 11, as part of their last few lessons on Elizabethan England, students have been studying the growth of Elizabethan exploration as a result of new technology and nautical knowledge.









Enquiry into Sustainable Urban Drainage Systems – design on the KLS site



STEM in GEOGRAPHY



Year 10 What is the quality of life like across Birmingham

The data - Birmingham's contrasting wards

- The students were introduced to a range of socio-economic data to compare Sparkbrook and Sutton Four Oaks.
- For example the percentage of unemployed people by ward, shown on a map here.
- The students had to decide their scale for each of the four graphs and were reminded that the data was discrete, rather than continuous data, so the bars should be separate not together.
- Max W discovers that the pattern is becoming quite convincing between these two wards.





Comparing Sparkbrook and Sutton Four Oaks with the average for Birmingham city.

Bella M, Lottie C and Hannah F with their graphs



Featuring work by Jack J, Chloe N, Megan S and Kaci A



Zoha C's colour coding system



Romario B's first graph



Year 11 – investigate STEM as part of the solution to issues of



Professor Ester Boserup (1910 - 1999)





"Necessity is the mother of invention"

Reverend Thomas Malthus (1766 - 1834)







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

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

an numbe	f X	is gn	eater I	than	2022	. Whi	ch is the smallest of	the following?	
A $\frac{x}{202}$	22			$B = \frac{2}{x}$	022		$C \frac{x+1}{2022}$	D $\frac{2022}{x}$	$E \frac{2022}{x+1}$
swer Yea	r 10	Autu	mn Uł	(Inte	rmed	iate Ch	0 allenge Question		
			13	1	2	5			
24	0	9	6			Sum	of missing numb	ers = 7 + 8 = 15	





Building a Balloon-Powered Car This lesson combines engineering and physics, where students build a small car powered by air from a balloon.

Materials Needed: Balloon Straw Tape Cardboard or foam sheet Plastic bottle caps (for wheels) Skewers (to attach wheels)

Steps:

Cut the cardboard into a rectangle for the car's base.

Attach the plastic bottle caps (wheels) using skewers.

Tape a straw to the top of the car and attach the balloon to the straw.

- Blow up the balloon and let it go. The air escaping from the balloon will push the car forward.
- Challenge the students to experiment with different balloon sizes or car designs to see how they can make the car go faster or further.

This lesson teaches students about force, motion, and how air pressure can be used to move objects. It's fun and hands-on while introducing important concepts in physics and engineering!

2.Building a Simple Circuit: In this lesson, we'll introduce students to the basics of electricity and circuits. The students will learn how to create a simple circuit using a battery, wires, and a small light bulb. They will also explore how switches work to turn the circuit on and off.

Materials Needed:

Battery (AA or 9V) Battery holder Wires Light bulb (small) Electrical tape **Steps:**

Show students how to connect the wires to the battery and light bulb.
Discuss how electricity flows through the wire, lighting up the bulb.
Let them experiment by adding switches to turn the circuit on and off.
Challenge them to make their circuit work in a more creative way—maybe add more bulbs or make a series circuit.

This lesson helps students understand the basics of electrical circuits and the role of components like batteries and wires. It's simple, yet effective in showing the power of electricity! Hesanya 7C





Component	Sporting Example 1	Sporting Example 2
Muscular Endurance	A cyclist's leg muscles turning the pedals	In the gym, completing 40 sit-ups.
Strength	A weightlifter performing a clean and jerk	A boxer punching a right hook
Flexibility	Trampolinist performing a pike shape	High jump need flexibility to reach/bend over
Cardiovascular Endurance	Marathon runner completing a race	Swimmers competing over long distance
Balance	A gymnast balancing on the beam	A dancer holding a kick whilst raising on their toes
Speed	100m Sprint race	50m freestyle in swimming
Power	Using speed and strength to generate power	Basketballer jumping and dunking over an opponent
Agility	Rugby side- step to beat an opponent	Footballer changing direction to beat an opponent
Reaction Time	Sprinter reacting to the sound of the gun	A boxer dodging a punch
Co-ordination	Running and hitting the ball over the net	A golfer performing a golf swing





Components of Fitness

Year 8 students have been learning about Components of Fitness during STEM Week and how they are beneficial to performance in the activities they have undertaken this term. The students have been able to provide practical examples of where each component would be seen and how some activities rely on some components more than others. Their efforts throughout the last two weeks have been excellent and they have enjoyed the interleaving aspect of their lessons.

Component	Definition
Muscular Endurance	The ability to use voluntary (skeletal) muscles repeatedly without tiring.
Strength	The amount of force a muscle can exert against a resistance.
Flexibility	Range of movement (ROM) available around a joint.
Cardiovascular Endurance	The ability to continuously exercise without tiring.
Balance	The ability to maintain the body's centre of mass above the base of support.
Speed	The ability of the body or parts of the body to move quickly.
Power	The ability to exert a maximal force in as short a time as possible or Strength x Speed.
Agility	The ability to change direction at speed.
Reaction Time	How quickly someone can respond to a stimulus.
Co-ordination	The ability to use different body parts together, accurately and fluently.





In science our STEM lesson was about making a poster about 'Change and Adapt'. My group did the adaption of the human diet, from the Stone Age all the way up to the Modern Era.

Anneka 7D

In my Science Stem lesson, we learned about skeleton and its body parts. First, my science teacher talks to me and my classmates about skeleton's body parts and bones. A fun fact about skeleton that is has 206 bone and our bones grow unit about age 25. Then it was time for a practical where with partners we had to make a moving paper hand. Then till the end of the lesson did a word search where I had to find words which where a bit tricky to find.

MALIKA 7P

In my Science STEM lesson, we learned about adaptations and how we adapted to the world around us! On this topic we also had to make a poster, I did mine on Chameleons! One example we learned about was humans adapting to their surrounding years ago. The adaptations were: they built social structures and had developed tools. also, they reproduced so the world would carry on working with people on it all the time. Problems: While living a life long ago they faced several problems like; the earth getting too hot for them to live on, dinosaurs appearing and maybe killing them, and finally the world getting TOO cold to live on! But after all these disasters we still had people left and they reproduced and reproduced until now and still reproducing. Fact: there is 8,213,269,530 people living on the earth right now to be exact! I hope you enjoyed the description of my STEM lesson

Mariia 7G









Violet and Billie-Ivory model (last picture) went over 2metres! Winners by far



STEM in TECHNOLOGY





Xbox Elite Series 2 Controller

What has it been made from? - The main body and some buttons are made from a durable plastic, known for its strength and impact resistance. Some of the key areas such as paddles, thumbstick shafts and D-Ped are made from tainless steel or aluminium, which enhances the controllers durability, while also providing a nice, heavy-premium feet. It's rubberlaed grip is made to ensure a secure and comfortable hold when in gameplay. The internal electronics are of printed circuit boards, haptic and vibration feedback motors, cables and wires as well as a rechargeable lithium battery.

Where has it been made? - Primarily manufactured in China and other areas in Asia through outsourcing from Microsoft.

How has it been made? - The production of this controller may include; injection Moulding, Computer Machining and Assembly through automated systems and guality control, ensuring standards are met.

Use - The usage is designed for gamers who prefer both casual and competitive gaming, with key offered features such as customisable components for versatility, adjustable thumbatick tensions, hair trigger locks, wired or wireless connectivity with seamless use across multiple devices and finally 40+ hours of battery life per charge (may degrade overtime).

End of Life Considerations - The built in battery can complicate recycling and disposal. Microsoft offer a trade-in program which may be used for controllers, promoting recycling.

Improvements for the controller as a whole would be increased durability on the materials due to intense hour after hour garning and wear-tear.



Dhillon

An aspect of work I have created in product design is paper engineering pop up books. We began by learning simple pop ups that Miss taught us one method at a time to get an understanding of how to cut and fold the card properly, the next lesson we refined our skills by using more advanced methods to create more innovative pop-up cards that had interesting designs. After the first two lessons we watched youtube videos of a professional designer and learned how to create more complex designs to fully hone our skills, followed by our final lesson where we watched a video on the whole alphabet made of pop-up books and began to design and create a Letter of the alphabet out of the letters T,E,C,H,N,O,L,O,G,Y so when everyone finished theirs our combined letters would spell out the subject name. The letter I got was H and I created a Japanese Tori gate, made of black and red card on a blue background that folded out when the

I enjoyed this project as it allowed me to attain a new skill, folding and pop-up skills, as well as the way it allowed me to include my own design style, creating a piece that matches what was asked to create, a pop -up card of the letter H, using my newly attained skill of folding and cutting card to create pop up mechanisms, while including a design style I am interested, the art style of Japanese culture, which allowed me to create a unique piece that differed from that of what was seen in the video that sparked the idea for this design project.



STEM in TECHNOLOGY



etter globing with minimal coice and energy

-



Biomimicry STEM – Charlie

Biomimicry in Product Design is a fascinating and innovative approach that involves drawing inspiration from nature to solve human problems. By observing how organisms, plants, and ecosystems have evolved to thrive in their environments, designers can uncover sustainable solutions that mirror the natural world's strategies. Nature, having undergone billions of years of evolutionary refinement, often offers optimal solutions for efficiency, resilience, and sustainability. For example, the structure of a bird's wing has inspired aerodynamics in aircraft design, and the self-healing properties of certain plants and animals have influenced the development of materials that can repair themselves. The lotus leaf, with its waterrepellent surface, inspired the creation of self-cleaning surfaces in various industries, while the gecko's feet, which allow it to cling to walls, have been mimicked in designing advanced adhesives.

The key advantage of biomimicry in product design is its focus on creating solutions that are not only effective but also environmentally responsible. By learning from the principles found in nature, designers can create products that are energy-efficient, use sustainable materials, and minimise waste. For instance, solar panels inspired by the photosynthesis process in plants have led to more efficient renewable energy technology. Similarly, architecture inspired by termite mounds has resulted in buildings that maintain optimal temperatures with minimal energy use. The ultimate aim of biomimicry is to develop products and systems that support the well-being of both humans and the planet, moving away from harmful manufacturing practices toward circular, regenerative systems. By incorporating these nature-inspired strategies, product design can evolve into a field that prioritises not only functionality but also environmental stewardship and sustainability.





Our team at the F24 Kit Car Club have been working tirelessly to build, test and race an F24 car for two years now. We started this journey as a small group, but we have rapidly grown in number over time, with students from multiple year groups working together to build the car. We intend to race the car against other schools at the end of this year – we are now making some final adjustments to improve our car. Currently, the team is working on creating a nose cone made of carbon fibre to reduce drag. Throughout building the car, we encountered many problems, but with new ideas and solutions, we overcame these problems. Now that we are close to finishing the project, we are looking for sponsorship to help us fund our work. If any companies are interested in sponsoring us at races, we would put your company's logo on the car to advertise your brand. Also, we are trying to find ways to transport the car to events, and we would be very grateful if anyone would be willing to provide a van or any other kind of transportation. To discuss sponsorship/ transportation, please email <u>housegoj@kls.herts.sch.uk</u> – we would be very appreciative. We our very proud of how far we have come, and we are looking forward to competing in the near future. Jake 10G













STEM Reads @klslibrary!

Maths Lab: Exciting Projects for Budding Mathematicians by DK

Maths Lab features interesting activities that cover many aspects of Maths, including measurement, geometry and trigonometry. You can combine art and maths by learning to draw impossible objects - creating beautiful patterns to make things like a timetable dream-catcher or perfect the ratio for making refreshing fruit drinks.

Produced in conjunction with the Smithsonian Institution, Maths Lab is designed to appeal to maths geeks and those that prefer practical projects. To complete these engaging projects, you don't need to be maths genius or even know how to use a



calculator. Easy-to-follow step-by-step instructions with photographs and illustrations will show you how to make each project, alongside an explanatory box that demonstrates









	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 run- ning of an extra- curricular STEM club for a year term, assuming a role of respon- sibility.	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 responsi- bility for a spe- cific activity/ event.	Become a student leader within an area of STEM for at least three terms, assuming a specific role of responsibility where you con- tribute 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 with- in 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 com- petition	Submit two articles to the STEM newsletter or contribute to STEM subject display board within a school year or Enter at least two STEM competi- tions over the year	Submit one article to the STEM newsletter each term or contrib- ute to STEM subject display board each term or Enter at least three STEM competi- tions (one per term)	Via the STEM news- letter, write an article to be in- cluded in local press about a positive aspect of your school or Enter the STEM fair individually or as a team	Produce a STEM student maga- zine for a STEM subject area of the school over a year. or Lead a team or sup- port a primary school team to enter the STEM fair	
School and Wider Commu- nity	Take part in a STEM school or com- munity fundrais- ing event	Contribute to a STEM school or community fundraising event assuming a role of respon- sibility	Lead a STEM school or community fundraising event assuming a role of respon- sibility	Organise a STEM school or com- munity fundrais- ing event assum- ing a role of re- sponsibility	Lead on, or assist the support of students in a STEM fundrais- ing 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.







- 1. Inventor Design Challenge
- 2.Lego Master Challenge
- 3. Cake Decorator Challenge
- **4.DT Recycling Challenge**
- 5.ART Sculpture Challenge
- 6.MUSIC Create an Instrument
- 7.English write a Science Fiction Short Story or Poem
- 8.Library Re-Design the Display for STEM books **New this year**
- 9.Textiles Sewing challenge produce an original item of Clothing or Accessories New this year



We are delighted to announce that we are holding our 'STEM FAIR' at KLS on Wednesday 18th June 2025 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 whilst the entries are being judged.

The competition requires students to complete one or more of the 9 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 board no bigger than A2 size. Models and presentation boards to be displayed at the STEM fair for judging by STEM industry experts. Students can compete in the STEM competition independently or as part of a team. We have some excellent prizes and trophies to award at the end of the evening.

If you would like to take, part in the challenge and book your table space 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 23rd May 2025 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 cakes with a STEM theme of your choicepresent 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 that works.
- Challenge 7: ENGLISH Write a piece of science fiction either a poem or short story.
- Challenge 8: Library- Redesign a display for STEM books in the library
- Challenge 9: Textiles- Sewing Challenge-Produce an original item of clothing or accessories

I WILL BE WORKING

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 18th June 2025.

I would also like to attend the event- Number of adults_