



This year STEM fair held on 21st June, showcased students innovation and creativity with a wide range of inventive design products for our different competitions. The event was well represented by students in KS3 , who enjoyed a fun evening of challenges alongside their family members, as well as presenting to the judge for the competition challenges. This year saw a particularly high standard of presentations by all the students who showed passion and enormous enthusiasm for their projects.

This year we introduced a new categories to our competition - DT Recycling Challenge. The judge Mr Wright was extremely impressed with the quantity and quality of all the students work which made it a difficult task to select the winners.

#### **Congratulations to the winners;**

LEGO STEM Challenge- Max 8D

Cake STEM challenge– Harry and Jo 8A

Invention STEM Challenge– George 7G, Joshua 7A and  
Adam 7D

DT Recycling STEM Challenge– Zaria 9C

**Overall STEM fair winners: Jo and Harry 8A**



All students who took part should be extremely proud of their achievements and will receive certificates for entry and STEM prizes. A very successful evening for all involved and we look forward to building on this STEM success into next year.

***Miss Scanlan.***



# STEM Fair– The Judge: Mr Wright

On Wednesday the 21st June 2023 I had the opportunity to visit the school and Judge the students entries in the STEM Challenge.

Having been involved over many years in the specifying, developing and marketing of Hi-tech products I was interested in seeing how the young students approached their projects. Many used a very mature approach to their development going through stages of planning, building, failing and re-specifying to achieve their intended goals.

It would appear from their answers to my questions that they all made mistakes and worked at overcoming them in a structured way, not being defeated by the problems and continued with determination.

I was able to assure them that out there in the big wide world professional people are making mistakes with their product development and continuing with revisions to there specification and structures until they get the desired results.

I was impressed by all of their attempts and their pride in what they had done.

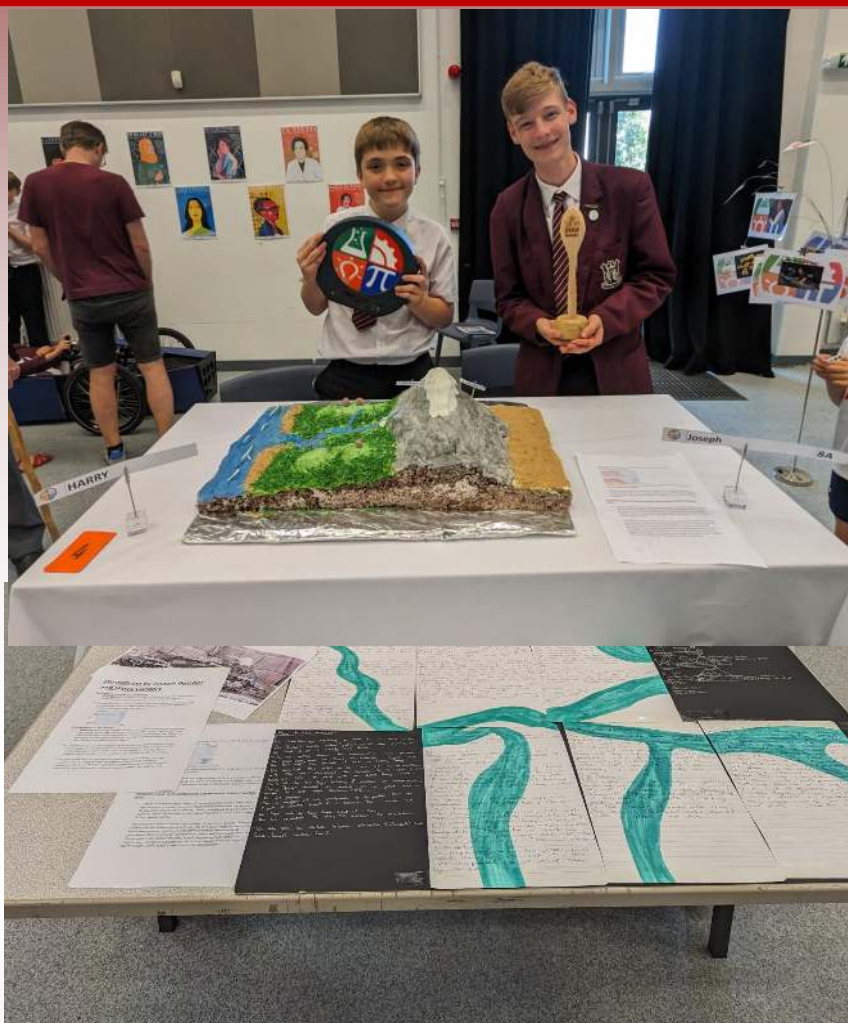
We discussed the difference between Features and Benefits, features are fine to differentiate your product but if they don't provide benefits they become an unnecessary cost with no pay-back which helped the students realise that for every element of their specification there needs to be valid reason for the feature to be included.

All in all , a lot of enthusiasm , some great ideas, perseverance and effort from all involved and an element of pride in their achievements.

Well done all who participated.

***Mr Wright***





Harry and I are thrilled to have won, despite having a superb competition with a multitude different and unique topics. Our Cake won due to the abundant amount of geographical subjects including the hydrological cycle, the formation of rivers and permafrost. The creation of the cake was a very messy affair, as it involved melting marshmallows and mixing them into coco pops. As I am sure you can guess our kitchen did not exactly look prize winning worthy. So the clean up probably took longer than the making! However short amount of boredom was overtaken by the fascinating research that introduced Harry and I to a vast array of new and exiting topics in Geography. In conclusion it was wonderful experience and we cannot wait for next year.

**Jo 8A**

### **Cake of a permaculture landscape**

I was absolutely amazed to see the level of landscape detail in this cake made by Harry and Joe. They had created a permaculture landscape that could be visualised from their modelling and labels to be in Alaska, Greenland or Canada. Some snow-capped mountains, with frozen plains, but, in tune with climate change and the news of rapid changes in the Arctic tundra at present, they had some melting landscape too. In conversation with the boys, I was so impressed at the knowledge that they had of the role of methane as an active greenhouse gas, which has been locked away in the permanently frozen soil for thousands of years, as a by-product of partially decomposed plant material. I also really liked the way that the cake could be looked at from another direction and it was like a cross-section through South America, with snow-capped mountains and the rain-shadow beyond. Such a clever link between the water cycle and the carbon cycle. Indeed, this is part of the A'level Geography specification - so I'll see you in class in four years' time lads!?!

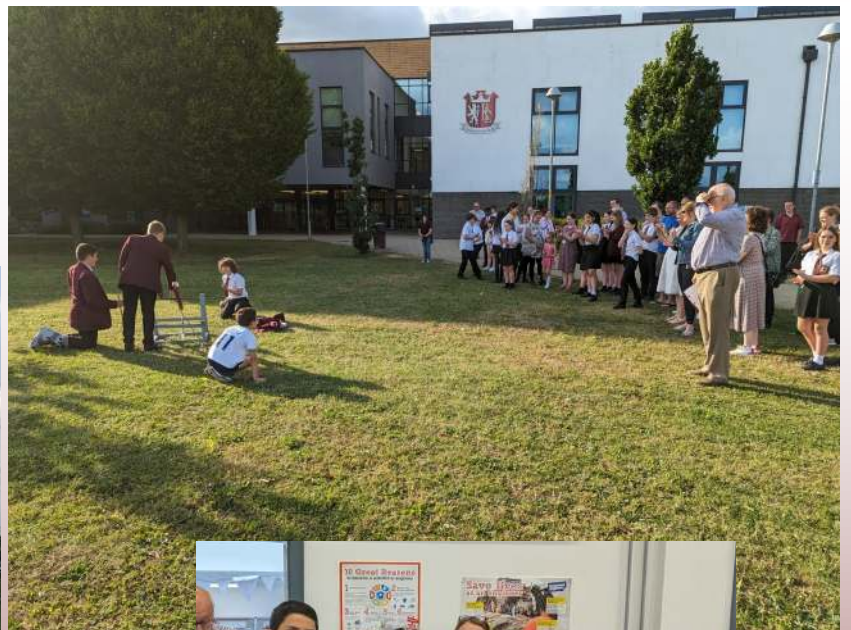
**Ms Chabrel-Subject Leader of Geography**

# STEM Fair– STEM Challenge WINNER

## George 7G, Joshua 7A and Adam 7D

After many days of assembling, designing and testing we had finished the catapult. After entering the STEM fair we enjoyed looking at other contestant projects and doing the fun challenges such as the race track in the hall. When we finished presenting our invention we were astonished to see our names called out for winning, we would never have guessed that we had won whilst going through multiple designs. The judge really liked our final design and to our shock we were delighted with the fact of winning a prize on our first time.

**Joshua 7A**



# STEM Fair: The recycling challenge



## Winner Zaria 9C

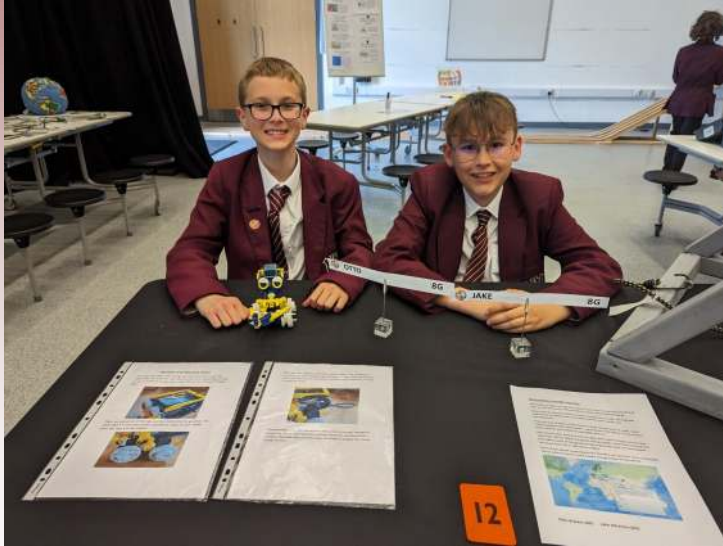
For my STEM recycling project, I decided to focus primarily on reusing old toy packaging as I have noticed that this is a big issue that needs addressing. I chose to use the packaging from a toy called Mini Brands which comes inside of a ball made up of 5 slices. I turned these into three different items. The first one was shelving to keep various trinkets or toys in (e.g., jewellery and Lego) by mounting the slices to foam boards using a hot glue gun. Another thing that came to mind was turning them into fruit slices, so I painted the packaging to look like orange, lemon and watermelon slices and attached them to keyrings and earrings. Lastly, I made baubles. For this, rather than taking apart the packaging, I wrapped the plastic balls in wrapping paper and/or added ribbons and glitter. I think that the STEM fair is a great idea as it allows students to get creative and find new ways to use day-to-day items.

Zaria 9C





# STEM Fair: Entries



Otto and I built a solar and hydraulic powered rover vehicle. We worked together to construct the solar panel, the hydraulic module and the gearbox. The solar panel transfers energy through the wires to the motor, which spins and in turn rotates the gears. These gears push the hydraulic piston in and out, forcing water through the tubes, which moves the arms of the rover these let it avoid obstacles. Unfortunately, the solar panel did not produce enough energy to turn the wheels, so we tried attaching the wires to a 9V battery. This worked at first, but the battery voltage was too high. We tried smaller voltage batteries, but these were not strong enough. We think the high volt battery had burnt out the motor.

I enjoyed all of the activities at the STEM Fair and also learning about the other competitors' projects. It was a fun and interesting evening and I look forward to participating next year.

**Jake 8G**



**James 7A** sanded down the timber before attaching bottle tops using resin and sourced tree stumps to create the table support.





# STEM Fair– Lego winner- Max 8D



A pinhole camera in Lego





## STEM Fair– Lego Challenge

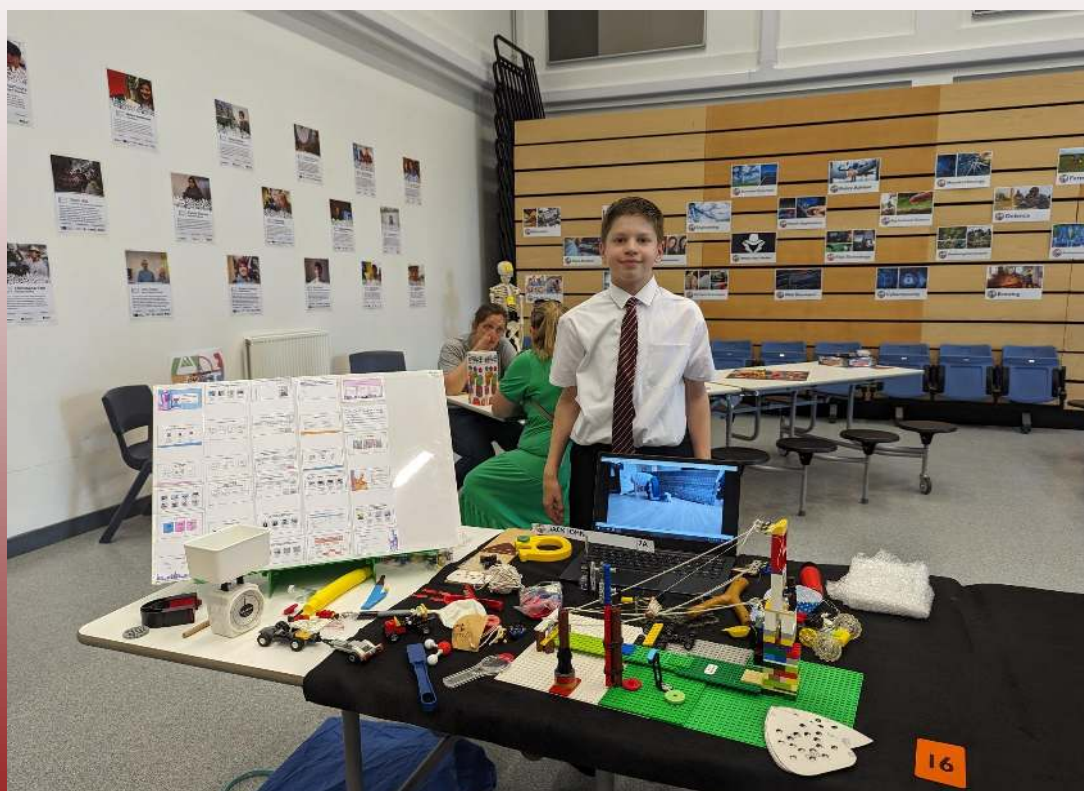
It was my first year entering the KLS Stem Fair Event and I would enter it again next year. Any student from any year group could enter one or all the range of challenges. I chose to build a few models in Lego to represent an aspect of stem. I chose to build a wind turbine using Lego technic and built it with cogs, gears, cranks, bushings and made the axle. I wanted to represent a green renewable energy source. I also conducted a zip wire from a doorway to the floor. I used fishing wire and rope. I tested which one had more or less friction. I built and designed my own Lego zip wire cages weighed and timed them over the same distances using gravity down the different lines. I observed, recorded and then decided some conclusions. I measured the angle of the lines and worked out if a smaller or larger attachment to the wire worked better. After this I build a mini Lego zip wire using rope, Lego and dental floss.

My next experiment was to design build and look into Lego car models which I powered by air or magnets. I learnt about Newton's third law. For every force there is an equal and opposite reaction. I tested them over different surfaces.

Finally, I looked into air resistance and gravity and designed some parachutes. I experimented with different materials, but I learnt a lot from the judge's feedback. He said I needed to make a parachute that was bigger and heavier than the Lego man that was attached. This was good advice.

Staff, parents , school governors and students all listened and looked at each display. The judge was interested and kind and fair to all of us and all students were encouraging each other. There were some worthy winners, but everyone went home with a prize for taking part and a chance to enter their work to be considered for a stem badge or Stem bronze silver or gold project . Thank you to all the organisers, and guests for supporting and encouraging us all.

**JJ 7A**







# STEM Fair: LEGO entries



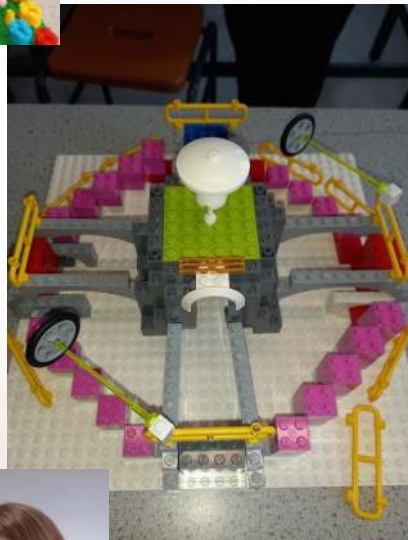
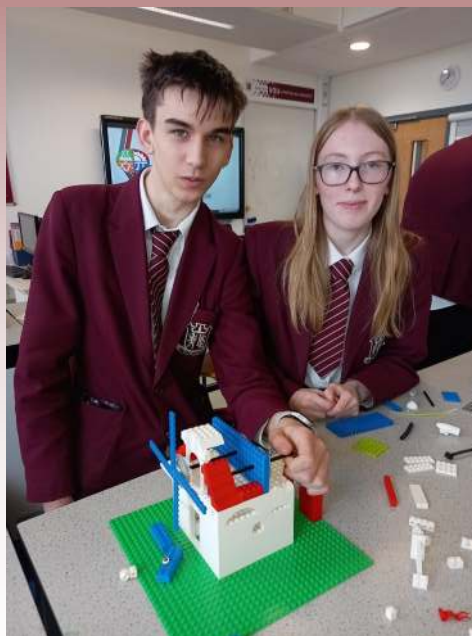
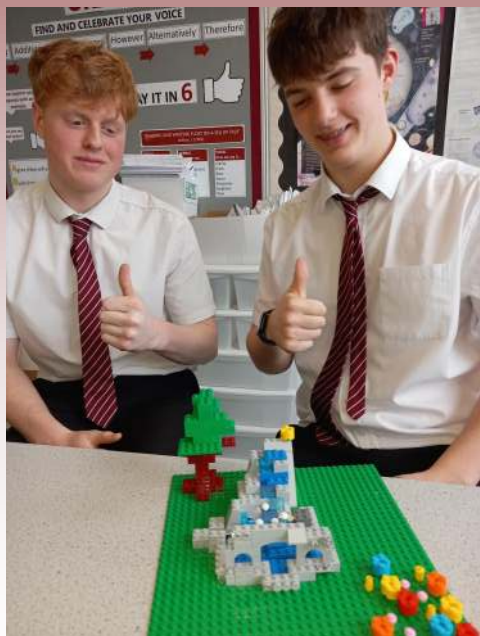
I entered the STEM fair and it was great, there were lots of games that were very interactive and fun, and an array of different projects. These games included; the pine wood cars being raced on the track, chess and even building the Eiffel tower out of paper. There were multiple categories to enter in, which were; making a sculpture out of recycled materials, cake making, and LEGO. All of the entries were amazing, and all of the winners deserved it.

**Olivia 7A**

# STEM in Science lessons— Lego

Science use Lego to explore a range of different concepts through building scientific models using Lego. Here are some of the examples of trees, coral reef, windmill and robots.

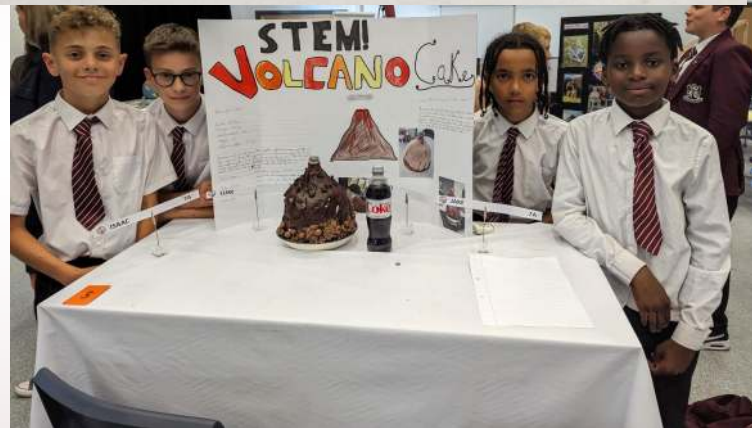
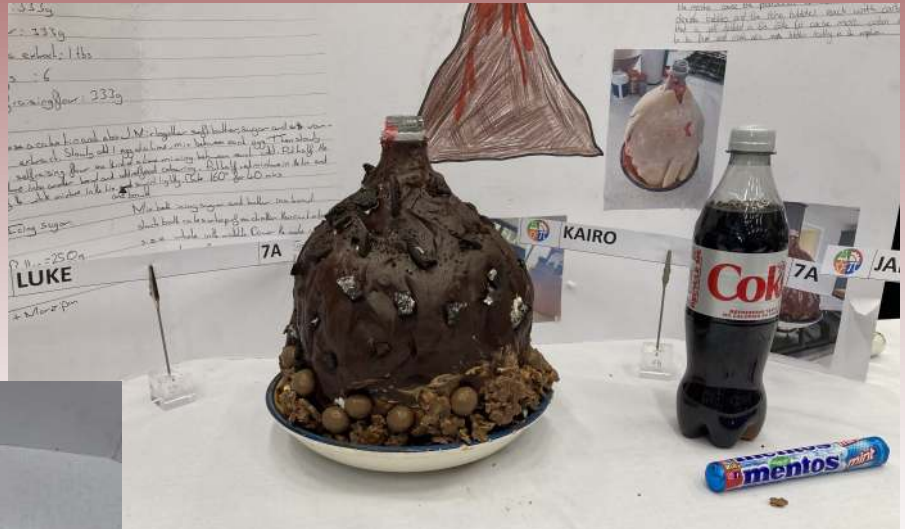
**Mrs Bloomfiled**



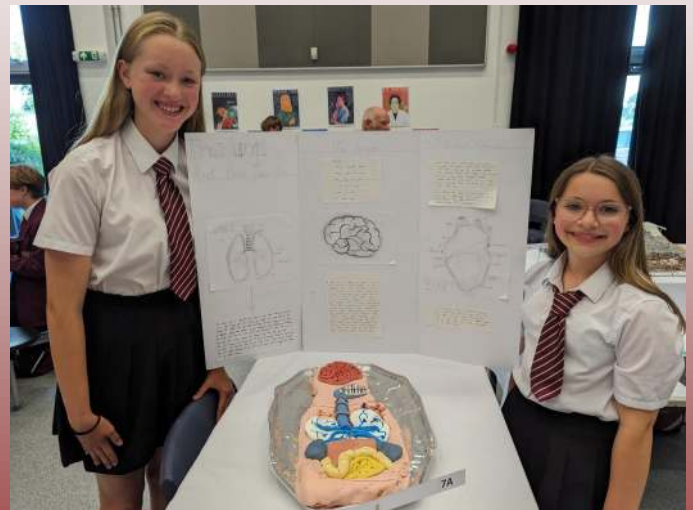


Jake, Kairo, Luke and I like cake. Kairo and Jake like to make cakes but Luke and I to design cakes and used it together to make a STEM cake. We chose a volcano cake because we all like volcanoes such as Pompeii, Mount Kilimanjaro etc..

Isaac 7A

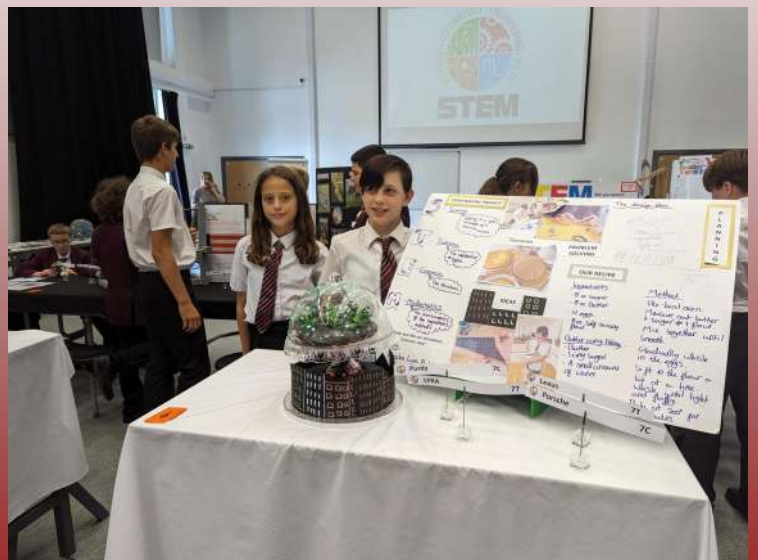
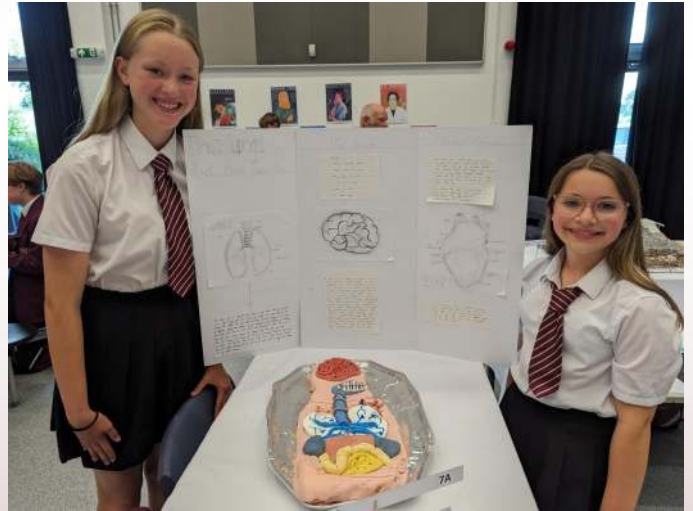


Elsie and I decided to bake a cake that represented the main organs in the human body. This included the brain, lungs, heart, oesophagus, and the kidneys, amongst others. We found the cake the most challenging part, as we needed to bake it, cut it to shape and cover it with quite a bit of icing. I really enjoyed, however, finding out new facts about our organs I might not have known otherwise. I loved that it was a collaborative project and that I could do it with Elsie. Emily 7A





# STEM Fair: The cake competition

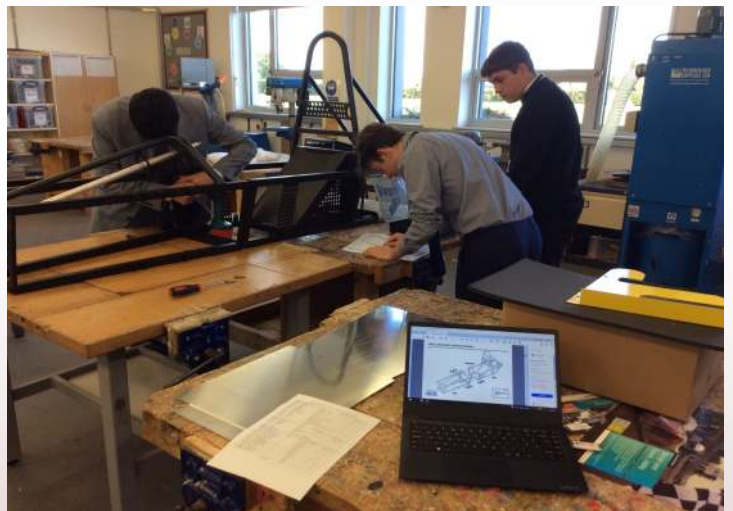


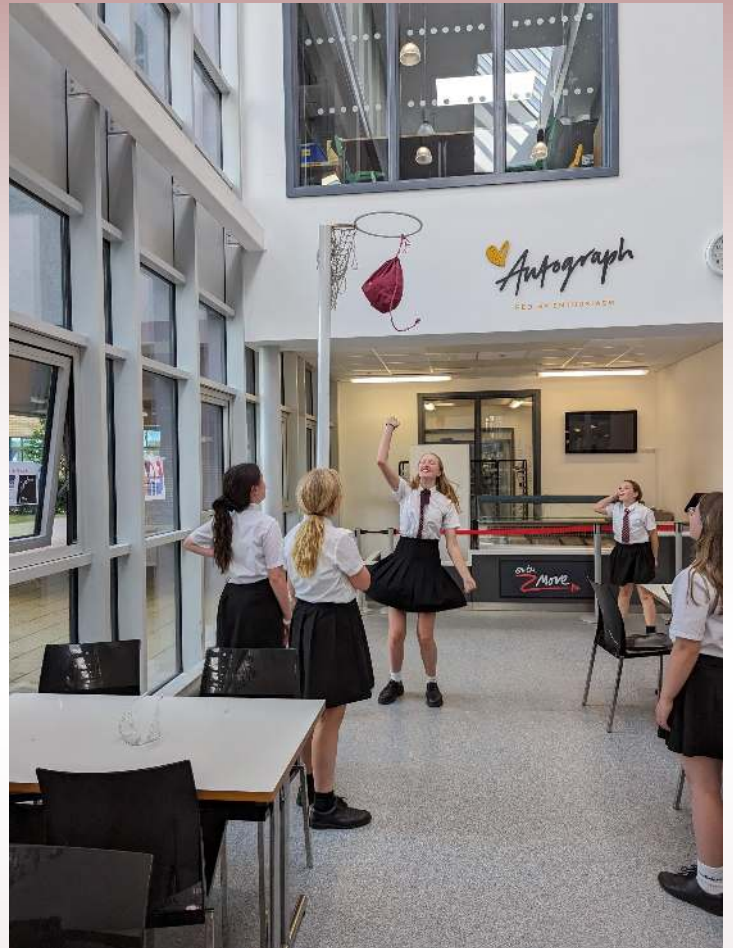
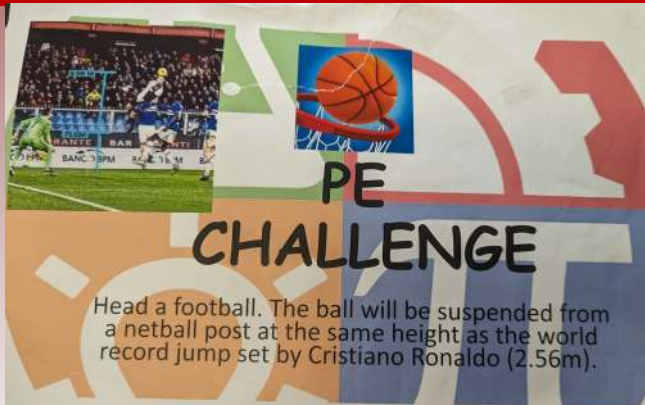
# STEM Fair: The Kit Car



Since October 2022, we have been working on the F24 kit car project. This has been a new extra-curricular project that started this academic year. The initial sixth form team has grown in recent months to include several students from year 8 as we look to inspire the next generation. Our aim is complete construction of the car and be ready to race at the start of the next academic year. We have worked alongside several external companies to develop this car through sponsorship packages. The project has presented a number of challenges over the course of the year and fully tested students' self-regulation and stickability.

**Mr Housego.**





## Jump the height of Ronaldo

At the time of heading the ball past Red Devils goalkeeper David de Gea for the equaliser, Ronaldo's head was **2.93m** above the ground, making it his highest jump.



# STEM Fair: The flight zone





# STEM Fair: Lots to see and do



# STEM Fair: Lots to see and do



# STEM Fair: Thanks to the teachers who visited and joined in with the activities



It was so great to see that as a school community we could produce a wide variety of different activities linked with STEM. What was also great was seeing that every single contestant had something to share, and every entry was different, which was great to see that lots of students had different mind-sets about what they thought about STEM. In my opinion I thought that this years STEM fair was very imaginative and creative. This was a nice idea and great to see how every single stall had something different. I thought there was a wide variety of different activities everyone could get involved in, it was amazing to see that there were different activities linked with what STEM stands for. Next year I think that we could have some more suggestions from students for some different practical activities that the students would like to see. I thought it was great to see a variety of different students from each age group and see what each year group could create.

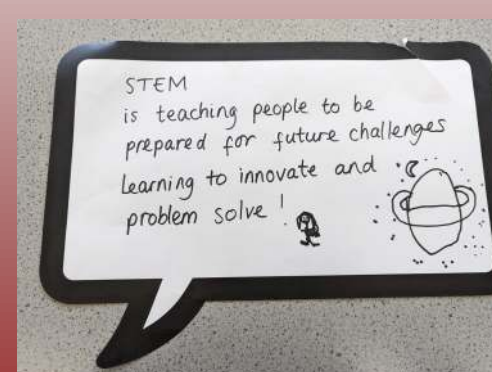
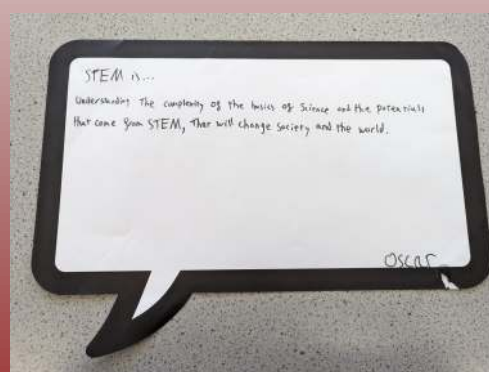
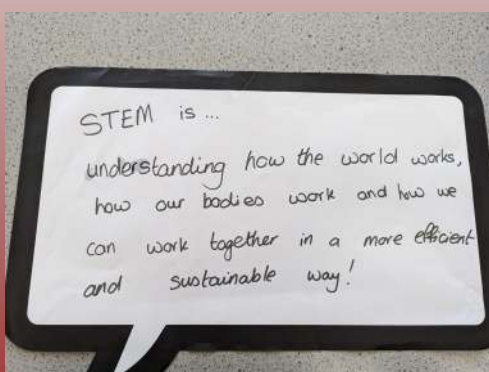
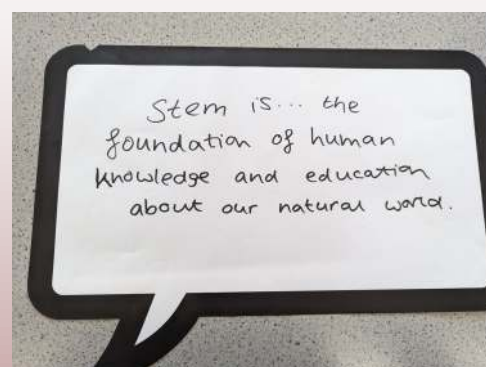
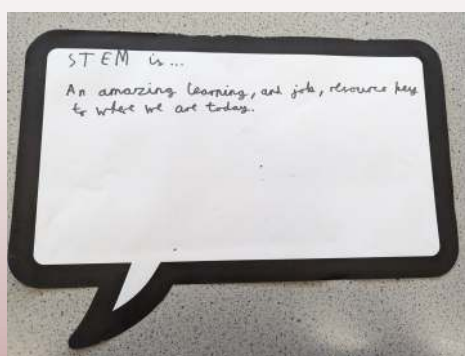
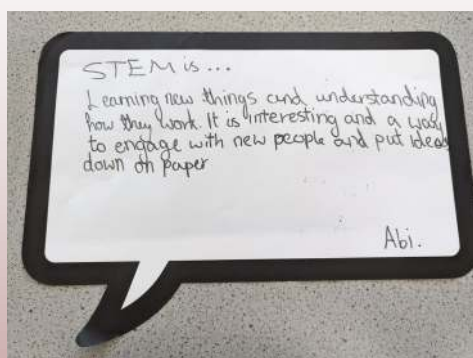
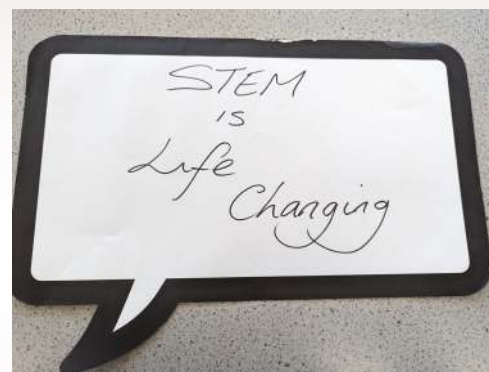
Thank you for inviting me.

**Harry J 9C**

**Thanks for a organising a great Stem fair.**

**I think everyone enjoyed it.**

**JJ 7A**





## Why is STEM so important?

STEM is important because it is found in almost everything! It's the elements to life that have made this poster, and the device you are reading this on, come true!

Why I personally think it's important...

I think STEM is important to me because when I'm older, I would like to be in Aerospace and Technical Engineering. This evolves STEM.



## So what does STEM mean?



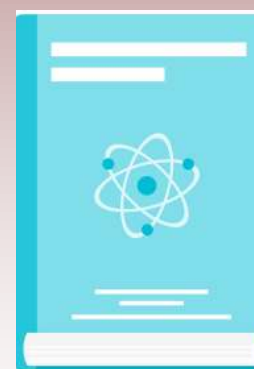


# STEM in the library

## Use the Library & **Win** at next year's STEM Fair!

### Things you need to be the best you can be at the STEM Fair:

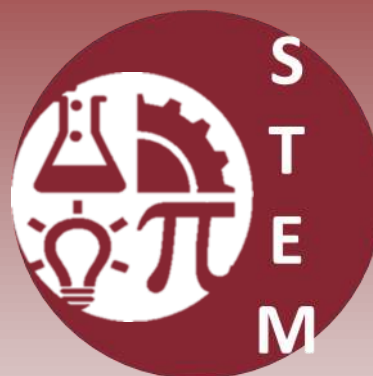
- **Knowledge**—you need to understand the theory behind your project
- **Research**—you need to learn and find out more about your subject, to make your entry better
- **Presentation**—your entry needs to look as appealing and interesting as possible
- **Planning**—the best STEM Fair entries have to be planned out carefully, especially when you're working in a group
- **Confidence**—you have to explain your ideas to the judges!



### How the library can help you with these things:

- **Knowledge**—the library has hundreds of books and magazines about STEM topics, available to everyone for free
- **Research**—use the library's resources to find out more about your topic, and get help with finding more good information online from the librarian
- **Presentation**—you can use equipment from the library to make your STEM display look its best
- **Planning**—use the library space to meet with your group, or talk through your ideas with the librarian
- **Confidence**—practice your pitch to the judges in the library — Ms Hill and the Library Leaders are happy to listen!





	Bronze	Silver	Gold	Platinum	Diamond
Extra-curricular	Attend one extra-curricular STEM club for two terms.	Attend one extra-curricular STEM club for at least a further two terms	Assist a member of staff in the running of an extra-curricular STEM club for a year term, assuming a role of responsibility.	Plan and run an extra-curricular STEM group for a year.	Take an active role with specific responsibilities for STEM such as setting up and leading a STEM activity
Leadership	Become a student leader within an area of STEM, for a minimum of two terms.	Become a student leader within an area of STEM, for a minimum of three terms, taking responsibility for a specific activity/event.	Become a student leader within an area of STEM for at least three terms, assuming a specific role of responsibility where you contribute to the running of events.	Become a student leader within an area of STEM, for at least two years, assuming a specific role of responsibility where you lead others.	Lead a student group/club within an area of STEM, taking responsibility for its planning, design, content and delivery.
Personal Development	Submit one article to the STEM newsletter or contribute to STEM subject display board <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
School and Wider Community	Take part in a STEM school or community fundraising event	Contribute to a STEM school or community fundraising event assuming a role of responsibility	Lead a STEM school or community fundraising event assuming a role of responsibility	Organise a STEM school or community fundraising event assuming a role of responsibility	Lead on, or assist the support of students in a STEM fundraising event across the school

See Miss Scanlan for more details on STEM awards / activities and colours