Proj.#	First Name	Last Name	Cate	Divisio	Project Title	Project Summary
5	Noor Aldeen	Injadat	Junic	Engine	Flying Cars	Now people say electrical cars take forever to charge and they run out of electricity quickly and they're slow which is true but we can use flying cars which are quicker for transportation. Also, we can use graphene and make them into a super capacitors which will make the cars electricity run out much slower and it's quick to charge our cars. I chose this topic because I want to save the environment by using flying cars as our new transportation and graphene supercapacitors as our new environmental friendly car charger. What interests me about this topic is how part of it is about saving the environment and how we can change our lifestyles. Also, it talks about things that are not out in marketing yet.
7	Jared	De Vries	Junic	Engine	Need A Hand?	I made two mechanical hands. The first one I can manipulate the fingers but I can't pick anything up with it,and my second hand can pick some items up.
9	Kevin	Shao	Junic	Engine	Dynamic Inductive Charging	In this project, we investigated if wireless charging could be implemented to charge electric vehicles while driving. We tested a variety of methods to improve the efficiency to the point where it could possibly a prototype vehicle.
11	Marcus	Lim	Junic	Engine	Project Haven: Gun Detection and Warning System	Project Haven is a multiphase project that hopes to make schools safer. It is a series of webcams, running a program that can detect guns. With this information, the program can deploy counter measurements against armed hostiles in the vicinity. This can eventually include specialized alarms and the alerting of authorities. This project uses technology from the software program Python, and an image detection software dubbed YOLO9000. Python is a high-level programming language for general purpose programming. YOLO9000 is a state of the art, real time object detection system that can detect 9000 object categories. The stages of Haven include: Stage 1a: Haven can detect objects in an embedded video Stage 1b: Haven can be trained to detect guns through the use of weights Stage 1c: Haven can detect people and guns with real-time webcam Stage 2: With the detection, an algorithm can be created that can institue a series of actions depending on the situation. This can range from alerting authorities, locking doors, controlling elevators, or sending audible alerts through the PA system Stage 3: Stage 2, but via a network of webcams Currently, project haven is past the Stage1a, and currently working on Stage 1b and 1c. My hope is that project Haven can help protect students and schools.
12	ahmed	Shwekh	Junic	Engine	Drones and Solar Panels	Drones, also called quadcopters or unmanned aerial vehicles are a popular toy for hobbyists. Some companies even want to use them for business purposes, like delivering packages right to your doorstep! However, drones typically have a rather short battery life. Does the added weight of a package affect a drone's battery life? Try this project to find out!
13	Sonali	Patel	Junic	Engine	Can Community-based Survey Kiosks Help Students Improve Communicating about Mental Health?	Hello, my name is Sonali and My project ponders; Can School and Community-based Anonymous Survey Kiosks Help Improve Communication for Student Reporting of Bullying or Stressful Experiences?
16	Skyla	Lar	Junic	Engine	Water Powered Car And The Ecosystem	A mini scale water powered car, controlled by a remote, and showing how it works, and how we did it. Also we are going to present how this would affect the ecosystem, both pros and cons.
17	Danny	Song	Junic	Engine	Storm Drain (converting mechanical energy to electrical energy)	our project is about converting mechanical energy to electrical energy using motor. our first idea was to use our object to make electrical energy by using water that was wasted because of storm drain, but we figured out that our object is not working well using water so we switched our main idea to converting mechanical energy to electrical energy.
18	Zixiang	Zhou	Junic	Engine	Teaching a Neural Network to Play Connect-4	Traditional methods of creating an Artificial Intelligence to play the game of Connect-4 is to use a method based on looking a certain number of moves ahead and determining how "good" each option is. A drawback of this approach is that the time needed to make a decision increases exponentially with the number of moves looked ahead. My project uses a different approach: Using Neural Networks, trained with a process similar to natural genetic selection. My method quickly learned to beat the traditional method. Once trained, a Neural Network can make a decision about where to move in constant time compared to the exponential time needed by the traditional method.
20	Victoria	Bennett	Junic	Engine	Pop Bottle Air Conditioner	I'm doing a Pop Bottle Ac. My Critical question is how could this technology be used? I had an idea for cooling stations in parks. The pop bottle air conditioner would have to be put in larger scale. The location and the wind direction is also a key factor. It would be cool to have it seen as a work of art. I would also like to add a water mister to add to the cooling effect.

23	Aly	Soliman	Junic Engine	SmartBin	My project, "SmartBin" is based on making it easier to throw stuff into the bin and to notify you when to throw it out. Hopefully long-term,I'll make it able to make notifications on the phone and be able to do it in multiple houses so it will reduce making garbage trucks go to houses that don't even have their garbage full at the time, it will also be based on (If it is possible to go long-term) making sure more than a certain number of houses (i.e 50 in a ward) have their garbage full. This will also lessen the amount of times the garbage truck goes which will lessen the Co2 being emitted. This may be possible to implement on public garbage boxes.
47	Manal	Assaf	Junic Engine	VR headset	hi my name is manal assaf. i didnt finish my project yet. so basically i have no summary ! thank you for your understanding. -
48	Adnan	Siddiqui	Junic Engine	Temperature's Influence on Battery Life	My project involves testing if the temperature of a battery will be influenced by it's temperature and testing the best insulation methods. Temperature's Influence on Battery Life
50	Nathaniaal	Silvester	Junic Engine	Measuring Soil Bearing Capacity	This project is about measuring how much capacity can different types of soil hold. The soil being tested are cryosolic soil(permafrost), sand, frozen sand, and luvisolic soil (common soil). The output of the tests will show which soil is the most stable and sturdy to build upon.
54	Lubna	Zabalawi	Junic Engine	Green Power Water Desalinator	Have you ever wondered how can salt water from the oceans be turned into fresh water that is suitable for people to drink in a simple less expensive way? Through a process called solar desalination! Desalination is the process by which salt water is made potable for drinking. In this science project, I will be making a solar water desalination device using readily available materials, and a power source that is free-the sun.
56	Mazzn	Abdelrahman	Junic Engine	Hybrid Water Pump Car	Its a hybrid car that gets its energy from the water pumps in the car. And the pump will pump and a transmitter will transfer the energy to the hybrid engine.
60	khouloud	Ghenai	Junic Engine	Lamp Magma	Question:how long will it take for the bubbles to diaper,the bubbles are made by alka seltzer pills. Prediction:the lava lamp with 20 pills of aka seltzer will be timed the longest. variables controle:1L bottle, quantity: vegetables oil,water, food colouring tempeture:water, vegetable oil, food colouring, the same time of food colouring. variable independent:quantiti water,variable dependent: how long the alka seltzer melts.To make a lava lamp you need 1L bottle,3/4cups of water the whole bottle with vegetable oil,10 drops of food colouring you need aka seltzer. You can put how many you wish but my partner and I did 4 expirements 1bottle has 1/2pills of aka seltzer and it was timed for 2.40s.Second bottle we put 5 1/2pills of Alka seltzer it was timed for 8.26s,3 bottle has 10 pills of aka seltzer it as timed for12.02s.The last bottle we put 20 pills of Alka seltzer and was timed for 17.51s.go further instead of filling the bottle with vegetable oil we filled the 1L bottle half way with the vegetable oil.The bottle with 1/2pills of aka seltzer took 47s,secound bottle has 5 1/2 pills of aka selter and was timed for 3.55s,treed bottle has10 pills of aka seltzer,was timed for7.29s finally the last bottle has 20pills of aka seltzer and was timed for 12.45s.This is a little summary explaining my partner and I project, I explained the method,variables, go further,my question and predictions. this is how you make a lava lamp.
62	Sanna	Mohamed	Junic Engine	H.A.R.R.I.S	My project to figure out a way to let kids who are hospitalized to go to school without actually being in the building. the benefits of this project are that the parents don't have to worry about their kids' education when they are to sick to come to school. Also, the kids get to have fun in their old or new school and see their friends face.
63	Rami	Elmedany	Junic Engine	How to Make a Simple Electric Motor	My project is about how a motor can work, but in a simple way. Their will be a a coil(wire) connected to the ends of a battery which will spin because under the coil it has a magnet that attracts the coils electricity so the coil will eventually spin as a motor
67	Charlie	Gale	Junic Engine	Reinventing the Wheel	Inspired by Formula 1 race cars, I wanted to invent a way to make it faster and easier to replace car wheels. It could be a new standard for most vehicles that would save car owners time and money. My invention will also have to meet safety and anti-theft standards.
70	Junior	Nyamusa	Junic Engine	How Safe Is Your Phone?	Our project is about finding out how much radiation is emitted from cell phones, and, using background research, to see whether that radiation is safe for people.
75	Richmonde	Melo-Wisema	Junic Engine	Wind Power	I am using wind turbines to see which will generate more electricity. I will be putting a fan in front of each turbine to see which will make the most energy by spinning, well hooked up to a motor that will be monitored by a voltmeter to see which is the best.
78	Marcus	Kukacka	Junic Engine	The Portable Support Bar	My project is basically a device that helps the handicapped and the old with their everyday lives. The device I designed will help them get them in and out of a seat and provide a support for when there is no other support available.
85	Julia	Geurten	Junic Engine	Solar Tracking Panel	I am constructing and testing to prove if a dynamic solar panel(Solar tracking panel) is more efficient than a static solar panel(normal solar panel). I will run tests on both and compare both results.
88	Ali	Hamou	Junic Engine	Hydrogen - The Clean Energy	A series of tests are conducted to measure the quanitity of hydrogen production using the process of electrolysis. These tests are done in order to determine the feasibility of hydrogen as an alternate fuel source, which can be produced in one's own home. Different currents are used, as well as the quantity of baking soda as a catalyst and these changes are measured. Our ultimate goal is to raise awareness about easy to produce alternative energies that are clean and renewable.
95	Jacob	O'Hanley	Junic Engine	Electro-Magnetic Train	My project demonstrates the basics of magnetic attraction and repulsion and how magnetism can be created with coiled wire and electricity to create propulsion. The "MagLev" (Magnetic Levitation) trains of Japan and Germany use magnetic attraction (Japan) and magnetic repulsion (Germany) to levitate and propel an electric train.
103	Mohammad	Elhayek	Junic Engine	VISC (Visually Impaired Smart Cane)	this project is about a stick for the visually impaired or blind people now there are already canes for the blind but what if we could add more to make it so much better and easier for them to find there way around town.

104	Muhammad	Shahzad	Junic	Engine	Hydraulic Bulldozer
106	Nabeeha	Anwar	Junic	Engine	Shading Solutions for LED Pollution
112	Natalie	McIntosh	Junic	Engine	Phone Charger Powered by Body Heat
3	Bianca	Ciohodariu	Junic	Life Sc	How Does Temperature Affect Magnets
4	Danya	Abbas	Junic	Life Sc	Sugar Intake
8	Gabriel	Lagerlund	Junic	Life Sc	Homemade DNA Tester
10	Sriya	Chakravarty	Junic	Life Sc	Watts Growing?
14	Holly	Venter	Junic	Life Sc	Under Pressure
19	Dominic	Oates	Junic	Life Sc	Will it Grow?
24	Ahmed	Salah	Junic	Life Sc	Alzheimer
45	Sumaya	Omar	Junic	Life Sc	Does Appearance Matter at the Time of Being Hired in the Educational Area?
49	Layla	Emara	Junic	Life Sc	SSCG (Super smart crossing guards)
51	Salena	Sun	Junic	Life Sc	Drastic Plastic
52	Hafiz	Adam	Junic	Life Sc	Do Men and Women See Differently
53	Kim	Tran	Junic	Life Sc	Vitamin E and C = No Bacteria?
57	Mitchelle	Wangui	Junic	Life Sc	Candy Confusion

I made a hydraulic bulldozer with cardboard and syringes. The main goal was to test hydraulic pressure.This project determines the use of hydraulic pressure, using syringes. This is an easier and less expensive way of lifting objects. Without the use of fuel to fulfill a day worth of lifting, and releasing all the smoke, syringes are the way to go.

Our project revolves around building an effective shader to stop light pollutions. We have built a few lamp shades and have used an app called Light meter that checks for the amount of illuminance per area. We check each shade with the app to see which one works effectively. The one that produces the lowest amount of illuminance will be the best lamp shade that works effectively.

How can we contribute to today's world? While searching for our science fair project idea, we came across a heat sensored flashlight, powered by body heat. After we went over multiple ideas, we finally asked ourselves how can we use the idea of a heat powered flashlight and incorporate it into one's daily life. Then we came up with an idea for a phone case charger powered by body heat

When we use magnets in different seasons, we sometimes feel like that they are not always magnetic. Therefore, we want to find out whether temperature affects magnets, and how can a magnet be more magnetic.

Our experiment is measuring how invertase changes the amount of glucose that is present in certain drinks. Invertase is an enzyme and its sole purpose is to convert sucrose into glucose. We will be measuring this using glucose test strips before and after adding invertase to track the change.
My partner and I will be conducting an experiment in which our homemade DNA testing machine will compare different colours of food dye. We will be using different colours food dye as a substitute for DNA.

The purpose of this project is to determine which intensity setting of a light source helps plants grow best in an indoor greenhouse and if plants can survive and thrive with only artificial light instead of sunlight. It examines height and the physical appearance of several different plants (which are planted as seeds), kept in transparent boxes and exposed to four different light conditions - no light, 40 Watts, 60 Watts, and 100 Watts.
This project tested how stress affects blood pressure using a structured quiz and reward system. It compared four groups of individuals: gifted males, non-gifted males, gifted females and non-gifted females.
In this experiment, I chose to compare the effect of LED light versus sunlight on plant growth. Controlling for daily time of light exposure, plant watering, I evaluated plant growth after 14 days of exposure.

Alzheimer is a disease that comes at an age of 60 to 65 years old. Alzheimer is a bad disease, who every has this disease, there brain will shrink, start forgetting everything in the past or 5 minutes ago. The stages when someone is getting Alzheimer are, Stage 1: No Impairment. During this stage, Alzheimer's disease is not detectable and no memory problems or other symptoms of dementia are evident. Stage 2: Very Mild Decline. Stage 3: Mild Decline. Stage 4: Moderate Decline. Stage 5: Moderately Severe Decline. Stage 6: Severe Decline. Stages 7: Very Severe Decline. Every person with Alzheimer's disease experiences the disease differently, but patients tend to experience a similar trajectory from the beginning of the illness to its merciful end. The precise number of stages is somewhat arbitrary. Some experts use a simple three-phase model (early, moderate and end), while others have found a granular breakdown to be a more useful aid to understanding the progression of the illness. On average, people age 65 and over survive four to eight years after Alzheimer's diagnosis. However, some live for as many as 20 years.

We all know that we are judged by our appearance, our appearance is all about how we dress, how we comb our hair, all that always matters, but we want to know if simple details in our faces like our nose type or eyes color could affect if someone is trying to be hired in the educational area. Maybe people with brown eyes and black hair are less likely to get hired cause of their skin or hair color.

Our project talks about how smart sensors can help us because they detect any speeding cars and how to stop them if a person is crossing the road, and a car comes speeding, then the smart sensors will detect and protect anyone crossing the road.

an investigation of micro-plastics in Canada's waterways and drinking water; how can we test for the prevalence?

my project is about whether men and women see differently. I must test a few participants of both genders by showing them a busy image and letting them study it for 10 seconds. afterwards I give them a minute to list everything they noticed and then compare what each gender listed.
This project is to find out if vitamin C or E aids the effectiveness of antibiotics. The experiment will also analyze at what ratio the vitamins and antibiotic will be the most effective.

We are testing to see if 6 year old children can find the difference between Medicale pills and candy better than 5 year olds.
The children will NOT be exposed to any type of medication.We will be using a slideshow.The slideshow will contain examples of the medication and candy that look alike,the children will then select which one they think is candy and which one the think is medical pill.

59	Aya	Elmawazini	Junic	Life Sc	Cool Beans!
64	Adyan	Iqbal	Junic	Life Sc	Does Colour Matter?
65	Hamail	Raza	Junic	Life Sc	Plastic From Milk?
69	Rachel	Kodde	Junic	Life Sc	Does 'Green' Stain Removal Work?
73	Lillian	Hartley	Junic	Life Sc	Saving Ontario Waters
74	Injey	Ali	Junic	Life Sc	Downtown London Needs an Automated Underground Garbage Collection System
80	Layal	Ibrahim	Junic	Life Sc	The Bullying Theory
81	Tristan	Look-Hong	Junic	Life Sc	Danger: Pesticides
83	Alaa	Ghanem	Junic	Life Sc	Liquids Effect on Teeth
89	Serene	El-Kahwaji	Junic	Life Sc	How To Turn Waste Into Life
91	Rayyan	Khan	Junic	Life Sc	Effect of Enzymes on Digestion of Protein
92	Phyleine	van Ravenhor	Junic	Life Sc	"What Makes You Think I Am Lying?"

Our experiment is on how light affects the way plants grow. The plant we decided to use, was a bean plant, as the grow very quickly. We have tested 3 plants, which are the same type of plant, and have changed the amount of light each plant gets, we did this by using a growing lamp. One plant was tested for 3 hours, one for 6 and one for 12. Then, the bean plants were mesured and noted onto a chart, which were then displayed onto a line graph. Pictures were taken every 3 days to display the growth of each plant visually. The same amount of water was used each and every day for the plants to grow, the mesurement was one teaspoon, no less, no more. Our project is very simple, yet interesting, we hope you enjoy!

Our project is about colour preference between genders. In our project, we conduct a survey to figure out the most preferred colours between males and female. We use all the primary colours, secondary colours, and some other colours like pink, brown, and gray.

The purpose of this project was to create a biodegradable plastic that would decrease the number of marine animal deaths due to plastic entanglement each year. To do this I experimented making plastic out of 3 different kinds of milk(2%, chocolate and almond) to figure out which one would biodegrade the fastest and which one would be the strongest. In the end, the 2% came in first, biodegrading the fastest and holding the most amount of weight without breaking. The chocolate milk came in second place and the almond coming in last as it failed to curdle thus not turning into plastic.

My science fair project is on “Which One Out Of Oxiclean, Nellie’s All-Natural Wow Stick, And A Natural Homemade Stain Remover Is The Best?” because I wanted to know how to get two common stains out of cotton the best. I also wanted to figure out if there is an environmentally friendly way to do so.

I found out lots about the different ingredients that are good and bad for the environment. I researched how stain removers work by dissolving a stain in a solvent. I found out that bleach is not good for the environment, but hydrogen peroxide with some lemon juice is a good alternative. Knowing how the ingredients work and what they are, determines if the removers are made up of natural ingredients. I think this is an important topic because God calls us to be stewards of the earth and take care of his creation. The information I learned is practical and will help me make good choices for whenever I am cleaning.

Out of the three stain removers I tested I have found out that Oxiclean works the best, but it is not the best for the environment.

The purpose of my project is to create awareness of the damage that adding extra phosphorus to fertilizers is making within the outdoor environment (blue-green algae), and even within our own households.

Through growing plants using 3 different fertilizers and 1 with just distilled water, I will test my hypothesis that naturally occurring phosphorus is enough to allow sufficient plant growth. The added phosphorus contributes minimally to plant growth, however it contributes significantly to the growth of blue-green algae in our waters. Blue-Green algae is very harmful to our environment, people, aquatic and animal life. I am hopeful to find ways to reduce the amount of phosphorus in fertilizer, and limiting the amount getting into water through agricultural run off.

my project is about an underground garbage system, i got this idea when i travelled to turkey last year. i really thought it was super nice i really think down town does need a few of these around it. Im trying to implement it in London. Im going to be creating a model with sensors that moves and more details coming after that.

This project is about what are other sides if the story of bullying and how we can deal with such situation and how to help fix the problem

In today's world, food safety is vital. One of the major controversies in this area of study is that of pesticide use. I proposed that pesticides have the capability to leak into bodies of water through soil, causing tremendous damage to marine life. To test this, I used two different types of pesticides; an all natural one and a commercially used one (Neem oil vs. RoundUp). I measured the amount of pesticide that was found in water runoff from two mint plants. One plant was applied with neem oil, while the other was applied with RoundUp.

Using eggs my partner and I will see the effects of different liquids on the eggs. The eggshells will simulate tooth enamel. We are testing liquid that have high sugar, or acid, or calcium content.

I this project, the main objective is to make most out of our waste. We talk about how waste, garbage, and recyclable materials, affect all living things. We try to give examples of how we can make more of this waste and actually make it useful.

In this project, I will explain how different enzymes affect the digestion process within human body on different proteins and how that process works.

For my project, I chose do something about lying. I decided to see what kind of strategies worked best for people to guess if someone is lying. I did research on why we lie, how often we do it, and how age affects the amount of times we lie in a 24 hour time. I tested a little less than 50 people and for each person I told them seven or eight things, four of them were lies. Each time I lied, I used the four strategies and the person I was testing would tell me whether or not they think I was lying and why. I used; covering my mouth/nose, having way too many details, making no eye contact, and repeating the same over and over in my sentence. My hypothesis was that making no eye contact would work best for people but only 50% knew I was lying when I did this, while 75% of people knew I was lying when I had too many details and overexplained what I was saying.

93	Mohamed	Said	Junic Life Sc	How To Cure Auditory Hallucinations
96	Hannah	Webb	Junic Life Sc	Light and Colour
97	Antara	Gandhi	Junic Life Sc	The Blooming Threat
99	Norhan	Rady	Junic Life Sc	CLPDT (Carbidopa-levodopa Parkinson's Disease Treatment)
100	Autumn	Tetreault	Junic Life Sc	Dream Job and Science
107	Ella	Koopman	Junic Life Sc	Battling Bacteria
108	Joshua	Finemore	Junic Life Sc	5 Second Rule
109	Avery	Cobban	Junic Life Sc	Words vs Colours
111	Isabella	Olson-Lamari	Junic Life Sc	Fertilizer Fun
114	Olivia	Siroen	Junic Life Sc	The Big Fizz: The Art and Science of Making Bath Bombs Eco-Friendly
116	Adalene	Boisvert	Junic Life Sc	Breakfast of Champions
117	Arwen	St.John	Junic Life Sc	Power Plant

Auditory hallucinations are diseases that involve with hearing. Some people hear what things that were not said. The purpose of this project is to find out how to cure this disease.

My project involves investigating the effects of different lighting on how tweens perceive colour. My question: Is there a gender difference in how people perceive colour in different lighting? I used 10 test subjects and showed them 3 different colours (dark blue, dark green and dark purple) in 3 different types of lighting (semi-darkness, fluorescent lighting, daylight) and had them answer a short questionnaire to see how they perceived the colours in different lights. I also did background research on how the eye works, how we "see" colour, and conditions related to colour perception (colour blindness, glaucoma, and macular degeneration). The purpose of my project is not only to learn about the process of how we perceive colour, but to find out if people can be helped to see colour more accurately (or in the generally accepted way) by using certain types of lighting.

In this project, we tested the effects of weed killer and fertilizer on algae blooms. We used algae blooms and applied both weed killer and fertilizer to the algae to test what the real problem was. Would the weed killer make the algae blooms grow further or would the fertilizer prove more dangerous?

Parkinson's disease is a long-term degenerative disorder of the central nervous system that mainly affects the motor system.
The symptoms generally come on slowly over time. Early in the disease, the most obvious are shaking, rigidity, slowness of movement, and difficulty with walking. Thinking and behavioral problems may also occur. Dementia becomes common in the advanced stages of this disease.Depression and anxiety are also common occurring in more than a third of people with PD. Other symptoms include sensory, sleep, and emotional problems. The main motor symptoms are collectively called parkinsonism or a parkinsonian syndrome. The cause of Parkinson's disease is generally unknown but believed to involve both genetic and environmental factors. Those with a family member affected by this disease is more likely to get the disease themselves

Our project is going to tell you about the use of science in the Job of a Crime scene investigator including D.N.A, Finger Prints and many other things.

My project tests the effectiveness of various subsorances to limit bacterial growth. The substances that I tested were; Purell hand sanitizer, soft-soap hand soap, tea tree oil and Oregano oil. All four of these products are advertised as having anti-bacterial properties.

Our project involved dropping apple slices on the floor for 5 seconds using 2 different strategies. The first strategy was dropping the apple slice on the floor for 5 seconds and then cutting off the part that touched the ground and placing it in a petri dish which was then sealed for 3 weeks. For the second strategy we dropped apple slices onto the floor for 5 seconds and then using latex gloves we swiped the part that touched the floor with our protected fingers and then swiped the agar agar solution, the bacteria was sealed in petri dishes for 3 weeks. We concluded that it is not safe to eat the apple slices that are dropped on the floor for 5 seconds after having been stored for 3 weeks.

My project is called Colours V.S. Words, and it is on the Stroop Effect. The Stroop Effect was discovered by John Ridley Stroop when he wrote a paper on it in 1935. The Stroop Effect investigates the play when reading incongruent words versus congruent words. This means that when a person is reading the colours of words, it is easier when the word is the colour the word is written in. I took seven Grade Fives and seven Grade Sixes to do an experiment. I called up a test where you are required to say the colours of the words that appear on the screen, and tied them. I hypothesized that it would take twice as long to read the incongruent words versus the congruent words, but this was incorrect, as it took the volunteers only an approximate five seconds longer. I also hypothesized that there would not be a large difference in times between the Grade Fives and the Grade Sixes, which was also incorrect. The Grade Fives took approximately seven seconds longer than the Grade Sixes.

Our project is about which homemade fertilizer (coffee grounds, molasses, fish water, cat food and regular soil) will make sunflower seeds grow the tallest, fastest and greenest.

Bath Bombs are great for making baths special by adding fizz, softening bath water and providing a pleasant odour. These qualities can help relax the bather in many ways. Looking at the ingredients, however, I found the added essential oils are not eco-friendly. I hypothesised that bath bombs could be made eco-friendly by replacing essential oils with natural ingredients such as rose petals. I made eco-friendly bath bombs, replacing essential oils with fragrant rose petals and conducted blinded experiments to measure the multiple qualities of the eco-friendly bath bombs. After unblinding the results, I found that selected fragrant rose petals could take the place of essential oils while maintaining the qualities of the bath bombs. I concluded that I could make eco-friendly quality bath bombs.

In this project, I compared school program provided breakfasts to a nutritionally balanced breakfast. I had a group of participants take a mental acuity test with no breakfast, again after eating a bowl of Cheerios and once more after drinking a nutritious smoothie. This was to test a link between a healthy breakfast and academic performance.

Testing the effect of different coloured lighting on plant growth in a 10 day period. Bean sees she were planted and their growth recorded.

118	Adam	Eldash	Junic	Life Sc	Are Fingerprints Inherited
120	Zohaib	Yousaf	Junic	Life Sc	The Plant's Pain From Acid Rain
121	Shayan	Mahmood	Junic	Life Sc	The Effect Of Different Disinfectant Concentrations On Bacterial Resistance
122	Miranda	teBokkel	Junic	Life Sc	Are Your Leftovers Safe?
123	Aisha	El-shwekh	Junic	Life Sc	Apitherapy
1	James	Levy	Junic	Physic:	La filtration de l'eau
2	Emaan	Umar	Junic	Physic:	Art of Convincing
6	Hayley	McKnight	Junic	Physic:	Orbeez!
15	Katrina	Hope-Ede	Junic	Physic:	How Textiles Burn
21	Faith	Moniz	Junic	Physic:	How Does Smell Affect How You Feel?

The project aims to collect fingerprints specimens from at least 15 related sibling pairs and another 15 unrelated pairs.

Investigator is going to compare the arch,loop, and whorl characters in each pair involved and see if the similarities are related to sharing the same genetic pool by being related siblings versus being unrelated.

The results will be depicted in table form. A line and bar graphs would be then created to display the results.

With modern age technology, such as power plants and factories —us humans can produce numerous amounts of goods, but there are underlying consequences with that process, and they are impacting our Earth daily. Acid rain isn't a very well known consequence, however, it can cause disastrous amounts of damage, due to the quantity of harmful chemicals from power plants and factories —and we aren't going to put this issue at halt, but rather, intensify it. Before the worst case scenario happens, we'll need prior knowledge of what subsational damage acid rain can do. Earth is surrounded by plants, crops, wildlife —and acid rain can precipitate overtop of them freely. What damage will acid rain do? What can we learn from it? And will it pose a threat to human lives?

Disinfectants (biocides) are widely employed in controlling hospital infection, home environment, sterilizing medical equipment, and decontaminating skin before surgery. Their activity depends upon several factors, notably concentration, the period of usage, PH, temperature, the type, and finally nature/number of microorganisms to be inactivated. The aim of this project is to examine how the concentrations of different disinfectants can affect bacterial resistance. This project uses the Kirby-Bauer disk diffusion method to measure the effectiveness of an antimicrobial agent, and how it changes over time.

This project looked at which place in your house (fridge, freezer, and counter) will cool different amounts (large, medium, and small containers) of food in the appropriate time. The hypothesis made was that cooling the food in the fridge and freezer would be sufficient enough to get the food out of the danger zone (60°C to 4°C) in the appropriate time. After cooking the chili to a set temperature, it was left on the counter for 20 minutes to represent dinner time. The chili then was placed in different sized containers and the temperature was measured every 20 minutes in the fridge, freezer, and counter. After testing all of the methods, only the smallest container in the freezer cooled in the appropriate time period. Therefore, three more methods of cooling in the medium container were attempted, which included soaking the container in ice while stirring, soaking the container in ice without stirring, and stirring an open lid container in the freezer. None of these methods cooled fast enough in the appropriate time.

Apitherapy is the sting of a bee, it's used in a treatment, for the people that have multiple sclerosis, arthritis and it could work for other dieses.

The aim of my project is to address the water problems in countries such as: Ethiopia, puerto rico, Bangladesh.etc and our problems right here in London and surrounding areas. The place that really got me thinking was Ingersoll. I concluded that we need safer, cheaper, and more effective ways to make water drinkable. I decided on several methods based on what was available to me and what I could find round the house that a standard household would have or is very commun and cheap at any store. I had access to U.W.O's chemistry technology to run my tests. In the end I found two sufficient methods to purify water. One of them is more expensive but produces more clean water, faster. This is a camp filter. The other is highly adaptable to many situations and is very inexpensive to make, but is quite slow to produce a satisfactory amount of water, and a little difficult to position depending on what materials you use and, impractical for emergency situations unless you set it up ahead of time. This is the method of distillation. In part I think I demonstrated a good but not superb solution to this world plaguing issue.

My project will include:
Methods and tricks to convince someone
When and where to use them
An experiment testing them
Psychology in general and some brief history of it

For our project we tested to see what would happen if we put uniform-sized dry orbeez into different liquids for a 2.5 hour time period. The liquids that we used were water, sugar water, salt water, plant food water, milk, apple juice and laundry detergent. We found that the orbeez grew largest/fastest in the sugar water.

in my project i will compare different kinds of textiles and how quickly they burn. I will compare synthetic materials to natural ones and see which fabric is the safest to wear around fire. This could help keep young children safe around campfires or fireplaces. I will also perform research on the different types of fabric I am using and their history.

My science fair project is about how people's smell affect how they feel emotionally. I used three different essential oils to get my results. I had people smell them and pick their favorite, they then had to say how it made them feel. I have observations and conclusion diagrams on my display board and much information on my topic.

22	William	Eastaugh	Junic	Physic:	Fair de la crème glacée
25	Kristianna	Toth	Junic	Physic:	H2O
46	Anisa	Dahir	Junic	Physic:	Do Video Games Have Faster Reaction Times Than Non- Players?
55	Abigail	Bickford	Junic	Physic:	Put a Shine On It
58	Alla	Ali	Junic	Physic:	Chemistry of Ice-Cream Making: Lowering the Freezing Point of Water
61	Anne	Vogt	Junic	Physic:	Mentos au boisson gazeux!
66	Jana	Almajali	Junic	Physic:	Solar-Powered Machines
68	Robbie	McAfee	Junic	Physic:	Sunglasses vs UV radiation
71	Alexandra	Karagiannis	Junic	Physic:	Comparison of Water Filters
72	Kennedy	Merritt	Junic	Physic:	Chocolate Dissolving in Liquids
77	Connor	Switzer	Junic	Physic:	Effects and Science of Baseball
79	Amy	Kim	Junic	Physic:	Bio-Plastic
82	Aya	Ismail	Junic	Physic:	CAR T-Cell Therapy: Re-engineering the Immune System
84	Andrew	Benn	Junic	Physic:	The Effect of Magnetic Fields on Blood Pressure
86	Logan	Mehta	Junic	Physic:	How Magnets Affect the Velocity of a Bullet

Ce projet explores les temps différent de fondre entre la crème glacée fait du chèvre et la crème glacée fait avec la lait du vache. On montre que les tailles de molécules différentes dans lait effet la temps à fondre la crème glacée.

This project explores the different melting times between goats milk and cows milk . We demonstrate how different size fat molecules in the two milks affects the melting time of ice cream.

My project involves testing emergency water purification. I tested a common carbon water filter (Brita) versus a homemade water purification system utilizing paint buckets, a water hose, locally sourced gravel, locally sourced sand, and a string filter. I used local creek water and tested a control sample, a carbon filtered sample, and the homemade filtration system sample.

When someone yells, "Think fast!" and throws you a ball, are you able to catch it? When the bell rings at the end of class, are you the first one out of your seat? If so, then you likely have quick reaction times. In this science fair project, we'll look at reaction times how fast people react to sensory events and see if people who play video games have faster reaction times than those who don't play video games.

Our parents always tell us to wash our hands after touching money, so we were wondering what liquids cleaned pennies the best.

This study investigated how different liquids with varying pH cleaned pennies. We used two acids (lemon juice, grapefruit juice), one neutral liquid (water) and one base (toilet bowl cleaner). After submersing pennies for 3 days we found that the acids cleaned the pennies the best, then the water was second best, and then the toilet bowl cleaner was the least effective.

I am working on the project on my own, and my experiment will take a bit of time to do what it needs to do what it has to do.

J'avais place des Pur Minthe Mentos dans Soda Stream, Du citronnade gazeux, Du ginger ale, cola, et du cola diète. Je redard epour un reaction chimique et vu des bonne résultat. Il y avait un peux de reation et beaucoup de reaction. Je vais dit plus chez le fete de science.

Have you ever wondered what the future will look like or be powered by? I will try to answer that by telling you about solar powered machines and how they work. Today, solar panels are less expensive than they were a couple years ago. And in a couple of years from now, they are going to be even cheaper so we can get all our energy from a renewable source.

Testing the difference between sunglasses and the amount of radiation that they block out, using a UV light source, different brands of sunglasses and UV beads.

This project examines a series of substrates (sand, powdered charcoal, granulated charcoal, and sphagnum moss) to determine which will be most efficient at filtering contaminated water.

Our project is chocolate dissolving in liquids. We chose to do three mini experiments, to test our main experiment. The properties are Acidity, Salinity and Temperature. We are going to have Red cabbage juice out, so you might want to be aware because it might stink. It's going to be how we test Acidity like if it's going to be acidic or a base.

About science behind things that can change baseball, statistics mainly. Analyzing the statistics and showing a demonstration of the sweet spot of the bat. Explanation of a short experiment evolving the height of bounce of a baseball at different temperatures, then a conclusion about how things can change to make the game stats more fair.

Our project idea is to make plastic out of vegetable starches to help the environment since they are currently making plastic out of oil and oil pollutes the ocean if it spills. Then we decided to figure out which vegetable starch plastic is the strongest and most convenient to make. After that, we wanted to see if store-bought starch works as well as homemade starch, so we tried extracting the starch to see if it works better or not. We also tried combining different vegetable starches and found that the effects combined. Mostly, we wanted to help the environment. However, while making these plastics and experimenting with starches we learned a lot.

My project is about reengineering the immune system using a cancer patient's T-cells, they are re engineered to grow CAR (chimeric antigen receptors) on the surface and are then called CAR T-cells. They attack the cancerous cells in the patients body and hopefully cure the patient.

My project is testing the effects of magnetic fields on blood flow. To test this I created a special bracelet that holds neodymium magnets. I measured subjects' blood pressure before and after wearing the bracelet and demonstrated a small effect.

In my experiment I accelerated metal balls between magnets to transfer kinetic energy to other balls causing a chain reaction that shot a metal ball (bullet) from he end of a wooden rail. I measure the distance the bullet travelled to calculate the velocity of the bullet. I was trying to see if adding more magnets increased the velocity of the bullet. I also changed the distances between the magnets to see how this affected the velocity of the bullet.

87	Marissa	Vodden	Junic	Physic:	Magnetic Force Levitating Car Our magnetic levitating car, is a car and track made out of 3D printing. It involves lots of magnets since it moves by itself only levitating. It is levitating between two forces of magnetism. The magnet fits between them, creating a repealer to opposites so that it moves. The bottom base is a track witch does not move. The top is just one magnet that does move by a human, who is dragging the top magnet, creating the car to move across the track.
90	Sunaina	Vallamkonda	Junic	Physic:	Easy, Green, Inexpensive: Water purification This is a project aimed to discover if biochar really is the easiest to make, most environmentally friendly, and inexpensive water purification system there is (according to our previously conducted research).
94	Rhys	Hartley	Junic	Physic:	Taking the Sting Out of Rust Our project explores ways to reduce the natural occurrence of rust on metal. We used bees wax, bare metal, black under coating and oil spray. After leaving the metal outside in the natural elements and spraying water and sprinkling salt daily, we measured the amount of rust that occurred in the four different sections of a piece of metal. Our hypothesis is that using bees wax is a natural way to reduce the amount of rust on metal. The importance of bees wax is that it is not harmful to the environment in ways that current rust proofing methods are. We wanted to explore a natural way to effectively stop rust from occurring.
98	Kira	Pye	Junic	Physic:	Fabriquer le Liquide Correction I tried to make liquid correction (Correction fluid) with common household ingredients such as baking powder, corn starch, tapioca flour, paint and all-purpose flour. I tested for coverage, whiteness, writability and drying time.
101	Weam	Abbas	Junic	Physic:	The Corrosion and Oxidization of Different Metals The corrosion and oxidization of different metals and what corrosion and oxidization is, And how corrosion and oxidization occurs what causes it and why it happens.
102	Katelyn	Coppola	Junic	Physic:	Different Methods of Food Preservation My science fair project is on how lack of air (vacuum sealing), salt and vinegar affects the preservation of food. I was inspired by how, in many old books that I have read, they preserve food by packing it in barrels of salt. As for the vinegar and lack of air, I have noticed that many foods in the grocery stores these days that are NOT filled with artificial preservatives are pickled with vinegar or vacuum sealed. I am interested to see how well these methods actually work. I will be taking a regular apple, cutting it up, and placing the pieces in separate jars. The jars will hold: water, white vinegar, salt, salt water, and nothing. I will also have a jar where the apple inside is inside an airtight plastic bag. After the apple slices have been put in the jars, I will seal the tops of the jars and leave them on a shelf for a month, making sure that they all receive the same light and humidity, and air pressure from their outside environment. After a month I will open the containers to see which one is the best preserved. My predictions are that the apple slices in the salt and vinegar will be the best preserved, while the slices in the water and the jar with nothing will be completely rotted. I will take small samples of the apple slices and examine them under a microscope to be sure of my results.
105	Christiaan	Meiling	Junic	Physic:	The Coin Cleansing Experiment The experiment is going to involve several liquids and many dirty coins. I will measure the magnitude of the dirtiness of each coin before the cleansing process. There will be a small glass of each different type of liquid, and the coins will remain in there for roughly 24 hours. The coins will then be analyzed for their magnitude of dirtiness again. After that the coins are then put through 10 seconds of scrubbing using a toothbrush on each side, or twenty seconds total. The magnitude would be measured a third time after the scrubbing. All results will be tallied and the victorious liquid will be determined.
110	Eesha	Garg	Junic	Physic:	Microplastic Pollution: One Laundry Load at a Time This project is an investigation to assess what factors affect the release of micro plastics fibres into waste water during the washing of household laundry.
113	Nina	Dimitrov	Junic	Physic:	All About Tsunamis For my project, I tested two different ways to lower the impact of a tsunami, by placing types if walls in front of the shore. This will lower the amount of displaced water (water that reaches the land), therefore, it will result in less damage being caused. The two walls I used are a straight, wooden wall, and a curved wall made of an aluminum half pipe. Both walls were effective, however, the curved wall was the most effective, and it resulted in 806mL less of displaced water reaching the land.
115	Amy	Bergen	Junic	Physic:	Lie Detector Gracie and I made a lie detector for our project. What we did first was we researched a lot about our lie detector so we could get more information about it. Then we thought of our question which is, " Is the truth overrated?" After that we tried to figure out how to work the blood pressure monitor and stethoscope and put it together so it would be a lie detector. finally we practiced everything so we would be ready for the science fair.
119	Jordan	Blizzard	Junic	Physic:	Les molecules deau contre sucre Our experiment is water molecules versus sugar molecules.What we did is we put 4 cups into a microwave,two of the cups have water,two of the cups have water and sugar.As soon as they come out of the microwave we measure the temperature.Our question is “Which cup with water will be colder?”
26	Aditi	Basdeo	Inter	Engine	Panda - Efficiently monitoring and reducing energy use on HVAC The panda system gathers temperature statistics throughout a house and constantly relays data back to a centralized information center. Panda will help ensure that the temperature throughout a home is evenly distributed to reduce overall energy consumption and cost. Therefore, resulting in an overall healthier environment for you and the world.
34	Alex	Ouellet	Inter	Engine	The Effect of Temperature on Magnet Strength Our project shows what happens when magnets are heated or cooled to extreme temperatures. We tested 4 different temperatures all using the same type of magnet, which included a freezer (-20°C), an ice bath (0°C), Room temp.(24°C), and boiled water(100°C). The question is, what will the magnets do? Will they loose or gain magnetic capabilities?
40	Aidan	Stiles	Inter	Engine	Weather-O-Meter - An Internet Connected Weather Meter Have you ever woken up in the morning and wanted to know what the weather was, but you couldn’t find your phone? The Weather-O-Meter is here to save the day! The Weather-O-Meter is an internet-connected Weather meter that uses data from Weather Underground to give someone information about the weather, mainly temperature. It’s easy to use and can be read by almost anyone!

41	Sara	Villavecer	Inter Engine	The Mobile Soccer Net	Our project is a mobile soccer net controlled by the coach to sharpen shooting accuracy and allow for rapid fire practice. The net was created with the goal of helping Sarah specifically, practice her soccer skills effectively.
142	Anika	Garg	Inter Engine	A Novel Water Filtration System Using Natural Materials	A novel, low-cost, easily replicable water filtration system using natural and common materials was developed. Tests were conducted in a laboratory to determine the effects of bio-waste materials such as banana peels on the turbidity of water and oregano on E.coli bacteria.
146	Áine	Pucchio	Inter Engine	E.A.R.T.H : Environmental Alternatives – Reducing Textile Harm	Environmental sustainability and reduction of human impact on the planet must guide all of our endeavours. Humans consume about 80 billion pieces of clothing a year. The carbon footprint and environmental impact of a garment depends largely on the material used. My project compares several different materials used to produce coats – cotton, wool, polyester, down, and the novel fiber of milkweed. The materials were tested for insulating value, when both dry and wet, as well as the environmental impact of production, processing and disposal of each material.
150	Haroon	Yousaf	Inter Engine	Bioengineering Sand To Grow Agriculture	This project explains the process of bioengineering sand particles to fertile soil. It will capable of growing agriculture and vegetation. It explains the revolutionary impact it can have on ecosystems and make the world more environmentally sustainable.
125	Hafeez	Husein	Inter Life Sc	The Effects Of Different Watering Amounts and Light Colours on the Height	The project tests out three different watering amounts per day and five different light colours. The watering amounts are 10, 20, and 30 ml, and the colours are red, yellow, blue, green, and clear. The best colours were red and blue and the best watering amount was 30 ml.
129	Mithila	Sothynathan	Inter Life Sc	Speedy Scriptures!	This study examines whether individuals that read syllabic languages are more detail oriented than those who read Latin scripture. Subjects of the experiment will be tested using a Where's Waldo puzzle.
132	Jawahir	Al Bayati	Inter Life Sc	Reducing Smokers Cough through Aromatherapy	The purpose of the project is to discover a herbal solution that reduces mucus production in bronchial tubes. Its also to test and see if said herbal solution works well with other herbs that could possibly be used in the future to reduce the effects of chronic bronchitis on smokers.
143	Jeewoo	Jeong	Inter Life Sc	Crystal Form of Different Tears	This project is about crystal forms of different tears. There are different reasons that make human cry and those reasons change the ingredient of the tear. As all the snowflakes are unique, human tears are very dependent on the ingredient which makes each tears unique. My project will show how different tears look like in a form of crystal and how it could affect our future.
145	Leah	Conway	Inter Life Sc	Milk Plastic: An Eco-Friendly Alternative	For my project, I studied how the amount of fat in milk used to make casein plastic affected the quality of the final product. Did you know, that during Mardi Gras alone, 25 million pounds of plastic beads are distributed each year? This requires a lot of oil which has a negative impact on the environment. Oil refineries cause pollution and have been proven to cause cancer, birth defects and other diseases in local residents. After some researching, I found a possible solution for this problem. Casein plastic. Casein is a protein found in milk. You can separate the casein from the rest of the milk by adding sulfuric or hydrochloric acid. For my experiment I used 237 mL of milk, 59 mL of white vinegar, a heat source, a pot, a digital weigh scale, an old shirt, a small bowl, a candy thermometer, and paper towels. I heated up the milk until it was 120F, then I added the vinegar. I then drained the mixture, and poured the curds onto a paper towel. I formed it into a disc with my hands, weighed it and let it dry. I repeated this with five types of milk. In conclusion I believe that whole milk created the plastic with the best appearance. Cream would make the best beads, because it had the biggest window that I could mold it in before it dried. Skim milk dried the fastest and was the strongest, but wasn't very easy to mold.
147	Wid	AlShaikh	Inter Life Sc	Sitting or Standing? Does it Really Matter?	In this project, I further examined the effects of standing on students' General intelligence. I tested each child using 2 tests of the same level with a time limit, both while standing and sitting. the Study is still undergoing at the time of registration.
148	James	Iansavitchous	Inter Life Sc	Inhibiting the Proliferation of Pre-Leukemic Cells with Astaxanthin and Docosahexaenoic Acid	Leukemia is a cancer of the blood or blood marrow. Omega-3-polyunsaturated fatty acids such as DHA (Docosahexaenoic acid) have potential for the prevention and therapy of several types of cancer. Astaxanthin (AST) modulates immune response and inhibits cancer cell growth. Salmon roe having the potential of being effective as part of the Ketogenic diet has a high concentration of DHA and AST. Pre-clinical research and preliminary clinical data demonstrate that ketogenic therapy could play an important role in cancer therapy. My project looks at the combined effects of DHA and AST on the proliferation BN and Pro-B leukemic cells in comparison to the effects of DHA. The goals of this project are to: 1. To determine whether Astaxanthin's lipophilic properties (by combining it with DHA) reduces leukemic cell proliferation 2. To reduce leukemia cell proliferation regardless of the outcome of (1).
152	Reem	Yasin	Inter Life Sc	Bean Plants can Smoke too?	In my experiment I strived to find out if the amount or type of vape juice can increase plant growth. I choice vape juice because its a liquid form of Nicotine. Nicotine, is a major drug affecting millions in todays society seen through cigarettes. I hope to educate more young adults or even fully grown adults about how harmful this drug is to any living thing.
27	Maria	Maglaris	Inter Physic:	The Effect of Different Levels of pH on the Removal of Penny Corrosion	This project is working to figure out the amount of corrosion that is removed off of a penny judging by the acidity of the solution it is submerged into (pH). When a penny is dropped in vinegar, the corrosion on the penny dissolves due to the transfer that occurs between the hydrogen atoms during the chemical reaction. The corrosion is called copper (II) oxide and is caused when copper reacts with oxygen. When the acetic acid in the vinegar touches the copper a chemical reaction occurs, therefore dissolving the oxide off the penny.

30	Kavin	Satheeskumar	Inter Physic:	Blown Away	This project investigates the following phenomena. When one places a piece of paper in an air stream, it vibrates. I wish to see the correlation between the speed of the air stream and the frequency of the vibration of the paper. The reason I am investigating this is because not much is known about the phenomena and this may give insight into it.
31	Layla	Ahmed	Inter Physic:	Charles's Law: Volume vs. Temperature of a Gas at Constant Pressure	This is a modern version of a classic experiment by Jacques Charles on the volume of a gas at different temperatures. Charles discovered the relationship between volume and temperature of gases that now bears his name. This project shows you a simple method for re-creating this famous experiment.
32	David	Tam	Inter Physic:	We Want Wifi!	The purpose of the project is to see whether or not certain materials or wavelengths can block the flow of wifi on an electronic device. In order to test this, in a controlled environment I will perform certain tasks with a working router and various materials to see if I can block the flow of wifi on an iPhone 8.
37	Jack	Christensen	Inter Physic:	Speeding Up The Robot Revolution	This experiment is about generic algorithms, which are computer programs that learn how to optimize something through simulation genetic evolution. My goal is to find the relationship between the size of the thing the algorithm is trying to optimize, and the ideal chance of its genome mutating in order to optimize it the fastest. I am doing this by running many algorithms in parallel with different lengths and mutation rates on the SHARCNET supercomputer and analyzing the number of simulated generations each one took to fully optimize their target. This is valuable because the current convention when trying to get a genetic algorithm to optimize something is to pick a random mutation rate and tweak that until it starts to learn at an acceptable speed, and the results of this experiment could provide a simple mapping of complexity to mutation rate, greatly speeding up this process.
124	Anna	Yang	Inter Physic:	Energy Efficiency In Household Lighting	This project compares the voltages needed to provide lighting suitable for performing everyday tasks such as reading. It also compares the efficiencies of incandescent bulbs and light emitting diodes. The purpose of this experiment is to explore different ways to save energy when it comes to household lighting. This was achieved by comparing the dependent variables (accuracy of OCR scanner) that were impacted by the independent variables (incandescent vs led, voltage). A piece of text containing every alphabetical letter in upper and lowercase as well as the numbers 0 to 9 is placed at the bottom of a box. A light (that I wired to have adjustable voltage) is placed above the text as an iPhone camera takes a picture of the text. The images are then read over by an optical character recognition application. A ratio between the voltage and the accuracy is then calculated to provide the results.
126	Tala	Elkhayri	Inter Physic:	The Effect of The Angle of The Solar Panel on the Voltage Generated	The Science Fair Project is about “The Effect of the Angle of the Solar Panel on the Amount of Voltage Generated”. The reason why this topic was chosen, was to discover natural methods to create energy that will protect and conserve the environment. If areas were to use more renewable energy sources instead, like solar energy, then it will hopefully lessen the amount of greenhouse gases in the atmosphere. Solar energy is a natural resource, and so by using solar panels, it has been identified what the best angle that a solar panel would have to be facing, to create the most amount of power possible, is. This research has been conducted by doing 10 trials, with 3 repetitions for each trial. For each trial, 3 different solar panels were rotated between (one for each repetition). After conducting the experiment, it was discovered that if the angle of the solar panel was 90 degrees to the sun, then it will generate the most amount of voltage. With this information, it has been revealed how power can be produced most productively, so that less time will be wasted.
130	Paige	Lowman	Inter Physic:	Does Juice Wreck Your Jello?	When pineapple juice is added to jello the enzymes in the juice will eat throughy the jello. If the juice is heated the enzymes will start to die and there for not eat through the jello as much
131	Khalid	Zabalawi	Inter Physic:	Smart Green Kinetics	How might communities lead to the rapid transition in renewable energy and how it might affect our economy? My idea is transforming physical energy and force invested by the human body from activities such as walking,swinging,lifting weights, and other activities.
134	Ally	Gardner	Inter Physic:	The Effect of Salt/Sugar on the Melting Time of Ice Cubes	We observed the speed that ice cubes melt at with different amounts of salt/sugar in them. We used 3 trials of salt, 3 trial of sugar, and a constant of no salt or sugar.
139	Kevin	Manka	Inter Physic:	The Effects Of Laundry Detergent Given to a Plant on The Height of a Lima Bean Plant	This experiment investigates the effects giving different amounts of laundry detergent (measured in mL) has on the height of the plant. This correlation is measured by using lima bean plants (all of the same age) and giving each set different amounts of laundry detergent over a five-day period to see the change of height over time.
144	Rachel	Pye	Inter Physic:	A Portable Practical Filter: Our Solution to the World's Water Problems	Today, water quality is an issue that many people face every day. Many people either don't have access to water at all or don't have access to clean water. Current solutions to cleaning water require donations or large fundraisers to purchase methods of cleaning water or to purchase enough if an item to clean water. We feel that everyone deserves to have clean water. This is why our goal is to create a filter that is inexpensive, compact, and portable so people are able to make clean water to improve their health.
38	Sihyun	Park	Senic	Engine	Miniature Basketball Game	Due to our love of basketball, we wanted to create something which would allow us to play it anywhere. Our basketball game includes a full basketball court as well as a counter that displays the number of hoops each side makes.
43	Tyler	Helm	Senic	Engine	Automatic Pet Feeder	This automatic pet feeder allows for people to keep up with their busy everyday lives' by simply feeding their pets from an app on their phones.
44	Rabia	Mazhar	Senic	Engine	Remote Control Artist	This is the drawing device of the future designed for helping those who have difficulties drawing or writing themselves. The Remote Control Artist is controlled by the user to easily create fantastic pieces of art!

140	Rebecca	Ma	Senic	Engine	An Alternative Method Of Recovering Precious Metals From E-Waste

"Electronic waste" or "E-Waste" may be defined as discarded computers, office or entertainment device electronics, mobile phones, television sets, and refrigerators. However, many precious metals are lost in the process. Methods such as hydrometallurgy, pyrometallurgy, and biohydrometallurgy can be used to recover these metals from E-waste. One problem is the toxicity and the environmental harm it causes.

An alternative way to recover metal from E-waste is to use different metals and solutes instead of using a large amount of energy from furnaces or producing hazardous chemicals such as cyanide, which can be very harmful to the human body.

The metals used in this experiment are aluminum, copper, and zinc. The solutes used are copper (II) chloride dihydrate, copper (II) nitrate trihydrate, and copper (II) sulfate pentahydrate.

This experiment is designed in such a way to produce the best, the most efficient, both method and cost, as well as the most environmentally friendly, combination of metal and solute to recover metals undergoing a displacement reaction.

28	Jeng-liang (David)	Wu	Senic	Life Sc	Cranberry Extract Enhances or Suppresses Antiproliferative Activity of Different Anticancer Drugs

As our understanding of cancer continues to grow, it is evident that more anticancer agents are needed. Naturally-occurring flavonoids seem to be an attractive option, but their mechanisms of action are unclear, so it is difficult to determine candidate drugs for effective drug combinations. This project identified available drugs that could be combined effectively with cranberry extract and proposed potential mechanisms of action to further investigate.
Crude cranberry flavonoid fraction 6 (Fr6) was combined with tubulin disruptors navelbine (NVB) and vincristine (VCR) as well as DNA synthesis inhibitors pemetrexed (PTX) and floxuridine (FUdR) in parental and multi-drug resistant head-and-neck cancer cell lines. It was observed that Fr6 and DNA synthesis inhibitors were primarily antagonistic in both cell lines, slightly more so with the parental cell line. The tubulin disruptors were both primarily additive in the parental cell line while antagonistic in the resistant cell line, where it was noted that the combination of VCR and Fr6 inhibited cancer proliferation better than NVB with Fr6. Based on these interactions, cranberry flavonoids may promote the activation of known resistance pathways during DNA synthesis or interfere with the cell cycle. Flavonoids may work in paths parallel to tubulin disruptors to sensitize cancer cells. Future studies will seek to investigate these biochemical pathways.
Tubulin disruptors such as vinca alkaloids are promising candidate drugs to combine with cranberry extract in non-resistant tumours, while DNA synthesis inhibitors are unattractive as a potential option.

127	Zsazsa	van Raalte	Senic	Life Sc	Best Oil to Make Biodegradable Soap

We are finding which type of oil used; canola, corn, or olive oil, makes the most durable biodegradable soap to make a good impact on the environment but still keep the desired properties of other less environmentally friendly soaps.

128	Seoyoon	Kim	Senic	Life Sc	Viability Duration of Fluoresced Red Blood Cells

Fluorescing red blood cells is a valuable lab technique used around the world. Red blood cells (RBCs) are extracted from a donor animal and chemically processed to emit light under a specific light frequency using a band pass filter. On the day of the experiment, a portion of the fluoresced RBCs are injected into a new animal to optimize vascular imaging and to assess blood flow in an area of interest. The extra fluoresced RBCs are discarded because they lose viability over time due to blood clotting, decreased light emission, and/or hypertrophic RBCs cells. However, the duration of fluoresced RBC viability during cold storage is currently unknown. By determining the duration of viability for the fluoresced RBCs, we can then devise ways to prolong its shelf life, thereby enabling experimenters to use the same blood sample for multiple experiments rather than just one. In doing so, we can save donor animals, time, and money.

133	Anna	Lee	Senic	Life Sc	A (Dis)Solvable Issue

The invention of plastic over the past 100 years has drastically changed how many people live around the world. For example, plastic gave people the ease of carrying grocery items at a very little cost or free by using plastic bags, as well as allowed people to easily store food by using plastic wraps. Moreover, there are many items in the market that use plastic to wrap individual items in a product, such as instant noodles and hard candies. Even though the invention of plastic has benefited the way people live in the society, there are serious health and environmental impacts that many people are not aware of. Our vision is to create an alternative for petroleum plastic, known as a biodegradable plastic, by using materials that are accessible, safe and cost effective. The final product of the bio plastic created shows similar properties of a petroleum plastic, yet it is environmentally friendly and cost effective.

135	David	Kim	Senic	Life Sc	The Impact of The Concentration of Iron (III) Chloride on The Biofixation Rates of Coccolithophores

Emiliania huxleyi are a species of coccolithophore; a type of phytoplankton (microalgae) that have the ability to produce microscopic, calcium carbonate plates called coccoliths. Like other phytoplankton, coccolithophores assimilate carbon dioxide in order to photosynthesize; however, coccolithophores are unique in the fact that they can convert carbon dioxide into biomass. This utilization of atmospheric CO2 as a carbon source is called biofixation. Cocclithogenesis, the process in which coccoliths are produced, utilizes three oxygen atoms, one calcium atom, and one carbon atom as constituents for the calcium carbonate plates. This means that for every coccolith produced, one carbon atom is biofixated; reducing the concentration of available constituents of carbon dioxide, a greenhouse gas, in the atmosphere. Therefore, promoting the rate of biofixation and coccolithogenesis of Emiliania huxleyi may help to reduce the concentration of atmospheric CO2 and contribute to mitigating climate change.

In the present day, the concentration of CO2 in the atmosphere continues to rise at unprecedented rates, and, as a result of increasing greenhouse gas emissions, the global climate continues to shift. This research question was chosen because I feel strongly that phytoplankton play an important role in the bioremediation of certain greenhouse gases, and that by researching the effects of the concentration of iron on the growth of Emiliania huxleyi, we are working towards optimizing the process of algal biofixation. Perhaps in the future, the growth factors of phytoplankton, such as the concentration of iron, may be manipulated in order to make large-scale algal biofixation viable.

136	Matthew	Zhou	Senic	Life Sc	Neuroinflammation and Cardiac Fibrosis following Insular Ischemic Stroke

Heart failure and stroke were the first and second leading causes of death worldwide in 2016 and 2015 respectively. It costs billions of dollars to care for individuals with these conditions. Understanding the relationship between stroke and heart disease is critical since this connection may help explain and diagnose various brain-heart disorders. This project examined fixed tissue slides obtained from 6-month old male Wistar rats to correlate levels of neuroinflammation in the corpus callosum region of the brain with amounts of cardiac fibrosis developed in the left atrium of the heart following an acute ischemic stroke to the insular cortex. Neuroinflammation was quantified as a percentage area of microglial activation in the corpus callosum. Treatment groups included a phosphate-buffer saline injection, endothelin-1 injection (induced stroke), ibotenic acid injection, and no injection to the insular cortex. Statistical analyses of neuroinflammation as a consequence of insular stroke and left atrial fibrosis as a consequence of insular stroke were conducted using one-way ANOVA tests followed by Tukey's post-hoc tests to confirm the significant effects of endothelin-1 stroke injection. Further correlational analysis was conducted to test the relationship between neuroinflammation and cardiac fibrosis following the focal insular ischemic stroke. Results show a significant positive correlation between these two variables ($r=0.7807$, $p<0.0001$). This novel finding calls for further investigation on whether neuroinflammation plays a causal role on cardiac fibrosis. Additionally, this relationship could have major clinical significance in the development of novel diagnostic and therapeutic treatment methods for heart diseases.

137	Amal	Aziz	Senic	Life Sc	A Switchable, Smart Trojan Horse Drug for Alzheimer’s Disease Phototherapy

The blood-brain barrier drug delivery problem of existing neuropharmaceuticals can be solved using genetically engineered molecular Trojan horses. A novel, tailor-made Trojan horse drug that quickly switches into an aggressive molecule to destroy even residual amyloid plaques could be more effective than any other known drug developed for Alzheimer's disease thus far.

138	Kristen	Benn	Senic	Life Sc	Silver Nanoparticles: More Than Just Bling!

The goal of my experiment was to discover whether silver nanoparticles can effectively act as an antibacterial. I tested their neutralizing effects on E.coli bacteria and looked at which concentration of silver nanoparticle solution worked the best. I then did further research observing the effects of this silver nanoparticle solution on common household bacteria.

149	Kusha	Sareen	Senic	Life Sc	The Effect of Different Mouthwash on Oral Micro-flora

This experiment tests the effects of varying mouthwash on a bacteria sample taken from the human mouth. Many claims have been made challenging the effectiveness of different mouthwash on oral health. In this experiment, a culture of bacteria grown from cheek swabs are be treated by water, as a control, as well as different brands of mouthwash. The number of bacteria are recorded over and number of subsequent days. The bacteria growth in different sample suggests the effectiveness of each mouthwash.

151	Dina	Babiker	Senic	Life Sc	Biodiesel, the Energy for the Future ?

We are going to be creating biodiesel using chemicals available and compare its energy yield to energy from the fossil fuel diesel while also considering its impacts on the environment, economy and society

29	Eric	Kim	Senic	Physic	Road Salt: Moving toward the Perfect Solution

To find an alternative to NaCl road salt that effectively melts ice in terms of speed, while also having less salty toxicity on plants and a lesser effect on speeding the rate of corrosion.Different natural alternatives to road salt were tested to determine their effectiveness in melting ice, their effect on the environment, specifically plants, and their effect on corrosion. The alternative de-icing products chosen for comparison to sodium chloride were pickle juice, beet juice, and calcium chloride. The two solid products, calcium chloride and sodium chloride were compared.

33	Yamen	Abo-Amer	Senic	Physic:	Lead Water Purifier

Our civilization has been prosperous for the many years that we have lived on this Earth. We have discovered and developed groundbreaking technologies that allow us to live our lives today. However, along the way we have made mistakes, one of which was lead pipes. Lead water is huge issue effecting millions around the world today. This projects objective is to explore different methods of filtering lead from water. The methods are compared to each other based on cost efficiency, practicality, and effectiveness.

Lead carbonate introduces lead ions into the water in our infrastructure. Under acidic conditions lead ions remain in our drinking water and cannot be filtered out through normal processes. To replicate this scenario in the lab, a 0.01 M lead nitrate solution was used.

The first method involves using sodium chloride to create lead chloride precipitate. The precipitate was then removed using a filter and the amount of lead captured by the filter was then calculated.

The second method uses sodium hypochlorite to create lead dioxide precipitate. It is then filtered and measured to determine the amount of lead captured.

The final method involves using biochar to mechanically remove the lead ions through absorption. We analyzed the molarity of the solution every 24 hours using atomic absorption.

Through these experiments we have discovered the most effective, practical and cost efficient technique of filtering lead.

35	Amila Miya	Kafadar	Senic	Physic:	Microplastics, a Macroproblem

Micro-plastics are everywhere, the tiny plastics most often being found in our seafood. This project focuses on solutions to this macro-problem. At just 0.3mm in size, the tiny microbeads in your facial scrub are doing more bad than good. Finding their way through our ocean and being eaten by our food, we try to come up with a way to replace our micro plastics and preserve our wild life.

36	Malachy	Bodak	Senic	Physic:	Road Salt: Finding an Alternative to Preserve Aquatic Plant Life

In summary, the project is concerned with the effects road salt can have on the environment, especially aquatic ecosystems. The goal is to come up with a road salt alternative that works just as well as road salt, at an affordable price that causes minimal damage to aquatic plant life.

39	Joshua	McPherson	Senic	Physic:	Which Cup Keeps Your Drink Warm Longest?

We compared different cup and different mugs to see which drink kept your drink the warmest. Using a thermostat we were able to test which cup was the most effective.

42	Hayden	Walker	Senic	Physic:	Magnetism

We are testing how magnets attract objects, through different mediums, and how they act with each other. We will be testing how magnets can attract object through cardboard, and distances away.

141	Ayah	Nehdi	Senic	Physic:	A Crabby Solution To End Plastic Pollution

"A Crabby Solution To End Plastic Pollution" tackles the aftermath of using unsustainable plastics. It proposes that chitin bioplastics should become the prime plastic used to finally "end" plastic pollution. Chitin is a natural polymer that is extracted from crustaceans, insects, and microorganisms. Crustacean wastes are discarded by fisheries after the meat is removed, thereby resulting in substantial amounts of pollution. Decaying crab wastes release ammonia and nitrates that evaporate in air and seep through the soil. In large enough concentrations, they can pollute freshwater wells that provide drinking water and shallow aquifers that eventually feed into a Bay. Using crab shells to create a fully biodegradable plastic will not only help reduce crab wastes but will also diminish the amounts of nondegradable plastics used. Through trial and error, we determined a method to extract chitin from crab shells and create a fully biodegradable plastic from this extracted chitin. We produced chitin and cornstarch bioplastics along regular plastic and compared their biodegradability and other properties. In the end, we determined that chitin bioplastics should become the main plastic developed since its benefits and advantages in the environment outweigh any other plastic we produced.