

2010

**Pittsburgh Regional
Science & Engineering Fair**

**Student Projects
Abstracts**

JUNIOR DIVISION

Junior Division

Physical Science.....	1
Life Science.....	9
Consumer Science.....	17
TEAM.....	21

Junior Physical Science

Project Number: JPS001

Grade: 6

Title: Remote Control Science

Abstract: Infrared light and visible light are used in many ways. This work intended to learn why companies use infrared light in their products. Different items (such as a piece of wood and glasses of liquid) were used to see if they blocked infrared or visible light. It was determined that infrared light is most likely used in television remotes and other things because it isn't affected by the environment like visible light.

Project Number: JPS002

Grade: 6

Title: Soy vs. Paraffin Which one is Better?

Abstract: The purpose of my experiment was to see if a soy candle losses more oxygen and absorbs more water than a paraffin wax candle. I did this by putting a two glasses over both candles at the same time. When one candle went out I wrote down the time and did the same for the next candle. I poured the water in the beaker. I measured the water in a beaker in mL. The soy candle lost oxygen faster and absorbed more water. My hypothesis should be accepted because I stated that the soy candle will absorb more water and lose oxygen faster than a paraffin wax candle because it is made from unlimited resources.

Project Number: JPS003

Grade: 6

Title: Environment & Biodegradability

Abstract: Which type of material including newspaper, plastic biodegradable bags, non-biodegradable bags, and paper bags will degrade the most in different environments during a three month period? I put the four materials in different environments to see how they will degrade. The environments included direct sunlight, a mulch pile to simulate an active landfill, a leaf pile to simulate a dry land fill, tap water to simulate a lake, and saltwater to simulate the ocean. I thought that paper bags will biodegrade the fastest in all of the environments. After a three month period, paper bags did degrade the most.

Project Number: JPS004

Grade: 6

Title: Which Kind of Insulation Works the Best?

Abstract: The purpose of my experiment was to test different types of insulation. My hypothesis was that the pink fiberglass insulation would work the best. Here is my procedure. First build a wooden box 71x71cm. Next build a smaller box within the big box 46x46cm. The smaller box should have a removable lid with a small hole in the middle. The distance between the two boxes should be 11.5cm away. Next put a thermometer down the hole. Open the box and put the insulation on the inside walls. Next, place one bag of ice around each wall. Each bag should have four cups of ice. Record the temperature of the box every ten minutes for an hour.

My hypothesis was proven correct; the pink fiberglass insulation worked the best. I showed this by finding the difference between the highest temperature and the last reading for the different insulations.

Project Number: JPS005

Grade: 6

Title: Hey, Where'd My Drink Go?

Abstract: My purpose was to see which liquid (Pepsi, Diet Pepsi, water, water with salt, and tea) would evaporate fastest. I did it by getting 40ml of each liquid and put them in bottles next to a window. For 14 days, I observed what happened to each liquid and wrote down how much liquid was left in the bottle. The tea was very moldy since day 12 and the Pepsi was syrupy and sticky since day 13 and both didn't evaporate since then. My conclusion is that water evaporates the fastest, then water with salt, tea, Diet Pepsi, and Pepsi.

Project Number: JPS006

Grade: 6

Title: So You Think Your Hands Are Clean?

Abstract: Please visit student's exhibit for the abstract.

Project Number: JPS007

Grade: 6

Title: Hover Craft

Abstract: Question being addressed. Can a hover craft be a good way to travel? Goals for hovercraft. The hovercraft should be able to lift one person a leaf blower and a chair. I didn't have eney experimental designs but the one I have now. The data I collected was that hovering doesn't conduct friction and it's amphibious so it can travel on water it can travel over eney thing with no problem

Project Number: JPS008

Grade: 6

Title: Hip Hop's Effect on Resting Heart Rate
Abstract: Please visit student's exhibit for the abstract.

Project Number: JPS009

Grade: 6

Title: The Best of FSX

Abstract: Pilots face the problem of selecting the right time to glide in different weather conditions. The purpose of this project is to see if a big Jetliner can glide as far as a little private plane. In this experiment, five different planes were used; 747, 737, C172, F-16, and A321. Three types of weather conditions were tested containing no wind, head wind, and tail wind. A flight simulator was used to conduct this project. The results show that jetliners can't glide as far as a private plane. Therefore, the lighter the plane is the farther it glides.

Project Number: JPS010

Grade: 6

Title: Ready, Set, Go

Abstract: I did my project because it would give me a great opportunity to go into depth of Newton's laws of Motion and Inertia and would also show that Galileo and Newton were both correct. I built a race track and I was letting the cars go down from different elevations. The cars had different weights. I was measuring the time it took the cars to get from the top of the incline to the bottom. And also the distance the car went from the bottom to its final stop. I noticed that the time of the car going down from the incline was about the same for different weights – which agree with Galileo's theory. Also I noticed that the distance was greater for all cars with heavier weights. Which agrees with the Motion and Inertia laws (takes longer to stop heavier object).

Project Number: JPS011

Grade: 6

Title: What Liquids Cause Rust?

Abstract: The purpose of my project was to find out which liquid out of Coke, Bleach, or Water was most acidic. My procedure was to weigh the ungalvanized nails, fill each 60 mL jar with the liquid written on that jar's label, leave the nails in the jar for a week, weigh the nails again, then repeat the process two more times. The Coke and Water nails did not lose any weight throughout the whole process, while the nail in Bleach lost 2 to 3 milligrams per test. Therefore, the Bleach nails lost the most weight throughout the whole process

Project Number: JPS012

Grade: 6

Title: Yellow Submarine

Abstract: I chose this project because I am interested in how submarines sink and rise. The project was done by placing a bottle filled with holes into a pitcher of water. Attached to the bottle was a tube with baking soda and a balloon filled with vinegar. Using 3 different weights, the submarine would sink and then resurface when the baking soda was activated by the vinegar in the balloon. The balloon represents the ballast tank of a submarine. My hypothesis was proven correct when the heavier weight took less time to sink, and significantly more time to resurface.

Project Number: JPS013

Grade: 6

Title: Watt Current?

Abstract: My question is: How does the type of light bulb affect the amount of electricity it uses? My hypothesis was that incandescent light bulbs would use the most energy, halogen light bulbs would use slightly less energy than incandescent light bulbs, and compact fluorescent light bulbs would use the least amount of energy. After gathering all materials, I placed an incandescent light bulb into a light socket which was connected to a multimeter. I recorded the amount of current the light was using. This procedure was done three times for the incandescent, halogen, and fluorescent light bulbs. In conclusion incandescent light bulbs used the most, halogen light bulbs used slightly less than the incandescent, and compact fluorescent light bulbs used the least amount of energy. My hypothesis was correct.

Project Number: JPS014

Grade: 6

Title: Steel Pan vs Iron Pan

Abstract: The purpose to my experiment was to see either Stainless Steel or Iron pot boils H₂O quickest. First I gather all materials. Second I got both pots. Third I put exactly 960 millimeters of water in each pot. Fourth I turn the gas stove on to high level 6. 5th Get the stop watch & time to see how long for the quickest pot to boil. Sixth I get the results. Seventh do steps over again till equal amount is right. While I was doing my experiment I notice that Iron pot takes a long time till it can start rising steam than Stainless Steel pot, but the Stainless Steel pot had a short time steaming and almost directly started to bubble unlike Iron Pot. In conclusion Stainless Steel took 5 mins. to boil & the Iron pot took 4 mins.

Project Number: JPS015

Grade: 6

Title: Does Fruit Dye?

Abstract: My project will test which red fruit produces the best dye. I will be testing four different fruits for ten trials each. After the experiment is complete, I will compare each dyed material to see which fruit produced the best red color.

Project Number: JPS016

Grade: 6

Title: What Will Keep Ice Cold the Longest?

Abstract: Please visit student's exhibit for the abstract.

Project Number: JPS017

Grade: 6

Title: Bouncing Bubble Solution

Abstract: Please visit student's exhibit for the abstract.

Project Number: JPS018

Grade: 6

Title: Out of Control

Abstract: Please visit student's exhibit for the abstract.

Project Number: JPS019

Grade: 6

Title: He Shoots 'N Scores

Abstract: Since hockey is a popular sport, I found it interesting to investigate the effects of the equipment used. My focus was on the flex of the stick. I gathered three volunteers and various flex sticks to conduct my experiment. I had each player shoot ten balls, using various flex, and recorded the results. The more flex, the better the shot accuracy. This was also impacted by the speed and weight involved. In conclusion, it is obvious that the flex and the person's weight have a lot to do with the impact of speed on the ball. My hypothesis was accurate.

Project Number: JPS020

Grade: 6

Title: Strong Rope? The Tension Builds

Abstract:

My hypothesis is that three strings wound into a rope are stronger than the three strings separated. To test this, I tied the rope/string to a beam and at the other end, to a board holding a weighing scale. I pushed on the scale to determine the weight before the rope/string broke. Many of the ropes broke at the knot and were not stronger than the three strings. I clamped the rope and strings instead of tying a knot. This time, the rope was stronger than the strings. My hypothesis was correct when there was no knot in the rope/string.

Project Number: JPS022

Grade: 6

Title: Bridge Weights

Abstract: The purpose of my project is to determine which type of bridge holds the most weight. To do my project, I built each type of bridge out of Popsicle sticks. Next, I added books to each bridge to test it out and if it broke that would be the results for that bridge. The Plank Bridge held 4 books, the Suspension Bridge held 1 book, the Truss Bridge held 6 books, and the Arch Bridge held 3 books. My conclusion is I think the Truss bridge would hold the most weight. Because of the results of this experiment, I wonder what would happen if I built a different type of bridge: would it beat the Truss bridge? If I were to conduct this science fair project again I would build types of different bridges.

Project Number: JPS023

Grade: 6

Title: Magnetic Force

Abstract: The purpose of this experiment was to see materials responding to a magnetic force. To conduct this experiment I used common household products; a honey experiment; and a cereal experiment. The experimental results were measured by a reaction to the magnetic force. The results of the experiment were that the only products responding to the magnetic force were the ones that were iron-containing materials. The results indicate that the hypothesis should be accepted because it stated that the only materials that would react to the magnetic field are the iron-containing materials.

Project Number: JPS024

Grade: 6

Title: Rust

Abstract: My project is to see which metal; copper, aluminum, or steel will rust fastest. My hypothesis is that steel will rust the fastest. To do my project I prepared a saturated solution of salt in three plastic containers. Then I dunked one of each kind of metal in a different plastic container, then pulled them out and laid them on a paper towel. I

repeated dunking the metal each day. Each morning I recorded the results. When I was done with my experiment I realized my hypothesis has been proven true, that steel does rust the fastest because copper and aluminum do not rust.

Project Number: JPS025

Grade: 6

Title: Which Metal Conducts Heat the Best?

Abstract: The purpose of my experiment is to find out which metal conducts heat the best. My hypothesis is that steel would conduct the most heat. First, place metal in wood holder. Use butane torch to heat the metal for 2 minutes exactly. Last, use an infrared to take the temperature. Aluminum was the least, brass was fourth, stainless steel was third, cast iron placed second. and steel came in first. The hypothesis, if heat was applied to different types of metals then steel will conduct the most heat, was supported by the data.

Project Number: JPS026

Grade: 6

Title: Pound, Sprinkle, Inject: What Should You Do?

Abstract: I wanted to see what type of meat tenderization technique produces the best texture/flavor of meat. I am going to mechanically pound, sprinkle with jar meat tenderizer, and inject the meat to see which method produces the best texture/flavor of meat. I will do numerous trials and average my results.

Project Number: JPS027

Grade: 6

Title: Peanut Power

Abstract: My project is titled Peanut Power. The reason I did this project was that in science class, I learned heat was energy and I wanted to prove that nuts (walnut, peanut, almond, and pecan) could have enough energy to heat water. With an adult's help, I created a set-up with a burning area and an attached can of water. Also with adult supervision, I burned three samples of each of the nuts and recorded the change in temperature of the water.

Project Number: JPS028

Grade: 6

Title: Different Methods to Cool a Soda

Abstract: The purpose of this investigation was to determine if putting a can in the refrigerator, freezer, bag of ice, or ice water will make a difference in how fast a can of soda will become cold. To perform this investigation I put 3 cans of soda in the refrigerator, freezer, bag of ice, and ice water. I recorded the temperature of the sodas every 10 minutes for 40 minutes. As a result, the ice water cooled the sodas the fastest. The refrigerator cooled the sodas the least.

Project Number: JPS029

Grade: 6

Title: What's Missing?

Abstract: Please visit student's exhibit for the abstract.

Project Number: JPS030

Grade: 6

Title: Light Reflections

Abstract: The purpose of this experiment was to see if light using mirrors will go back to the starting point. To conduct this experiment I used 11 mirrors, and a laser pointer. The experimental results were measured using the angles of incident, and refraction. The results of the experiment conclude that I was able to do my problem correctly. The results indicate that the hypothesis should be accepted.

Project Number: JPS031

Grade: 8

Title: Winglets and Jetliners

Abstract: Do winglets help improve fuel efficiency? I created 5 different types of wings (3 with the winglets attached, and two regular wings). The wings were tested in a wind-tunnel to determine the effect of winglets and wing shape on performance. Through three trials the data seemed to be almost identical to each winglet, until the winglet bent at two different places finally showed that once up to speed, it was the best in performance.

Project Number: JPS032

Grade: 6

Title: Salt Crystal Development

Abstract: I grew salt crystals in three different temperatures; hot, room temperature and cold, to find out if temperature had any effect on the crystal development. I decided to do this because I use salt to clear my throat before I sing. I wanted to know how I could grow my own salt crystals the fastest way. At the end of the crystals' growing period of three weeks, the hot area crystals grew to the most mass. In my hypothesis I thought the crystals growing in the room temperature would have the most mass. My data did not support my hypothesis.

Project Number: JPS033

Grade: 6

Title: Paper Airplane Aerodynamics

Abstract: The purpose of my experiment Paper Airplane Aerodynamics was to find out the best paper airplane design. The procedures used was throwing each plane then measuring height, distance, and time. After that I recorded my findings. The average distance for all planes was 108.68 cm. The average airtime was 1.75seconds. The average distance thrown was 322.69 cm. My conclusion is that the plane from book A on pages 40-41 was the best paper airplane because of the wind resistance that came from the body of the paper airplane which helped with distance, height and airtime.

Project Number: JPS034

Grade: 6

Title: Sweet Dreams

Abstract: I love dreams and eating sweets. So I thought I would do a project on dreams. I decide to see what sugar has affect on sugar. I had three girls, my control group, and three boys, my uncontrol group. the boys got to eat what ever they wanted, while the girls had to eat spcific things at certian times. The girls showed regular dream patterns, while the boys did not. I figured out that sugar dose give off more of a dream. How cool!sixth

Project Number: JPS035

Grade: 6

Title: Suck It Up!

Abstract: My experiment was conducted to investigate Bernoulli's equation describing the maximum height a siphon can lift a column of liquid. Surprisingly, a water siphon can lift greater than 10 meters or about as high as a two-story house, and we see its function every time a toilet is flushed. The highest water siphon that I was able to attain in my experiment was slightly less than Bernoulli's equation might predict, however, this result was somewhat expected and sufficient to prove the theory.

Project Number: JPS036

Grade: 6

Title: Effects of Salt Water on Metals

Abstract: The purpose of this investigation was to determine which metal will be the most corroded after being in saltwater for the same amount of time.5 trials for 6 different metals were wieghed on on a digital scale and then sat in salt water for 30 days. The metals were taken out and remassed on a digital scale. The metal that had the most change in mass was steel. THe metal with the least change was stainless steel.

Project Number: JPS037

Grade: 6

Title: Popsicle Bridges

Abstract: The purpose of my experiment was to investigate which bridge design could hold the most weight. First, I researched and built three bridges using popsicle sticks and a hot glue gun. I built a triangle, trapezoid, and flat bridge. Next, I weighed soup cans, toy cars, and bricks in grams to use as weights. I put the weights on the bridges, and recorded how much weight each bridge could hold. Finally, I analyzed the data. The triangle bridge held the most weight (17,290 grams), followed by the trapezoid bridge (10,832 grams) and flat bridge (590 grams).

Project Number: JPS038

Grade: 6

Title: Have A Bowl of Nails For Breakfast.

Abstract: The purpose of this experiment is to measure and compare the amount of iron in four different breakfast cereals. I will put the recommended serving amount of each cereal into a blender and add distilled water. I will stir the mixture up into a slurry. Pour the slurry into a cup. While stirring the slurry up, I will hold a magnet outside of the cup, attracting the iron particles. I will remove the iron particles from the cup and allow them to dry, then weigh them. I will average and compare the amounts to what is listed on cereal box to check for accuracy.

Project Number: JPS039

Grade: 6

Title: Equality of LIGHT?

Abstract: Please visit student's exhibit for the abstract.

Project Number: JPS040

Grade: 6

Title: Ball Drop

Abstract: The purpose of my project is to determine what diameter of what ball will bounce the highest. I became interested in this project because I just wonder how different balls bounce higher than another. I will use three different types of balls: a basketball, a soccer ball and a volleyball and drop them from the same height. I will record

how high each one bounces. I think that the basketball will bounce the highest. I wonder what would happen if I used balls whose sizes are a lot different.

Project Number: JPS041

Grade: 6

Title: Which Ice Cream Will Melt Faster?

Abstract: The purpose of this investigation was to determine if slow-churned ice cream melted faster than regular ice cream. I set out 125 mL of regular and slow-churned ice cream for 30 minutes, then measured the liquid ice cream. I repeated this 9 more times. The hypothesis was not supported by the data. The regular ice cream melted faster.

Project Number: JPS042

Grade: 6

Title: Which Heating Method Works Best?

Abstract: I hypothesized that if I cook oatmeal using three different cooking methods(stove, microwave, crock pot) then the crockpot will keep the oatmeal warm the longest. I used 200mL of water and 250 mL of oatmeal for each of the nine tests (three for each method.) I recorded the amount of time it took for each oatmeal batch to reach 50 degrees celsius. My hypothesis was proven wrong as the microwave oatmeal retained the heat the longest.

Project Number: JPS043

Grade: 6

Title: Dice Probability

Abstract: Please visit student's exhibit for the abstract.

Project Number: JPS044

Grade: 6

Title: Reactions with Candy and Sodas

Abstract: I wanted to design an experiment which included two things I really like, candy and soda. So I wondered what would happen if I mixed the two together. I measured an equal amount of pop rocks and poured them in one of the four different sodas at a time. Then I measured the amount of gas collected. Next, the reactions of each soda were compared. Until the ingredients change, the results will always be the same.

Project Number: JPS045

Grade: 6

Title: An Electric Truth

Abstract: The purpose of this experiment was to see what amount of salt added to water affects how much chlorine gas is produced during the process of electrolysis. To find this out I performed three tests of electrolysis with three different salt solutions of different concentrations. I tested each one for the amount of chlorine gas that was produced. First, I started with 5ml of salt in one 470ml container of water, and it produced 1cc of gas. Second, I mixed 10ml of salt qith 470ml of water and it produced 2cc of gas. The last trial, with 15ml of salt solution, resulted in 4cc of gas produced. The results showed that the more salt you add the more gas is produced.

Project Number: JPS046

Grade: 6

Title: Bubble Blowout!

Abstract: The purpose of my experiment is to find out if bubbles last longer in different temperatures. First I went and purchased bubbles, next I took out a thermometer and a stop watch. Then I blow a bubble and caught it on the bubble wand, and immidently started the timer, when it popped I stopped the timer. I repeted this about 4 times to see if my results would be accurate, on the fourth time I recorded the data. I did this with 3 different temperatures. In my results my hypotheisis was correct. The cold temperature bubble lasted 3:45.31. The hot lasted 38.83, and the normal lasted 1:05.88. In my conclusion, not only was my hypothesis correct, but I learned many things.

Project Number: JPS047

Grade: 6

Title: Water in Fruit & Vegetables

Abstract: Please visit student's exhibit for the abstract.

Project Number: JPS048

Grade: 6

Title: Effects of Diff. Types of Water on Paper Airplanes

Abstract: This work utilized origami priciples to learn whether different types of water effect the shape-retention and aerodynamics of paper airplanes. Five different airplanes were folded out of copy paper: a dry control, rain water dampened, saline dampened, distilled water dampened and tap water dampened. Planes were flown on five occasions using the same arm motion and distances flown were measured. The distilled water airplane flew the longest distance over the five tries and the rain water plane the shortest. The distilled water did not have salt, additives or pullution so pure water was the best dampening agent.

Project Number: JPS049

Grade: 6

Title: On what surface does a basketball bounce best on?

Abstract: The purpose of this experiment was to find out on which surface does a basketball bounce the best on. To conduct this experiment I used a basketball and a tape measure, a hardwood surface, a cement surface, and a ceramic surface. The experimental results were measured by how high the ball bounced on each surface. The results of my experiment were that a basketball bounces the highest on hardwood floor. I am accepting my hypothesis because I stated that a hardwood surface would be the best because it is the smoothest floor.

Project Number: JPS050

Grade: 6

Title: Boiled Water

Abstract: The purpose of this experiment was to determine if water would boil the fastest when salt, brown sugar, white sugar or nothing was added to it. I placed 15 mL of salt in a pot with 250 mL of water. I recorded how long it took for this solution to come to a boil and repeated the test two more times. I used the same procedure for the remaining solutes. I have concluded that salted water boiled the fastest and plain water boiled the slowest. This proved my hypothesis incorrect.

Project Number: JPS052

Grade: 6

Title: Viscosity of Liquid

Abstract: The viscosity of liquid is a fluid's resistance to flow. In this experiment five labeled liquids were tested for their viscosity, their droplet's size and the droplet's neck's length. The liquids used were water, syrup, glycerin, olive oil and shampoo. This experiment was conducted in two parts. The first part is to find the viscosity. For the second part the droplet's size, neck and shape were studied carefully. The conclusion was that the droplets of liquids with longer necks were more viscous.

Project Number: JPS053

Grade: 6

Title: Rusting Nails

Abstract: Ingomar Middle School Grade 6

The purpose of this experiment was to study which liquid makes nails rust the quickest and the most. There were 5 liquids: drinking water, salt water, base water, acid water, and river water. There was 10ml of drinking water in each test tube (excluding the river water) with 2.5ml of salt, base, or acid added if necessary to one nail submerged for 3 weeks. Rust was measured by sight on coffee filters and two trials were conducted. River water rusted the quickest (1 day) and most, then drinking, salt, and acid water, but base water had no rust.

Project Number: JPS054

Grade: 6

Title: Which Bridge is the Strongest?

Abstract: The purpose of my project is rather plain. It is to figure out which bridge design – arch, truss or suspension—is the strongest. I ran trucks with weights on them across truss, suspension and arch bridges and then tallied how much weight the bridges took. After ten repetitions I found the mean weights that each bridge could hold. The results showed that suspension bridges were the strongest. For the designs I used, the data was clear. My conclusion is the strongest design was definitely the suspension bridge.

Project Number: JPS055

Grade: 6

Title: How Large Will it Get?

Abstract: The purpose of this experiment is to see how a hydro source bead which is used when gardening and rock climbing will react in different liquids. To conduct this experiment I used Kool-Aid, vinegar, water, eight containers, and hydro source beads. The results of my experiment are the hydro source beads grow best in the large water container. The results indicate that my hypothesis is correct because a hydro source bead can grow in water, Kool-Aid, vinegar, and Sierra Mist and the larger the container I place the hydro source bead in will control how large it will get.

Project Number: JPS056

Grade: 6

Title: What Container Would Keep Water The Coolest?

Abstract: The purpose of this investigator's project was to determine what cup, aluminum, glass or plastic will keep water colder. The investigator put 200 mL of water at a temperature of 5.56°C in each cup. Then, he set the timer for thirty minutes. He recorded the temperature of the water in each cup. Then, he set the timer for an additional thirty minutes. He recorded the final temperature of the water in each cup. He concluded that the plastic cup kept the water colder.

Project Number: JPS058

Grade: 6

Title: Why Aren't Fog Lights on Every Car?

Abstract: I chose this topic while coming home from the science fair workshop because I was intrigued why some cars did not have fog lights. The purpose was to determine which type of car headlight/fog light would work best on different thicknesses of fog. In order to perform this experiment in a controlled environment it was necessary to utilize three different types of fabric to "simulate" fog. Using real fog would not be controlled and would have too many variables. This experiment tested high/low beam and fog lights. I concluded that the fog lights worked the best and should be on every car.

Project Number: JPS059

Grade: 6

Title: Red Cabbage, a Natural pH Indicator

Abstract: My project is to test the pH of household solutions by using a natural homemade pH paper made from red cabbage juice and coffee filter. I began my project by chopping red cabbage and bringing it to a boil. Once it cooled I was able to soak my coffee filters in the juice left behind in the pot. After they soaked for about an hour, I removed them from the pot and set them out to dry. After they dried, I cut them into strips to use to test the pH of household solutions to see if the solutions are acid or base. pH is the scale used in science to rate how acidic or how alkaline a solution is.

Project Number: JPS060

Grade: 6

Title: Greenhouse Effect: Friend or Foe?

Abstract: The purpose of my experiment was to learn about the greenhouse effect. Two cups were placed under a light, one was covered in plastic wrap and the other was uncovered. The cups represented the Earth's surface, the light represented sunlight, and the plastic wrap represented greenhouse gases in the atmosphere. In just 3 hours, the temperature of the covered glass was 0.9 degrees C higher than the other glass. According to research, the greenhouse effect is an essential part of plant and animal growth. However, this process of trapping heat from the sun can be dangerous if pollution increases.

Project Number: JPS061

Grade: 6

Title: Dissolving Alka-Seltzer

Abstract: My Project is titled Dissolving Alka-Seltzer. I chose to do this experiment because I was interested to see how the pH of liquids affects how Alka-Seltzer dissolves. I placed Alka-Seltzer in water, lemon juice, ammonia, and Mountain Dew. The water had a pH of 7, ammonia had 11, the lemon juice had 2, and Mountain Dew had 3. I conducted three tests with each liquid. My hypothesis was that the Alka-Seltzer in the lemon juice would dissolve the fastest. The lemon juice dissolved the slowest, and the mountain dew dissolved the fastest. After conducting this experiment, my hypothesis was proven incorrect.

Project Number: JPS062

Grade: 6

Title: Paratrooper

Abstract: My project is called Paratrooper and I am going to be testing parachute materials. My materials are nylon, silk and plastic. The reason why I chose these materials is because plastic and nylon are frequently used for toy parachutes. I chose silk because it is light weight and is tightly woven. I wanted to determine the best material that would assure a slow descent and safe landing. I recorded the time it took for each to land during 3 trials.

Project Number: JPS063

Grade: 6

Title: Battery Life vs Temperature and Humidity

Abstract: Batteries last in different temperatures and humidity. This project is intended to learn which type of battery will last longest in different temperatures and humidity. My hypothesis says that the Lithium batteries will last longest. Three different types of batteries will be set in a flashlight which will be placed in a box, the thermometer and humidifier will be placed in as well. I will use a timer to time how long each battery will last. I did this project to find which battery is the best to use. Future work is planned to determine if Lithium batteries last longer in different temperatures and humidity.

Project Number: JPS064

Grade: 6

Title: Changing Vegetables

Abstract: The purpose of the project is to see which liquid changes the cucumber the most from when it started. I will be placing cucumbers in jars covered with four different liquids: water, carbonated water, cola and vinegar. My hypothesis is that the one in the cola will turn brown, the one in vinegar will be sour and the carbonated water will be sweet. I hope to learn about ways that people can keep their vegetables fresh.

Project Number: JPS065 **Grade:** 6
Title: Metal vs Wooden Which Makes the Ball go Farther
Abstract: Please visit student's exhibit for the abstract.

Project Number: JPS066 **Grade:** 6
Title: Smashing Sand
Abstract: The purpose of my project is to see if the volume of sand will remain the same after the sand is compressed. I added rocks, pebbles and sand to three different containers. I measured their volumes. I used a piece of wood to smash the rocks, pebbles or sand down. I measured their volumes again to see if they changed. Since the rocks were the biggest, the volume changed the most.

Project Number: JPS067 **Grade:** 6
Title: Magnet Strength and Temperature
Abstract: Please visit student's exhibit for the abstract.

Project Number: JPS068 **Grade:** 6
Title: Mentos in Diet Coke
Abstract: I researched how the flavor of Mentos candy affects the height of spray when the candy is dropped in Diet Coke. I used 4 different flavors: Mint, Fruit, Apple, and Strawberry. I dropped 4 candies of each flavor into a 24 fl. oz. Diet Coke bottle, measured the spray heights, recorded and compared the ingredients. My results were that the spray of the Diet Coke with Mint Mentos went the highest. The Mint flavored Mento did not contain color or wax ingredients, the other flavors did. I think that flavor ingredients may decrease the strength of the chemical reaction.

Junior Life Science

Project Number: JLS001 **Grade:** 6
Title: Do Different Beverages Affect Plant Growth?
Abstract: The purpose of this experiment was to determine whether or not different beverages affected plant growth. The investigator tested nature-formulated beverages such as iced tea, orange juice and milk as well as synthesized beverages such as orange and grape soda. The investigator added 50ml of each beverage to each pot of planted grass seed every other day. The height of each plant was recorded over a two month period. Water was the best for helping the plants grow but it was followed by the milk. One surprising result was the fact that the plants watered with orange juice died.

Project Number: JLS002 **Grade:** 6
Title: Worms Vs. Fertilizer
Abstract: The purpose of this investigation was to determine if worms or fertilizer makes the plants taller. I planted lima beans in top soil. In 2 pots I placed 4 worms, 2 pots had fertilizer, and 2 were control. The fertilizer group had the most plant growth and the worm group had the least plant growth.

Project Number: JLS003 **Grade:** 6
Title: Fitness Factor
Abstract: Because I enjoy many sports, I chose a project that features exercise. I gathered twelve 6th grade boys to compare their resting heart rates to their heart rates after three different exercises. I used form 4 as a permission slip. The subjects performed sit-ups, push-ups and sprints for a 15 second duration. I repeated the trial three times, then I recorded and graphed the results. I predicted that the sprints would produce the greatest change in heart rate. I found that the heart had to work hardest to supply enough blood to the larger muscle mass, which is the legs. Therefore, sprints impacted heart rate the most of these exercises.

Project Number: JLS004 **Grade:** 6
Title: The Journey of Milk to Yogurt
Abstract: The purpose of my experiment is to observe at what temperatures milk, yeast, and Lactobacillus Bulgaricus work together to make yogurt. I poured 1/2 c of milk into a glass bowl, and heated it to the boiling point, and allowed to set to 100degrees F. I added one tablespoon yeast, and stirred, and stored in a place with a base temp of 80F for 6-8 hours. Once the mixture is settled, creamy, and firm, I tasted and recorded the result. By varying milk temps, I found the optimum temperature which yields the best yogurt.

Project Number: JLS005

Grade: 6

Title: What Colors Make up the Pigments of Fruits and Vegetables?

Abstract: To find what pigments make up the pigments of fruits and vegetables. I collected 2 tablespoons of fruits and vegetables. I then applied the pigment 1 in. from the bottom. I poured 1/2 in. of water into the blue and red. I poured 1/2 in of nail polish remover into the green and yellow. I observed which colors were on top of the applied pigments. In green, was green. In red, there was nothing. In yellow, was yellow. In blue, was purple, blue, green, and yellow.

Project Number: JLS006

Grade: 6

Title: Sudoku Size??

Abstract: The purpose of this experiment is to see if physical exercise affects your learning ability. To conduct this experiment I tested four people by giving them a Sudoku Puzzle before and after they exercised. The experimental results were measured by looking at the results of the Sudoku Puzzle and comparing the time it took them before and after exercise. The result of the experiment was that scores improved by two to three minutes. The results indicate that the hypothesis should be accepted because each person improved their scores exercising.

Project Number: JLS007

Grade: 6

Title: Dog Disinfectant

Abstract: The purpose of this experiment was to test dog saliva and bleach to determine which had more disinfectant properties. To test this hypothesis, bacteria was grown and filter paper dipped in bleach and dog saliva was placed on top of the bacteria. The results of the experiment concluded that bleach worked better than dog saliva. The hypothesis was proven incorrect. The results mean that bleach has more disinfectant properties than dog saliva. If the experiment was redone, different dogs would have been used to compare if one breed has more disinfectant properties in its saliva than another breed of dog.

Project Number: JLS008

Grade: 6

Title: What Bread Molds Fastest?

Abstract: The purpose of this experiment was to investigate if type of flour used would affect the rate and amount of mold growth on bread. I hypothesized that wheat bread would mold first because of the amount of moisture in whole wheat. Three kinds of bread were made holding all ingredients constant except for type of flour, white, whole wheat or cornbread. Bread was sliced and placed in plastic bags. Mold growth was measured and photographed every two days for 18 days. The hypothesis was not supported: Mold developed on white bread first, then wheat and last on cornbread.

Project Number: JLS009

Grade: 6

Title: Which Soil Helps Grow Plants The Best?

Abstract: The purpose of this experiment was to find out which soil helps to grow herbs the best in an indoor garden; natural forest floor soil, aged horse manure, or store bought soil with fertilizer and nutrients. The investigator planted sweet basil seeds in the three different soils (equal amounts of soil), provided equal light and water in an indoor garden, and measured the results. The data showed that the herbs planted in the manure grew the most in size, while the store bought soil grew the most plants. The store bought soil grew six plants to the sizes of one at 3 cm, two at 2 cm and 3 at 1 cm. The manure grew only three plants, but to the greater sizes of two at 6 cm and one at 2 cm. The forest floor soil did not show plant growth at any time. The investigator concluded that the store bought soil with fertilizer and nutrients helped to grow herbs the best in an indoor garden, if you would like to grow the most plants.

Project Number: JLS010

Grade: 6

Title: Eco Smart Grass

Abstract: Lawns around houses are beautiful, but Lawn mowers create a lot of air pollutants into the air. This experiment was intended to learn if there are grasses that need fewer cuts. Four kinds of grasses were planted in a controlled area for a month. The height of each type of grass was measured as soon as every grass germinated, and photos were taken daily. It was observed that the Kentucky Blue grass grew the slowest in this setting. With this grass we can reduce the carbon footprint by 25%-50%. Future work is planned to test this idea with different variables.

Project Number: JLS011

Grade: 6

Title: The Growth Comparison of Vegetables

Abstract: Abstract

For my science project, I chose to compare soil samples to see which medium would be the best for our family garden. I hypothesized both the cucumber and the tomato will grow faster in the potting mix than in the potting soil or potting mix + potting soil (1:1) because the potting mix contains the most fertilizers to promote faster growth. The results showed both plants grew the fastest in the potting soil + potting mix combination, thus dis-proving my hypothesis. For further research, the sample population could be increased to reinforce the the results of the experiment.

Project Number: JLS012

Grade: 6

Title: How Do You See It?

Abstract: The purpose for my experiment was to see if the human eye concentrates more on color or words. How I did this was, first I got thirteen participants to test. I had them read four charts (one color blocks, one with words in black and two with words in color but not the same color for example the word RED may be printed in BLUE ink.) They read each chart as I timed them and charted their answers. It turns out that people read words in black the fastest, followed by the word blocks, then reading the words (not the color ink they are printed in), and finally reading the color of the ink the words they are printed in. The end I found out that it is not the eyes that make us see words or color it's our brain.

Project Number: JLS013

Grade: 6

Title: How Do Different Waters Affect How Cosmos Grow?

Abstract: I did this project because it sounded interesting and I never grew any thing in my life before. I used water, sugar water, and bleach water. I timed how long it took to germinate, to grow 4cm high, to grow a leaf, and to grow 8cm high. I hypothesized that water would be the most effective for the plants, but my observations showed that sugar water was the most effective watering agent for cosmos.

Project Number: JLS014

Grade: 6

Title: Colorful Memory

Abstract: The purpose of this experiment is does color affect memory? To conduct this experiment two girls and two boys from each class third grade-sixth grade will look at a chart. The chart will have 11 color pictures and 11 black & white pictures. They get 30 seconds to see how many pictures they remember. The results were measured by how many people remembered color better than black & white pictures. The results are color pictures are easier to remember than black & white. The results indicate that the hypothesis should be accepted because my trials indicate that color pictures are easier to remember.

Project Number: JLS015

Grade: 6

Title: The Peroxide Plant

Abstract: My purpose for this project is to find if hydrogen peroxide will help the plant grow. The first thing I did in my project was get 4 containers that are exactly the same size and adding different amounts of peroxide to each container. After that I cut close to where the roots were but I did not cut them off. Then I put the roots in the cup. I watched to see what happened. The plant with the 20tsp had the shortest roots. But the 12 tsp plant had the longest roots. The no peroxide and the 4 tsp plant took the longer than all the other plants to grow. In conclusion my hypothesis was incorrect because the peroxide helped the plant grow instead and stopping it's grow.

Project Number: JLS016

Grade: 6

Title: Color vs. Clear

Abstract: The purpose of my experiment is to see if light does have an effect on a plant's growth. To conduct this I had to put green and red cellophane over top of the propagator and have them expose to the light of sun and absorb water. The experiment results were that the clear grew first, but the red had the highest measurement. That means that colored light does have an effect on a plant's growth. I accept my hypothesis because different color light does have an effect on a plant's growth.

Project Number: JLS017

Grade: 6

Title: Age+Common Sense=?

Abstract: Is there a 4th of July in England? You would not know unless you had common sense. Does it matter whether you're four or fifty-four? What I want to figure out is if age affects how much common sense you have or how much common sense you lack. I tested students of all ages in the same room and gave them the same test. From my results, I can see that the older group had more correct answers. Therefore, I can conclude that age did affect common sense.

Project Number: JLS018

Grade: 6

Title: Let's See Those Purely Whites

Abstract: The purpose of this experiment is to see which soft drink is better for your tooth enamel. To conduct this experiment I put two teeth into milk and soda. I observed them over about one week. The experimental results were measured by which tooth from which soft drink had a bigger or smaller. The results of this experiment was that the Mountain Dew had a larger affect than the tooth with milk. The results indicate that my hypothesis should be accepted. I am accepting it because my hypothesis says that the Mountain Dew should have a bigger effect on tooth enamel and since the tooth lost two millimeters I accept it. Therefore, my experiment was successful and it proves that Mountain Dew is a very bad soft drink for your teeth.

Project Number: JLS019

Grade: 6

Title: Insulin vs. Exercise

Abstract: My project is called "Insulin Vs. Exercise". I decided to do this project on whether insulin brings diabetics' blood sugar levels into range more than exercise. I chose this project because I am a diabetic and a competitive dancer. For each test, I ate two pieces of pepperoni pizza, a clementine, and 240mL of vanilla ice cream. I did a Normal bolus, a Dual Wave bolus, and walked on the tread mill after eating. I checked my blood sugar one hour, two hours, and three hours after eating. I hypothesized that exercise would bring my levels into range most. My hypothesis was correct.

Project Number: JLS020

Grade: 6

Title: Which Flower Absorbs Water The Best?

Abstract: The experimenter's purpose was to determine which flower would have the greatest absorption of color over a four day time period through a cut stem. The procedure was set up by the experimenter by buying the flowers and stems holders, placing the food dye in the stem hold and then putting the flower in the holders, and then I placed the stem holders with the flowers in the cut base and waited for results. The experimenter concluded that her hypothesis was wrong. The rose absorbed the most color followed by the carnation, the mum and finally the daisy with the least color absorption.

Project Number: JLS021

Grade: 6

Title: The Highs and Lows of Laughter

Abstract: The purpose of this project is to see if laughing affects blood pressure. To conduct this experiment I used three 6th graders and made them watch a funny movie. The experimental results were that by laughing, the blood pressure increased. The results indicate that the hypothesis shouldn't be accepted or rejected until further study.

Project Number: JLS022

Grade: 6

Title: Beneficial Bovine

Abstract:

My experiment will test different types of milk, 1%, 2%, whole, and skim, and evaluate how they encourage the growth of beneficial bacteria. In yogurt like Activia, they have the beneficial bacteria Bifidus Regularis which helps keeps your digestive system balanced and operating well. There is another beneficial bacteria found in this yogurt, it is called phenylalanine. This bacteria is a type of amino acid and it is closely related to epinephrine or adrenaline. Through this experiment I hope to find away to stimulate the development of these bacteria in our bodies and encourage better health.

Project Number: JLS023

Grade: 6

Title: Is Drinking Water Safe In Allegheny County?

Abstract: If the organizations responsible for drinking water quality in Allegheny County are successful in meeting the EPA guidelines, then the drinking water in Allegheny County should be safe to drink. Water samples were collected from public sources including schools, shops, restaurants, and homes. The water qualities of these samples were tested to determine the levels of various water quality parameters. Published water quality reports for various municipalities in Allegheny County were collected, analyzed, and compared to the water quality results from the public sources. The water quality tests conducted were comparable to the water quality results published by the municipalities.

Project Number: JLS024

Grade: 6

Title: Food DNA

Abstract: The purpose of my experiment is to determine if DNA is really in food. I became interested in this project because I was always interested in DNA when I saw Samantha's experiment and I wanted to see if her experiment was true. The information gained could be helpful to farmers because they can test the crops.

Project Number: JLS025

Grade: 6

Title: Clean or Dirty: Who Needs to Go To The Dentist?

Abstract: I wanted to know if a cat's mouth or a human's mouth was cleaner. I will swab four cat's mouths and place each swab on a nutrient agar plate. I will swab four human's mouths and place each swab on a nutrient agar plate. I will then compare the average growth results of each group.

Project Number: JLS026

Grade: 6

Title: Get the Dirt Out!

Abstract: Soil is an important part of our ecosystem - it provides a place for plants to grow, it filters our water, it is used for construction. The purpose of this project is to demonstrate the differences in soil from various land sources and show the effect of humans on the soil. I collected four soil samples from various areas/sources around Pittsburgh to test them for their differences (my yard, a baseball field, forest, and a cornfield). My experiments consisted of physical and chemical tests using a soil testing kit. The results showed that the four soil samples I collected were very different due to their location and the use of the soil.

Project Number: JLS027

Grade: 6

Title: Are We Related?

Abstract: Abstract

This experiment was done to see if fingerprints are hereditary. In order to complete this experiment we identified four families and fingerprinted parents and children. The fingerprints were compared against eight different types of fingerprints to observe similar characteristics. The results were that the children did have similar fingerprints to the parents; however, prints were not always shared with both parents. For example family four had one child with fingerprints similar to the father, and another child with fingerprints similar to the mother. The hypothesis was partially true or inconclusive. Fingerprints are not always hereditary.

Project Number: JLS028

Grade: 6

Title: How does the exposure to different colors of light affect bean plant growth?

Abstract: Please visit student's exhibit for the abstract.

Project Number: JLS029

Grade: 6

Title: How Fast Can A Dog Learn a Trick

Abstract: My purpose of my experiment was to learn whether treats effect the way a dogs learn tricks. How I did this experiment is simple. First you tell the dog to do a specific trick if he does the trick you give him/her a treat or praise depending on which group it is. Next, you write down what happened in the 15 minute time period. Finally, at the end of the week write down what you observed. My conclusion was the dog that got the treats learned faster than the dog that didn't.

Project Number: JLS030

Grade: 6

Title: Acid Rain: Algae Terminator

Abstract: Grow Spirogyra in different types of water: rain, tap, and distilled water at pH of 4, 5, 6, and 7 using sulfuric acid. Grow for 24 and 48 hours and 5 days. Observe daily: growth density and color of Spirogyra. Take photos. Observe all samples under the 400X microscope. Observe the histology of Spirogyra under the 400X: color, presence or absence of cell walls and chloroplasts, overall cell shapes. Measure the width of the cells.

Project Number: JLS031

Grade: 6

Title: Mold Growth on Fabric

Abstract: My purpose was to find out what fabric has the most mold. I took ten fabrics (two of each kind) and placed five into five small glass dishes, this would be my experimental group. The other five were placed into one large glass dish, this would be my control group. I added a large amount of water to my experimental group the first week and a smaller amount over the next seven weeks. Leather (one of my variables) grew the most mold.

Project Number: JLS032

Grade: 6

Title: Bread Mold

Abstract: My experiment Bread Mold I tested what bread molds the fastest. Italian bread takes only three days to mold, wheat took eight days, and white took fifteen days to mold. My research shows that Italian molds the fastest, Wheat molded second, and White molds the slowest. I poured a teaspoon of water on each piece, put each piece of bread in a Ziploc bag, and put each one in my pantry. After day two I put each one in my bathroom so the steam from my shower would make the bread grow faster. Each and every day I observed them.

Project Number: JLS033

Grade: 6

Title: Softening Beans

Abstract: The purpose of my experiment was to find out what bean softens the fastest when adding different solutions and if the bean was easy to cut after the bean was soaking for hours. In my experiment I took lima beans and soaked them overnight in water. Then I boiled them, and soaked them in five different solutions for a couple minutes. After soaking and cooling I cut and squeezed the beans to see how easy it was to do. The salt solution made the beans the softest and the water solution didn't soften the beans at all. The results indicated that my hypothesis was rejected because the salt water soften the beans the most. Even though the tomato juice did soften the beans it wasn't the substance that soften them the most.

Project Number: JLS034

Grade: 6

Title: Soil Surprise!

Abstract: I want to see what soil additive produces faster and better results. I am going to put different soil in different pots. I will plant seeds in each and observe my results.

Project Number: JLS035

Grade: 6

Title: Effect of Seed Proximity on Radish Plants Growth

Abstract: I believe the farther apart seeds are planted, the less competition there is for food and the healthier the plants will grow. I planted (84) seeds in the following manner: (12) groups of two together, (12) groups of two 1" apart, (12) groups of two 2" apart, and (12) groups of single seeds. My hypothesis was confirmed. Each group came in exactly the order predicted in measurements of total growth, average growth, # of plants >10cm and # of plants >15cm. These results could help farmers create favorable growing conditions and save money by growing the most productive plants possible.

Project Number: JLS036

Grade: 6

Title: Zainy Brainy

Abstract: It is important to know if students' learning capacity or brain functionality is better in the morning than evening hours. To achieve this result, I did a survey where 10 students were tested on Kumon math and reading assignments in morning and evening for one week. The performance criteria depended on time taken to finish each assignment and the percent of correct answer. All the results were averaged, graphed and analyzed. My result shows that the performance by the students were better in the morning than evening. This supports my hypothesis that the brain is more efficient in morning than in the evening hours.

Project Number: JLS037

Grade: 6

Title: Can you teach an old dog new tricks?

Abstract: The purpose of this experiment was to see if you could teach an old dog new tricks. To conduct this experiment I used a four year old english springer. The experimental results were measured by how many times the dog was able to do the tricks after I had taught them. The results of experiment is the dog learned new tricks. The results indicate that the hypothesis should be accepted because the old dog learned new tricks.

Project Number: JLS038

Grade: 6

Title: The Battle Between Soil and Water

Abstract: The purpose of my project is to determine to if plants that are in water can grow faster than the plants in the soil. I became interested in this project because my next door neighbor was planting flowers and it looked interesting to me how they grew so fast in her backyard. I will grow some seeds in soil and some in water. I will observe them for twelve days. I will see how well the plants grew and compare the results. My hypothesis is that I think that the plants with soil would grow before the plants without water would.

Project Number: JLS039

Grade: 6

Title: What concentration of bleach is needed to kill mold on bread?

Abstract: The purpose of my experiment is to find out what concentration of bleach best kills mold. I grew mold on two bread slices. I then sprayed them with different concentrations of bleach and water. I measured the results by noting the amount of time it took for the mold to disappear. I found that higher concentrations of bleach were more effective at killing the mold. Almost all mold disappeared on all samples over longer periods of time. Higher concentrations – 90% and 100% – worked the quickest, however. Therefore, I accept my hypothesis as proven correct.

Project Number: JLS040

Grade: 6

Title: Gender and Spatial Reasoning

Abstract: There have been a number of studies which have shown that boys are better than girls at static spatial reasoning tasks since the '70s, but recent studies are beginning to show that the genders are equal. My concept was to examine that in 6th grade classes, especially in advanced placement classes. I gave each subject a number of spatial questions, then graded them on percent correct and time taken. My data showed that, actually, girls were more accurate in the tests, but boys were faster. Girls were also, when presented with an impossible problem, the quickest to give up.

Project Number: JLS041

Grade: 6

Title: Fighting For Fresh Water

Abstract: The purpose of this experiment was to see if solar energy can purify polluted or salt water faster. Gathering my necessary materials, I conducted a trial by using a black light with 25 ml of salt water. This trial was tested for 48 hours and failed. The next experiment I used a heat lamp. The results determined that the salt water did evaporate faster than the creek water. The final test was using purified water samples with litmus paper. These results indicate that my hypothesis was correct, because I predicted that salt water was purified faster than polluted water.

Project Number: JLS042

Grade: 6

Title: Fermentation is a Gas!

Abstract: The result of this gaseous project will show much alcohol is produced by adding yeast to various kinds of one hundred percent fruit juices. In doing this experiment, I will focus on the sugar content in the fruit juices. I will also watch and record the release of carbon-dioxide gasses produced during the process. This project allows me to see how yeast ferments in four different kinds of juices. Also, I will measure the fermentation of the sugars by using a hydrometer. Another purpose for this experiment is to show local wineries which juice ferments the best.

Project Number: JLS043

Grade: 6

Title: Got Milk?

Abstract: Lactose intolerance is holding back seventy-five percent of the world's adult population, including fifteen percent of the United States, from drinking milk, although it is a very essential part of our daily diet. This science experiment was to determine the amounts of lactose in different milks, and to find the best temperature for lactose enzyme activity. From my experimental results, I found that the goat milk contained the lowest amount of lactose, and the best condition for enzyme activity is 35° C.

Project Number: JLS044

Grade: 6

Title: Do taste buds change as you grow older???

Abstract: The purpose of this experiment was to find out how taste buds change overtime. I conducted this by giving pretzels, powdered sugar, lemons, and cocoa to different aged people. The experiment was measured. People rated the strongness of the food's taste from one to ten. The results are when you are younger you have many taste buds, as you grow older you lose some. From my observations, it looks like when you reach about age sixty your taste becomes sensitive. I agree with my hypothesis because the general idea of it was correct, stating that you lose taste buds overtime.

Project Number: JLS045

Grade: 6

Title: Music: Life or Death

Abstract: The purpose of this experiment is to see if different types of music affect different types of plants. To conduct this experiment I used two radios; one set to rock, the other set to classical. Plants were placed near radios for one hour. One plant is ivy and the other cactus. Results were measured with each plant. At first, all four plants grew. After four days they started to decrease. Each plant decreased about two centimeters. Results indicate that the hypothesis should be rejected. My hypothesis stated that the music would have no affect on the plants. It did!

Project Number: JLS046

Grade: 6

Title: A Wash A Day Keeps The Doctor Away!

Abstract: I was interested in getting rid of germs on my hands and wanted to know the best way how. I will get volunteers for this project. I will have each volunteer wash one hand with soap and water, then use sanitizer on the other hand. I will take a swab of each hand and place the swab on a nutrient agar plate. I will allow the bacteria to grow and compare my results.

Project Number: JLS047

Grade: 6

Title: Effects of Pot Size on Growth

Abstract: I did this experiment because I wanted to know if pot size will effect the growth of plants. Then I will know what size pots I will need if I buy plants.

Project Number: JLS048

Grade: 6

Title: Huff Puff Can't Blow the House Down

Abstract: The purpose of this project was to determine whether passive smoking affects lung function in children. In this experiment, the investigator measured the lung function of children using a spirometer. The results demonstrated that children who have smokers in their house in which they are not exposed to smoke have the best lung function. Not suprisingly, children of nonsmokers did well. As expected, children of people that smoke in the car or house with them performed the worst proving the investigator's initial goal to demonstrate that smoking around children damages their lungs.

Project Number: JLS049

Grade: 6

Title: Fire Belly Finding Food

Abstract: The purpose of my experiment is to determine a toad's dominate sense for locating food. The procedures used for this project were sense and memory. I put the toad in a 5 gallon tank and put 1 dish of food for the scent test and put 2 dishes of food in the tank for the memory test. The toad found the food in scent 2 times faster than in the first trial in memory. The fire bellied toads dominate sense for locating food is scent. Toads cannot remember the location of the food for more than 24 hrs.

Project Number: JLS050

Grade: 6

Title: Best Liquids for Plants

Abstract: My purpose is to see which liquid is better for plant growth. Four types of liquids were used in this experiment. They are bottled water, sugar water, salt water and sugar/salt water. Each liquid is tested on three plants. I water on Mondays and Thursdays. I observed on Tuesdays and Fridays. I recorded the height on Saturday every two weeks. During the experiment, I noticed that the sugar water plants grew taller than all the plants. In conclusion, my hypotheses were proven wrong. Sugar water worked the best to grow the tallest plants.

Project Number: JLS052

Grade: 6

Title: Mold Monsters

Abstract: I wanted to find a simple way to create mold in a contained environment, which was my purpose. First, I gathered two halves of a green apple, two slices of provolone cheese, and two slices of ciabatta bread, each in individual bags, then one of each food was placed in either a dark corner or refrigerator. Lastly, I recorded the growth of mold on the foods each day, with the apple in the dark corner developing mold the fastest. The provolone cheese in the dark corner, however, grew more mold than any other test subject, while the ciabatta bread and fridge items never developed any mold. I come to the conclusion of provolone cheese, because it is rather soft and moist, is able to grow and support mold. The apple in the dark corner, growing mold faster than the other test subjects, was unable to support more mold due to the fluids inside it leaking out as it was exposed. I am uncertain why the ciabatta bread or the fridge items never developed mold.

Project Number: JLS053

Grade: 6

Title: Growing Healthy Houseplants

Abstract: This project will show the effect of nutrients on the growth of houseplants. Nutrients, including manure, earthworms, and houseplant food, were added to the houseplants. One plant received no nutrients. The growth of the plants was tracked by measuring the height of the tallest stem, the number of leaves on each plant, and the number of stems on each plant. In the end, the plant that received only water grew the best. It won in all three groups of measurements. I learned that other factors could have affected the plant growth, including the size of the containers and cold weather.

Project Number: JLS054

Grade: 6

Title: A Moldy Mess

Abstract: I am going to try four methods to keep foods from molding. I am going to put food in the freezer, one group will be unprotected/unsealed the other group will be in an airtight plastic bag. At room temperature, I will put food in an airtight plastic bag and in plastic bags made environmentally friendly.. Observe my results.

Project Number: JLS055

Grade: 6

Title: Doggy Rx

Abstract: I wanted to determine how dog's saliva effects the growth of bacteria. I will swab human's mouths and place the swab on nutrient bacteria.Allow the bacteria to grow for a certain number of days. I will observe and record the amount of bacteria on the nutrient agar. I will then add dog saliva to one side of the agar to see if it deters the growth of the bacteria. I will compare the results of the bacteria with saliva added to the ones without saliva.

Junior Consumer Science

Project Number: JCS001

Grade: 6

Title: Which product of bubble gum blows the biggest bubble?

Abstract: Everybody loves bubble gum. This project is to show which bubble blows the biggest bubble (extra, juicy fruit, trident and stride).I started out doing the Trident then, Stride, the stride did blow a bubble but it was not that big so I put a check by it. Then I did the juicy fruit that also blew a bubble, the bubble that the juicy fruit blew was bigger than the Stride.Finally, I did the Extra. It was hard to chose which one was going to blow the biggest bubble but I figured out the one that blew the biggest bubble.

Project Number: JCS002

Grade: 6

Title: Washcloth Absorbency

Abstract: There are many different materials that have been used in washcloths. Each washcloth material has different useful properties. One property is how much water they can absorb. This project uses three simple materials: cotton, bamboo, and cotton/polyester washcloths. The purpose is to determine which absorbs the most water. The cloths are weighed when they are wet and dry to determine how much water each holds. Three trial are conductede. The average weight absorbed per gram of cloth is: cotton 6.13 g., bamboo 3.87g., and cotton/polyester 5.57g. The results show that cotton absorbs the most water.

Project Number: JCS003

Grade: 6

Title: Stain - B - Gone

Abstract: Please visit student's exhibit for the abstract.

Project Number: JCS004

Grade: 6

Title: The Arrow Stop Project

Abstract: Traditional archery backstops are made of hay bales. Styrofoam will also stop arrows without damaging arrow heads. This project investigates which foam product will stop the arrowsin the shortest distance: craft foam,,extruded polystyrene or expanded polystyrene. Ten arrows were fired into each sample from a distance of 18m. The puncture depth was measured for each arrow. Results show an average puncture depth of 9.1, 13.4, and 23.7cm respectively for extruded polystyrene, expanded polystyrene and craft foam. Extruded polystyrene could be used to provide a neat, hypoallergenic, compact, lightweight alternative backstop for archery ranges.

Project Number: JCS005

Grade: 6

Title: Preservation Station

Abstract: Food goes bad all the time, I tried three different ways to preserve tomatoes using a green bag, a tomato in 24 degrees and a tomato in a refrigerator. I had hypothesized that the green bag would work the best, I was wrong.

In my procedure I placed my first tomato on a plate at 24 degrees celcius, the second tomato in a green bag on a plate at 24 degrees celcius, my third tomato on plate in the refrigerator. I checked to see how many days it took for mold to grow. After three trials my results were inconclusive.

Project Number: JCS006

Grade: 6

Title: Orville Redenbacher vs Act II

Abstract: My purpose was for doing which popcorn pops the most kernels Orville Redenbacher or ActII. What i did was i got to micorwave bags of popcorn one for Orville Redenbacher and one for ActII and i popped both bags for 3 minutes and 30 seconds. Then i counted the popped kernels of both then i counted the un popped kernels of both but i did them at different times one right after another. What i saw was that both Orville Redenbacher and ActII had pretty much the same amount of kernels before i popped the bags.My conclution is that ActII popped the most kernels.

Project Number: JCS007

Grade: 6

Title: Killing Germs At Home: What Works Best

Abstract: The purpose of this experiment was to see if regular household cleaners kill as many bacteria as disinfectant/antibacterial household cleaning products. To conduct this experiment I bought 4 different household cleaners: 409, Clorox and Lysol, all three of which say they are disinfectant/antibacterial cleaners and Arm & Hammer Essentials, which is a plant-based cleaner. I also tested plain water. I purchased a kit to grow bacteria, and built an incubator to grow the cultures in. The experimental results were measured by counting the colonies of bacteria, and observing the size of each colony. The results of the experiment were that Arm & Hammer Essentials appeared to kill as many or more bacteria than the other cleaners. The results indicate that my hypothesis should be accepted.

Project Number: JCS008

Grade: 6

Title: Leak No More!

Abstract: I would like to know which disposable diaper absorbs the most liquid. I am going to test four different brands of disposable diapers. I will expose each diaper (10 of each brand) to a certain amount of liquid and record how much was absorbed. Compare my average results for each brand.

Project Number: JCS009

Grade: 6

Title: Should you Clean Green?

Abstract: Green products are becoming increasingly popular but are they effective for the extra cents? I compared two non-green glass cleaners and two green glass cleaners to see which one has the best performance for your money on dirty, greasy glass. I used them separately on four dirty mirrors, dried them all off with paper towels, and waited 5 minutes. The green and non green products worked equally well. I did the same thing on greasy mirrors. The green products worked better. From my data the green products I used performed better than non green while being eco friendly so it is worth the extra cents.

Project Number: JCS010

Grade: 6

Title: Sticky Situation

Abstract: My experiment that I tested was to see if differences in surfaces affect the adhesion of several types of tape.

I got five different types of tape and stuck them to a selected surface [wet and dry]. Then I pulled each one off one by one to determine which one needed the most force to pull. On each surface both the duct and packaging tape needed the most force to pull off, but the duct tape stick even when I added a tbsp of water. It turned out that duct tape was the strongest and most durable than masking, scotch, electrical, and packaging tape. It required the most force to pull off of glass, wood, plastic, and metal surfaces wet and dry.

Project Number: JCS011

Grade: 6

Title: Biodegradable Airsoft Pellets

Abstract: I did my experiment on biodegradable airsoft pellets to observe which liquid causes a biodegradable airsoft pellet to dissolve the fastest: vinegar, salt water or water. Regular plastic airsoft pellets don't break down for up to 2,000 years, so a biodegradable pellet would be better for the environment. I purchased three brands of pellets, placed them in the bowls of each liquid and took photographs over several days. My results showed that only one pellet brand dissolved in three hours in water, and in one hour in the vinegar because it is acidic.

Project Number: JCS012

Grade: 6

Title: To Clean Or Not To Clean

Abstract: I am going to test four different brands of laundry detergents to see which one removes the most stains. I will create stains on pieces of clothing. The stains will be made with chocolate milk, ketchup, grass, and spaghetti sauce. Each stained piece of clothing will be washed using manufacturers instructions. I will compare the cloth after air dried.

Project Number: JCS013

Grade: 6

Title: Which wrapping is the best?

Abstract: This purpose of this experiment is to prove which wrapping can keep the apple fresh and longer. I will wrap my apples in three different materials and watch them for a few days. I think the saran wrap will keep the apples from spoiling quicker than the waxed paper and the aluminum foil. I think this because the waxed paper is so thin and flimsy and there is no way to keep it sealed. Aluminum foil even though you ball it up in folds and creases, there is no way to tell if every part is sealed. Air is what makes fruit spoil.

Project Number: JCS014

Grade: 6

Title: What Paper Towel Absorbs The Most?

Abstract: The purpose of my experiment was to find out what paper towel absorbs the most because my family uses a lot of paper towels during everyday life. I used Bounty, Dollar General and Sparkle. The results were Bounty being the most absorbant, Sparkle and then Dollar General.

Project Number: JCS015

Grade: 6

Title: Which Fabric is the Most Durable?

Abstract: The purpose of the investigator's experiment was to see which fabric lasted the longest. The investigator tested 5 new pieces of 18x18 cm. of denim fabric, 5 new pieces of 18x18 cm. of polyester fabric, and 5 new pieces of 18x18 cm. of cotton fabric by placing an electric sander on the fabric and used a stopwatch to time how long each fabric took to wear through. The investigator concluded that the cotton fabric was the most durable, the polyester was the second most durable, and the denim was the least durable out of the three.

Project Number: JCS016

Grade: 6

Title: Strength of Homemade Paper

Abstract: My project is on Strength of Homemade Paper. The first thing I did was make the homemade paper using three different stock materials – 100% recycled paper towels, 60% recycled and 20% recycled. I then took a sample of each of the dry homemade papers and put a 2 cm cut in the middle. I attached one tab to a flat surface and put a paper clip on the free tab. I placed 13 galvanized washers on each paper clip. Since none of the papers ripped initially with this number of washers, I timed how long it took until they broke.

Project Number: JCS017

Grade: 6

Title: Batter Up!

Abstract: Abstract: As a baseball player, I want to see what bat will help me hit farther this coming spring: aluminum, composite or wooden. To test the bats, I constructed a baseball bat test rig that controlled the motion of the bat swinging at a ball sitting on a tee. I performed tests for each bat and measured the distance that the ball flew for each test. In almost every category evaluated, the composite bat outperformed the others. Looks like I will be using a composite bat this spring!

Project Number: JCS018

Grade: 6

Title: Which Fabric is the Strongest?

Abstract: The purpose of my project is to find out if cotton, polyester, or flannel were stronger. I put a hook in the wall and put chain links to the hooks added the fabric and linked it to the bucket. The results of my project were that polyester was the strongest fabric and lasted the longest with the most amount of weight.

Project Number: JCS019

Grade: 6

Title: The Clean Up

Abstract: The purpose of this project was to test which of 3 stain removers was most effective in removing 5 common stains. SHOUT, RESOLVE, and an off-brand were tested in removing wine, ketchup, mustard, cheese sauce and grease. I conducted the test three times and I had hypothesized that SHOUT would receive the highest rating on my student-made "stain chart." My hpothesis was proven correct.

Project Number: JCS020

Grade: 6

Title: Sugar and Substitutes, and Everything Nice

Abstract: The purpose of my experiment is to help people who cook to better understand sugar substitutes. This could help them pick the best substitute for the desired sweetness. For my procedures, I prepared a solution with sugar and three popular sugar substitutes. Multiple subjects were used to judge the various sweetness and their results were graphed and analyzed. Once the results were reviewed, "Splenda" and "Sweet 'n Low" were founded to be the sweetest. "Equal" and regular table sugar were always in the bottom two. My experiment did not support my hypothesis. Sugar was not the sweetest of these products.

Project Number: JCS021

Grade: 6

Title: What Type of Bat Affects the Distance of the Ball?

Abstract: The purpose of the investigator's experiment was to find out which type of bat has the most affect on the distance the ball travels. The investigator tested wood, double barrel, composite, and big barrel bats. The investigator rolled the ball through a piece of PVC pipe and recorded the distance it traveled back. The investigator tested each type of bat five times then recorded the average distance for each bat. The investigator concluded that the distance

the ball travels has to do with the swing and flex of the bat. The material of the bat has very little to do with the distance the ball travels.

Project Number: JCS022

Grade: 6

Title: Which Dish Detergent Works Best?

Abstract: The purpose of this experiment is to find the best dish detergent that removes the most food left on a plate. For my procedure I left spaghetti sauce on 3 plates for 10 hours. I tested 4 different dish detergents as follows. I submerged each plate in the water/soap solution for 15 seconds at a time until sauce was removed. Each detergent was tested three times. Dawn came in with 19 submersions- the least. Then Ajax and Palmolive tied; Joy came in last with the most immersions! In conclusion Dawn was the best brand detergent and Joy was the worst.

Project Number: JCS023

Grade: 6

Title: Swimsuit Buoyancy

Abstract: I decided to do this project because I am a competitive swimmer, and I wondered how the buoyancy of a swimsuit could affect a race. I used four different high-tech swimsuits, and held each one halfway underwater. I added washers to the suit until the suit moved from the halfway point. I did this to each suit three times, and recorded the amount of weight necessary to displace the suit. I calculated the total mass that each suit held. Then I made graphs of all the data. My hypothesis was proven incorrect. Suit D held the most mass, therefore it was the most buoyant.

Project Number: JCS024

Grade: 6

Title: How Does Sight Affect Taste

Abstract: The purpose of this experiment was to find if sight affects taste.

To conduct this experiment I had two bowls of popcorn, one colored, one not colored. I gave each person one of each. They tried each kind blindfolded and not blindfolded.

The experimental results were measured by what each person voted as their favorite.

The results of the experiment were that when people are blindfolded answers varied, but when people weren't blindfolded they liked the non-colored popcorn.

The results indicate that the hypothesis should be accepted because it said when people aren't blindfolded they would like the non-colored popcorn.

Project Number: JCS025

Grade: 6

Title: Fertilizers: What Brand Do You Use?

Abstract: I am going to compare three brands of plant fertilizer to see which one will help grass to grow the fastest. I think that the most popular name brand fertilizer will work the best. I will have three different plant groups. I will observe the height of the grass growth over time and compare the average of my results.

Project Number: JCS026

Grade: 6

Title: Which Water Soluble Glue Works the Best?

Abstract: The purpose of the experiment was to help my mom. She is always doing crafts. I wanted to see which water-soluble glue works the fastest. I could tell her which one she should use so she gets the best results. To set up my experiment I put four bottles on a table which held up a plastic lid. Then I tested the glues on the lid. The conclusion was that the Aleene's Fast Grab Tacky Glue worked the fastest.

Project Number: JCS028

Grade: 6

Title: Saran vs. Glad

Abstract: As shown in these graphs, the 118.29 ml. of water didn't evaporate at all during ten-day period. However, the control dropped 73.93 ml. of water in ten days in both trials. I conclude that both plastic wraps work equally well in preventing evaporation.

Project Number: JCS029

Grade: 6

Title: Curdling Milk

Abstract: My purpose of this project is which milk will make the most curdles. My hypothesis is that skim milk will make the most curdles, 1% milk will make the second largest amount of curdles, 2% milk will make the third largest amount of curdles. I will learn a lot about curdles and how fast the milk turns into curdles. I would pour the skim milk into a pot and heat it up on medium until the milk comes to a simmer. I would add 1 tablespoons of vinegar to the milk and stir. After the milk is cool, I will strain it by lining the strainer with paper towels and pouring the milk through it. Last, I will measure the curds by weighing them and repeat the steps with each other type of milk.

In my experiment my hypothesis was wrong I thought that skim milk would make the most curdles it actually came in last. Lactic milk came in first with 1.705oz then it was 2% milk with 1.465oz then 1% milk with .890oz. Finally, skim milk was .755oz.

Project Number: JCS030

Grade: 6

Title: Which Window Cleaner Creates Less Streaks

Abstract: The purpose of the investigators project was to see which window cleaner creates fewer streaks. The investigator tested Windex Original glass cleaner and Method Planet Friendly glass cleaner on two 24x28 inch windows. She recorded each of the number of times she sprayed each glass cleaner on the two windows. Then, she studied each window for about ten minutes and counted the number of streaks judging which streaks were whole ones by the thickness and length. The investigator decided that Method Planet Friendly glass cleaner created fewer streaks.

Project Number: JCS031

Grade: 6

Title: The Strength of Wood

Abstract: The purpose of my project is to find out which type of wood will support the most weight before breaking. The procedure used was putting a piece of wood across two saw horses, putting a level over it and then hanging buckets on the leve and filling them with gravel or bricks until the wood broke. The data is Poplar 133 pounds, Cherry 189 pounds, Walnut 277 pounds, Maple 285 pounds, Mahogany 297 pounds, Red Oak 297 pounds. Ash did not break and Hickory didn't break. My conclusion is the data did not support my hypothesis. Ash and Hickory won.

Junior TEAM

Project Number: JTM001

Grade: 6

Title: Acid Rain is a Pain

Abstract: We decided to do this project after we heard that Pennsylvania has a lot of acid rain. For this project we took three plants, three bottles full of water of different acidity, and a sunny window. We watered the plants every day. The results were: the leaves of the plants exposed to acid rain turned yellow or dropped of. Our conclusion is that acid rain damages crops. In the future we will extend this experiment with different plants to find out if some are more resistant than others.

Project Number: JTM002

Grade: 6

Title: Battle of the Creeks

Abstract: In our research, we evaluated the water quality in Mountour Run Creek and Squaw Run Creek by surveying macroinvertebrate populations at each creek. We hypothesized that Montour Run Creek and Squaw Run Creek would have Class 2 macroinvertebrates because both areas are not completely undisturbed but they are also not completely urban. We collected freshwater macroinvertebrates (aquatic bugs without a backbone that can be seen without a microscope) in these two locations and used the system of determining water quality by knowing what lives in the water and what water quality those bugs can survive in. We also collected water samples from both sites and test them for pH, turbidity, total dissolved solids, and dissolved oxygen. We concluded that Squaw Run Creek was cleaner. This creek has been straightened by humans, is 7'-15' wide and 6"-24" deep, and is cold, clear, clean, and fast. The other creek, Mountour Run Creek, was deeper, slower, muddier, skinnier, and had "quicksand" on the bottom (it was probably mud). During our project fieldwork, we also found many interesting bugs, fish, and crayfish.

Project Number: JTM004

Grade: 6

Title: Cleaner Wars

Abstract: The purpose of this project is to determine if environmentally friendly products could work better than name brands or bargain brands that may contain harmful chemicals. First, we poured 60 ml of red Kool-Aid on a carpet square three times. Next, we followed the procedures on the back of the cleaners. Then, we repeated this procedure two more times. After we were done, the stains were cleaned up. The results of the first test were that Woollite (name brand) cleaned the best, followed by Scotch Guard (bargain brand), and then Martha Stewarts (green brand). In the second test, the results were the same. In test three, Woollite was the best and Scotch Guard and Martha Stewart switched places, but were comparable.

Project Number: JTM005

Grade: 6

Title: Do You Judge a Book by Its Cover?

Abstract: Do you judge a book by its cover? For our project we did a taste test but switched the drinks but without our testers not knowing. We both thought more people would judge a book by its cover and it was true.

Project Number: JTM006

Grade: 6

Title: Effect of Lack of Sleep on the Nervous System

Abstract: We did this project to let kids and teenagers know the importance of getting enough sleep to the person's body. We monitored the reaction time speed of eight volunteers between 10 and 15 years old after getting enough sleep and after sleeping six hours only. Data was recorded. We found that the person's reaction is slow when the body lacks sleep. The nervous system needs to rest in order to function properly. In the future we will blindfold the volunteer and let him/her catch the "grab it gauge" by using a beeper.

Project Number: JTM007

Grade: 6

Title: Electromagnetic Levitation

Abstract: Our invention is a Personal Maglev (P.M.) It's a hovering skateboard, using a concept related to the Eurasian Maglev. For our scale model, materials were a small finger board weighing 28 grams, a dozen or so magnets, two steel cylinders, and insulated wire. We built two electromagnets by wrapping wire around each cylinder 260 times, then conducting 4.5 amps through the wire. For testing the model, we set up two small, parallel tracks of powerful magnets on wooden boards. The two electromagnets were placed between the tracks. Our test showed that levitation is possible through magnetic materials.

Project Number: JTM008

Grade: 6

Title: Feel The Heat

Abstract: Our project was to see what would make ice melt faster: rock salt, calcium chloride pebbles, clear 60 watt light bulb, black 60 watt light bulb, or a controlled one. Our procedure was to get six ice cubes on separate trays and time each one with the ingredients on them. We found out that the calcium chloride pebbles melted the ice the fastest and the controlled one melted the ice the slowest. Our conclusion was that

Project Number: JTM009

Grade: 6

Title: Hamster Powered Fan

Abstract: Our purpose for this experiment was to make a fan that can work outside and is green. First we researched a little, bought Zhu Zhu pets and began setting up a basic plan. 2% of Americans own hamsters or guinea pigs, which is a lot considering how many citizens there are. We think the project will be a success.

Project Number: JTM010

Grade: 6

Title: High Speed Underwater Train without Wheels

Abstract: In our project we tested to see if a high speed underwater train could be carried by a metal conductor without wheels, providing a smooth ride.

Project Number: JTM011

Grade: 6

Title: How do Color Filters and Angles Affect a Laser?

Abstract: Purpose: Will color filters and the angle of a solar cell affect the energy of a laser? Which color gives the most power to the laser? We placed a laser 17 inches from a solar cell/multimeter glued to a Protractor. The laser will go through the color filter and then hit the solar cell at the angle measured. Red filter at 90° angle, voltage was 1.39; Blue laser at 90° angle, voltage was 2.60. Color filters and angles do affect the energy of a laser. The blue filter at a 90° angle provided the most power.

Project Number: JTM012

Grade: 6

Title: How Does Your Popcorn Pop?

Abstract: Procedure-to tell the best brand of popcorn according to how many kernels go un-popped. First we gathered all of the brands of popcorn, then we popped each brand for the same amount of time, opened each bag and finally counted the kernels not popped. We used Pop Secret, Act II, and Orville Redenbacher. Orville Redenbacher had the MOST un-popped giving us the least amount of eatable popcorn. The best brand according to us was Pop Secret.

Project Number: JTM013

Grade: 6

Title: How to Break Down Water Into its Two Substances?

Abstract: Water is the liquid state of the oxygen and hydrogen together (H₂O). We did this project to determine how to break down water into its two substances. We attached wires to pencil lead pieces, mixed lemon juice with water, then used paper clips to hold the lead pieces to the inside of the cup. Finally we taped each end of the wires to

electrodes on the battery without letting the wires touch. The break down of the water releases gas (bubbles in the water). In the future we will develop a test to identify the nature of the gas released.

Project Number: JTM014

Grade: 6

Title: Is the Sun Always Best?

Abstract: The purpose of the experiment was to find the best way to grow plants in the winter.

The procedures were that we planted three identical plants in the same kind of pots. We watered daily, and measured and took pictures every other day. We recorded the data.

For the data, we used a graph to record our measurements and charted it every other day.

Our conclusion is that the plant under the grow light grew the most, the plant under the artificial light grew second best, and the plant in the sun grew the least.

Project Number: JTM015

Grade: 6

Title: Magnetism's Affect On Bean Growth

Abstract: The purpose of our experiment is to help scientists and any bean growers grow their beans healthier and faster. Our procedure; gather pots, soil, growth light, cow magnet, two fish tanks, water, and seeds. Fill pots half way, plant seeds, and fill soil to top. Place under growth light. Water daily and record data. The magnet isn't helping, but we now know that magnetism does not affect the growth of bean plants.

Project Number: JTM016

Grade: 6

Title: Making Electricity from Fruits

Abstract: The purpose of this experiment is to figure out which fruit, lemon or orange makes more electricity. We made 2 slits in each lemon and inserted copper and zinc electrodes. Next we connected the lemon to an LED and kept adding lemons, connected in a series until the LED glowed. We used multi-meter to measure the voltage. We repeated the process for the oranges. Three lemons were required for LED to glow. Three oranges weren't sufficient. Each lemon produced 0.9 volts, while the orange produced 0.613 milli-volts. We found out that lemons produce more electricity than oranges.

Project Number: JTM017

Grade: 6

Title: New Uses of Old Nitrogen

Abstract: Our experiment; effect of nitrogen in fire inflation, tests the effects of nitrogen in a beach ball. We will test this theory by immersing a beach ball filled with nitrogen in a large bucket of water. We will also do this with normal air. We are currently testing this experiment.

Project Number: JTM018

Grade: 6

Title: pH and how it affects creek life

Abstract: The purpose for this experiment was to study the pH of creek water and its conditions for the survival of the water strider. We took multiple samples of the creek water and compared it to the plain tap water for pH analysis at our lab. We took six trips to Squaw Valley Creek in Fox Chapel to test the pH level. Water striders were tested in tap water vs. creek water to see how they would react in different pHs. The water striders' living conditions were much more comfortable in the creek water conditions than the tap water. This study showed that Pennsylvania's creek conditions are close to ideal for wild habitat than the domesticated tap water conditions, created by humans.

Project Number: JTM019

Grade: 6

Title: Plant Formulas

Abstract: The purpose of our experiment is to help people and plants in need of water. We came up with a plan to help people in a serious situation like a drought or water pollution/accident. We will be using milk, water, orange juice, and vinegar on plants to test which liquid is best served to a plant during a drought. The result of the plants experimenting is somewhat the same as our hypothesis. Our hypothesis is that one of the liquids will be more effective to the plants than water. First, we used 4 cyclamens to use for the experiment. Second, we gave each plant the same amount of liquid (2 fluid ounces) to see what would make a plant grow better than water. Third, we recorded the growth of the plants by taking pictures of the cyclamens and measuring their height. We repeated the steps to get through the conclusion. MILK DOES A PLANT GOOD!!!

Project Number: JTM020

Grade: 6

Title: Power Shots

Abstract: Do Oxyride or Lithium Batteries give you a better price over regular Alkaline's for taking pictures with digital cameras? We believe that, based on research, the Oxyride batteries will provide extra life to take more pictures with the digital cameras. We placed a pair of each brand of "AA" batteries into a digital camera. We then took 20

pictures, alternating flash and non-flash, followed by turning off the camera for 5 minutes so the batteries and camera could rest. We repeated this until the camera would not take anymore pictures. We changed the type of battery and repeated the process. We will compare how many pictures each brand of battery took versus the price for each.

Project Number: JTM021

Grade: 6

Title: Roll On Over To Statistics

Abstract: Our project was based on Physical Science. We wanted to see what affected outcomes of dice. Our hypothesis was "Special rolls affect the outcomes of dice, but not types of dice." Our procedures were to first, make special rolls for different dice. Second, do the rolls. And third, put together our data, and look for patterns. We concluded that neither the roll or the die affected the outcome, it was merely chance. We also noticed that once you got used to a roll, a number could be the same five times in a row. This proves that dice are randomized.

Project Number: JTM022

Grade: 6

Title: Turtle Creek Watershed Extravaganza

Abstract: In our research project, we investigated Abers Creek in the Turtle Creek Watershed. We looked for wildlife and macroinvertebrates. We also tested for pH and turbidity. We traveled to the creek one time and placed a net to catch macroinvertebrates. Two weeks later we went back to the creek to find our net. We searched for hours and found it on shore dried up. That part of our test was a failure but the rest of the project was a success. The testing was good and we found numerous animal tracts, wildflowers, and healthy algae at the bottom of the creek. In the end we concluded that Abers Creek is a healthy creek.

Project Number: JTM023

Grade: 6

Title: Watch your step-Alarm will sound

Abstract: You have probably heard of burglar alarms that start off when you open a door, but have you ever heard of one that goes off when you step on a sensor? The reason we chose to do this project is to see if we can create a burglar alarm with a step on sensor using a simple circuit. It was demonstrated that when pressure is put on concealed open circuit contacts, the contacts connect the circuit triggering the alarm as the current flows through the circuit. In the future we will try triggering an alarm by sensing motion.

Project Number: JTM024

Grade: 6

Title: Water Quality Showdown

Abstract: Our project's focus was to compare the water quality of the Allegheny River and one of its tributaries, Squaw Run Road Creek. Our hypothesis was that the Allegheny River would be cleaner. Our method of determining the water quality included eight tests using water from the Allegheny River and Squaw Run Road Creek. We tested the water for dissolved oxygen, alkalinity, pH, nitrates, phosphates, temperature, total dissolved solids and turbidity. We performed the tests on the samples at Shady Side Academy Middle School on October 3, 2009. At the end, we found out that it both waterways were very healthy.

Project Number: JTM025

Grade: 6

Title: Which Blade Pitch Generates the Most Amps?

Abstract: The purpose is to determine which blade pitch will generate the most amps in a model wind turbine. First we built a small wind turbine. Next we hooked the wires from the turbine rotor to an amp/volt meter and turned on a window fan for two minutes while measuring amperage. We set the blade pitch between 0 to 90 degrees. Data showed the greatest amperage was generated between 45 to 70 degrees. In conclusion, a small model wind turbine will generate the greatest amperage when the blade pitch is set between 45 to 70 degrees.

Project Number: JTM026

Grade: 6

Title: Will a slap shot's distance affect it's speed?

Abstract: The purpose was to see how fast a slap shot is from different distances. First we gathered all the materials and set up the net. Next we took slap shots and then calculated the speed of each shot using the formula $s = d/t$. We found that it doesn't matter how far you are from the net, but how much power is used when making the shot.