

#16

Grade 7-Red St. Joseph's School

Herndon, VA

Mrs. Hurley

Medicine and Health

Do Multivitamins make you feel better?

The purpose of the experiment was to see if the participants would feel better after taking multivitamins for one month. The hypothesis was if giving participants multivitamins for one month it would make them feel better.

To conduct the experiment, six men and six women, all over the age of forty, were asked and provided with thirty tablets of multivitamin dietary supplements. The six men were given men's multivitamins and the six women were given women's multivitamins. At the end of one month, the participants then answered health-related quality of life questions to assess their overall health. The participants completed a seven question survey. Most of the questions were validated by the Centers for Disease Control and Prevention with regards to health-related quality of life. The independent variable was the participants' general health because it was subject to change. The dependent variable was the results, how they felt after a month. The constant variable was the multivitamin (men's or women's).

It was concluded that the hypothesis was correct. Of the survey questions, the most predictive were questions B and G. Question B asked "Compared to one month ago, how would you rate your health in general now?" and the result showed 66% (8/12) of participants noting their health was somewhat better or much better. Furthermore, Question G asked "In the future, how likely are you to continue taking multivitamins?" and the result showed 92% (11/12) of participants were likely to continue taking multivitamins. It was noted that 100% (12/12) of the participants described their health before taking the multivitamin dietary supplements as good or better.

#17

Grade 7-Red St. Joseph School

Herndon, VA

Mrs. Hurley

Biochemistry

To Clean or Not to Be Cleaned

The purpose of the experiment was to see, of the three laundry detergents used on three different stains, which detergent would be the best at removing stains. The hypothesis is that if three different laundry detergents (Tide, Gain, and Great Value) are used to remove three different stains, then Tide will be the best at removing the stains due to the quality of its ingredients.

To conduct the experiment, there were three groups; Group 1 (Tide), Group 2 (Gain), and Group 3 (Great Value). In this experiment, the independent variables were the three groups and the dependent variable was how much stain was removed from each hand towel. Each group was assigned a white hand towel (38cm x 38cm) and the same stain. The stains were tomato sauce, fruit punch, and red wine. Each group then got 50mL of the same stain. Once the stain was poured on each of the three white hand towels, the stain soaked for 30 minutes. After 30 minutes, the Color Mate app (an app used to find color percentages) found the saturation levels of each stain. Then each stained hand towel was put into the washer with 24 mL of one laundry detergent for 15 minutes. After the 15 minutes were up, Color Mate was then used to determine the saturation levels after the wash. The experiment was repeated for a total of three trials.

It was concluded that the hypothesis was correct. Tide tied two of the three trials with Gain (both with saturation level differences of 59% pertaining to the red wine stain and 138% pertaining with the tomato sauce stain). Ultimately Tide beat Gain because in the third and last stain trial Tide had a saturation level difference of 99% and Gain with a 95% difference. Although Great Value won the fruit punch stain trial with a saturation level difference of 105%, it came in last place in all the other stain trials. All in all the averages of the differences conclude that Tide is the top laundry detergent with an average of 99%, Gain with 97%, and Great Value coming in third with an average of 97%.

#18

Grade 7R, St. Joseph School

Herndon, VA

Mrs. Hurley

Biochemistry

Microwaving Fruit

Microwaving fruit is an experiment. The purpose of microwaving fruit is to figure out what temperature the world has to be for humans to not be able to grow certain fruits anymore. If a person microwaves fruit and measures the temperature before and after, then humans will know *when fruit will not be able to grow anymore due to global temperature. Humans have been* studying what the temperature will be in the future for years, so if that is applied to the fruit temperature humans will know when fruit won't be able to grow anymore. Microwaving fruit will answer the question of when humans won't be able to grow fruit anymore.

Microwaving and measuring fruit has a procedure that takes preparation. First, the fruits were measured for temperature. Next, the fruits were put in the microwave at different times individually. Lastly, after each fruit was finished heating, the fruits were measured for temperature individually. The independent variable is the time the fruits are going in the microwave (30 seconds and 60 seconds). The dependent variable is the temperature of the fruits. The control is the fruit in this experiment. There is a procedure for microwaving and measuring fruit.

If various fruits are microwaved at 30 seconds and 60 seconds, then the fruits at 1 minute will have more deterioration than the fruits at 30 seconds. The hypothesis for this experiment was supported because the fruits at 60 seconds were more burn and melted. The apple before put in the microwave for 30 seconds was about 23 degrees celsius and after microwaved it was 85 degrees celsius. The apple before put in the microwave for 60 seconds was about 23 degrees celsius and after microwaved it was about 98 degrees celsius. The orange before put in the microwave for 30 seconds was about 23 degrees celsius and after microwaved it was about 84 degrees celsius. The orange before put in the microwave for 60 seconds was about 23 degrees celsius and after microwaved it was about 98 degrees celsius. The banana before put in the microwave for 30 seconds was about 29 degrees celsius and after microwaved it was about 37 degrees celsius. The banana before put in the microwave for 60 seconds was about 29 degrees celsius and after microwaved it was about 61 degrees celsius. In conclusion the banana seemed to have a thicker peel because it's temperature before microwaving was hotter than the apple and orange. Also, the banana didn't heat up as much to the thicker peel.

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Grade 7, St. Joseph School

Herndon, Virginia

Mrs. Hurley

Biochemistry

Electrolytes Inside Sports Drinks

The purpose of the experiment was to determine if sports drinks, such as Gatorade, replenish electrolytes in the body that are lost during exercise over less expensive drinks such as orange juice and water. The hypothesis was that if one were to drink distilled water, tap water, and orange juice, then the body would be replenished with electrolytes lost during exercise more so than the more expensive sports drinks.

To conduct the experiment, a digital multi-meter was used to measure the conductance of the different liquids that claim to provide energy and replace depleted electrolytes in the body. The procedure for the experiment was to create an open circuit using the multi-meter, 9v battery, copper wire and a plastic straw and to set up five plastic bowls, each filled up with 1/3rd of each type of liquid drink to be tested. One bowl was filled with distilled water that was used as a test bed. A second bowl was filled with orange juice, a third bowl was filled with Red Bull, a fourth bowl was filled with Gatorade, a fifth bowl was filled with tap water, and a sixth bowl was filled with Body Armor sports drink. Two strands of copper wire connected to the plastic straw, separated about 38.10 mm apart. The other end of the two copper wires were connected to the 9v battery and multi-meter to make an open circuit. The plastic straw was placed into each of the liquids to measure the conductance of each, which in turn led to the electrolytes that each liquid provided. The sports drinks and the other liquids used during the testing were the independent variables. The dependent variables were the conductivity readings that were measured.

It was concluded that the hypothesis was not correct. Orange juice provided more electrolytes than water and Red Bull, but it did not provide more electrolytes than the Body Armor sports drink. The information gathered in this experiment showed that by performing average exercise and weekly activities, natural fruit drinks and water would replace the electrolytes lost. For more competitive or strenuous activity, the more expensive sports drinks would be recommended to replenish the body with the more-needed electrolytes.

#20

Grade 7-Red St. Joseph School

Herndon, VA

Mrs. Hurley

Botany

How do different fertilizers affect plant growth?

The purpose of this experiment was to discover which of two fertilizers were the best to use on mustard seeds. The hypothesis is if two different fertilizers, Miracle Gro and Expert Gardener, are applied to two different sets of mustard seeds, then the mustard seeds with the Miracle Gro will grow taller.

For the experiment, the fertilizers were added to two sets of mustard seeds. Each set had four pots. The fertilizer was then added to water and then used to water the plants every two days. Over a course of 7 days each plant would be measured. The plants would then be averaged by height. After that the data would be recorded. The independent variable is the fertilizer. The dependent variable is the height of the plants over the 7 days.

It was concluded that the hypothesis was correct. The mustard seeds with the Miracle Gro grew taller. During the first day of the experiment none of the seeds had sprouted for each set of seeds. During the second day of the experiment the seeds had sprouted. On the third day, the plants with the Miracle Gro averaged 3.6 cm, on the fourth day they averaged 4.9 cm, on the fifth day they averaged 6 cm, on the sixth day they averaged 7.5, and on the final day the plants averaged 9 cm. The mustard seeds with the Expert Gardener averaged 3.4 cm on the third day, on the fourth day they averaged 4.7, on the fifth day they averaged 5.5 cm, on the sixth day they averaged 6.8 cm, and on the seventh day they averaged 8.1 cm.

#21

7B - St. Joseph School

Herndon, VA

Mrs. Hurley

Botany

Let It Grow! Let It Grow!

The purpose of this experiment was to test if watering grass plants with water, plant food, Sprite or Coke would promote the most plant growth. The hypothesis was that if watered with either water, plant food, Sprite or Coke then the grass plant watered with plant food would grow the tallest of the other plants.

To carry out the experiment, a cardboard box was divided into four sections (each with 12 cups with 30 mL of dirt on the bottom, 12 seeds and another 15 mL of dirt on top) and watered with either water, plant food, Sprite, or Coke. The independent variable in this experiment was which liquid was used to water the grass plant. The dependent variable was how tall the plant would grow. Then, everyday for four weeks, the plants were watered with the four different liquids and measured and averaged at the end of each week.

In conclusion, the hypothesis was not supported because the grass plant watered with water was the plant with the highest growth average. For the "water" plants the overall growth average was 35.23cm. For the "plant food" plants, the overall growth average was 32.68cm. As for the Sprite and Coke plants, both of their growth averages were 0cm.

#22

Grade 7-Blue, St. Joseph School

Herndon, VA

Mrs. Hurley

Botany

Is Glucose or UV Light a More Effective way to Train a Vine to Grow?

The experiment's purpose was to see whether or not it was possible to grow a vine with two different methods and which method was more effective. The hypothesis was that if one uses glucose and UV light to train a vine, then the method with UV light will be more effective for the plant.

To set up the experiment, each plant was put into a wooden maze on its side. Plant number one had a clip on light with a UV light bulb clipped to the maze, which was moved throughout the experiment, and covered with a cardboard box; plant number two was placed by a window that received direct sunlight. Both plants received 51.75mL of water once a day, but the plant with direct sunlight had 3.5g of sugar added to the water. They were grown over the course of a month and measured every other day. In this situation, the independent variable was the method used to grow the plants, specifically glucose and UV light. There were two dependent variables including how fast and how long they grew.

The conclusion was that the hypothesis was correct because the vine grown under the UV light grew 3cm longer than the vine grown with natural light. Plant number one, or the plant grown with UV light was 22cm long, but plant number two grew to 19cm long. It was noted there was constant light on plant number one increasing the chances that it may have grown longer.

#23

Grade 7-Blue St. Joseph School

Herndon, VA

Mrs. Hurley

Botany

Which color light is better for plant growth?

The purpose of the experiment was to see how different colors of light affect plant growth. The hypothesis is that if the plant receives different colored light, then it will have different growth rates.

To conduct the experiment, a partitioned room was built with six little boxes (each 10x10x12 inch). Each holder contained soil and the beans/seeds (beans, three black eyed peas, and basil seeds). About 5 1/2 inches away from the top of the seedling holder is the colored lightbulb (blue, green, red, purple, white, and ultraviolet). The different colored lights is the independent variable. The dependent variable is the height of the plants. Before planting the beans, they germinated in water. The constant in this experiment was the white light as a substitute for the sun. The seeds/beans were planted on the 14th of December and started sprouting in the first few days. The plants grew and were watered over the course of 22 days (3 weeks and one day). The data was then recorded.

The conclusion of the experiment was that the hypothesis was correct because some plants grew tall and healthy, tall and unhealthy, short and healthy, short and unhealthy, or didn't grow at all. For blue light the plants did well in the first few days then after awhile kept growing but the stem and leaves were not very healthy. The plants in the green light grew pretty high and very healthy. Red light was somewhat healthy and tall. Purple was was not very healthy or tall. The plants in white light were healthy, strong and tall, but the leaves started losing their color and turning white because they were too close to the lightbulb. The ultraviolet light was not very healthy or tall.

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Grade 7-Blue St. Joseph School

Herndon, VA

Mrs. Hurley

Botany

Which plant will thrive in different lights

The purpose of my experiment was to find out if sunlight could make plants thrive better than in purple light. The hypothesis was that the plants in the purple light will die of too much energy.

To conduct this experiment I placed two similar sets of plants in each light. The plants I used were two sets of Fittonias, Ivy, and Begonias. I placed these plants in two separate rooms. One of the rooms had a window so sunlight would shine through. The other room was dark but had a purple light for growing plants. Purple light has a short wavelength which some plants don't thrive in. The two plants grew for three weeks and were watered and measured daily. The independent variable was the type of plant, soil, amount of water, and the light. The dependant variable was if they grew or died.

It was concluded that the hypothesis was correct. The plants growing under the natural light were the same as in the beginning of the experiment but the plants growing under the purple light had died even after being properly and similarly cared for. Both sets of plants grew 2 cm after the first week and never grew again. At the end of the three weeks the plants growing under the purple light had all shriveled up and died. One thing that I noticed was that growing a plant under on type of light only is not healthy for the plant.

#25

Grade 7-Red Saint Joseph Catholic School

Herndon, Virginia

Mrs. Hurley

Botany

When Plants Attack: Even Plants Need Space to Live!

The purpose of this experiment was to observe the growth of companion and combatant plants to understand how they grow in different spacing patterns, close together and spread out. Sunflowers were planted in between bush beans and basil. Sunflowers are combatants with bush beans but companions with basil. The hypothesis of this experiment was that if the spacing between the plants is too small then the plant growth will be stunted; if the spacing is just right then the growth is maximized. By discovering the correct spacing and understanding the interaction between the plants, a better garden can be built to provide healthy flowers, vegetables, and herbs for everyone to enjoy.

To conduct this experiment, sunflower, bush bean, and basil seeds were sown and germinated in a custom-made cedar planter box (0.61 x 1.22 meters). A custom mix of garden soil and moisture control potting mix was combined in the planter box (5 total bags). A 30 watt grow light for plants was mounted over the box to provide 16 hours of artificial light each day, and the box received sunlight from a south-facing window. A soil moisture meter was used to maintain the right soil moisture level and a flexible metric ruler was used to measure the plant heights. The procedure for the experiment was to sow the seeds in three different spacing patterns (10.2, 15.2, 20.3 cm) and water the plants so that the soil moisture was just right each day for proper growth. The average plant heights were measured and recorded in Google Sheets at the end of each day for 30 days. Pictures were taken each day to visualize plant growth. The dependent variables were the growth height and growth rate for the three plant types. The independent variables were the distance between each plant and the three plant types. The number of seeds per plant type was kept constant for the three spacing distances to better understand the effect of spacing on growth. There was no control for this experiment.

The conclusion was that the hypothesis was mostly correct. Basil and sunflowers were clearly impacted by all three plant spacings. The three spacings had a minimal impact on the bush beans. Basil growth was stunted considerably, more than likely impacted by the bush beans, a combatant to basil. Surprisingly, bush beans grew 38% higher than the sunflowers and stunted sunflower growth for the 10.2 cm spacing pattern. The optimum planting pattern appears to be the 15.2 cm spacing for bush beans and sunflowers. It is recommended that basil be planted much further away than 20.3 cm from bush beans and sunflowers for optimum growth. So even plants need space to live properly!

#26

7th Grade St. Joseph School

Herndon, VA

Paige Salang

Botany

The Effect of Sugar Water on the Survival of Fresh Cut Flowers.

The purpose of the experiment was to test the effect of sugar water on the survival of cut flower stems. The hypothesis was if sugar water is used in place of regular water for fresh cut flowers, then their life expectancy will be longer.

The following is the procedure that was used. Supplies consisted of four tulips and four roses; one 3 L bottle of spring water; one pair of scissors; eight plastic cups; sugar; a measuring cup; a measuring spoon; a metal spoon; and a black sharpie. The room temperature averaged between 68 to 70 degrees daily and the flowers received natural sunlight during the day. Each flower stem was cut at an angle under running water to a stem length of 13 cm using scissors. Eight plastic cups that could hold up to 167 ml were used. The control cups had no marks. 118.29 ml of room temperature spring water was poured into each cup. Cup one for both flowers was the control flower as it had only water. The cups were marked I, II and III to designate how many teaspoons of sugar were added. A metal spoon was used to stir each cup eight times to help the sugar dissolve. One of both flower types was placed in each of the plastic cups. The dependent variables were the number of days the flowers stayed fresh and lived and the independent variables were the types of flowers. The control was one of each flower in regular water with no sugar.

In conclusion, the hypothesis is correct but the amount of sugar used is key. It was observed that the flowers with the most sugar did not do well but the control flowers and the flowers with the least amount of sugar did well. At this point, it is believed that it takes more than sugar to extend the life of a fresh cut flower. Neither the tulips nor the roses developed mold over the four days of observation. Wilting flowers may give off ethylene which could cause other flowers to wilt. The packet you get with fresh cut flowers, also known as a floral life extender packet, is basically sugar with an additive that helps keep the bacteria count low in the water. The life of a fresh cut flower is typically five to seven days but can be extended by adding some sugar but also adding vinegar or bleach to help kill the bacteria/mold, by changing the water every few days and re-cutting the flower stem.

#27
Science- 7R

If bean seeds are exposed to natural sunlight, a 60 Watt light bulb, an LED light and a fluorescent light, then the fluorescent light will facilitate the greatest growth.

There Are 2 variables in an experiment, Independent and Dependent variables. The Independent variable in my experiment is the light source. The light sources changing for the plants are natural sunlight, 60 Watt light bulb, fluorescent light and an LED light. Now, the Dependent variable in my experiment is the plant height. The highest plant height I have is from the 60 Watt light bulb, (3 in. = 7.62 cm.). The lowest height out of my plants I have is from the LED light, (1 in. = 2.54 cm.).

So in conclusion, the plant that grew the tallest was the best light. The best light was then, the 60 Watt light bulb. Which then grew the plant to be 3 inches taller than all the other plants with different lights.

#28

Grade 7, St. Joseph School

Herndon, VA

Mrs. Hurley

Botany

Do Mushrooms Grow Better in the Dark or Light?

The purpose of this experiment is to determine if mushrooms grow better in light or dark. The hypothesis for this test is that mushrooms don't need light to grow, because they use mitosis and reproduce on their own. So, the expected result is that the mushroom log placed in the dark will grow more mushrooms and taller mushrooms versus the logs in the light. If mushrooms don't need light to grow, then the mushroom log in the dark will grow better than the others.

For this experiment you will need four mushroom logs, containers at least an inch deep, fresh water, a knife, a dark space, light space, and a growing lamp. First off get the four mushroom logs and don't open them from the plastic package. Get the knife and carefully cut an "X" in the top center of the mushroom log. After that is done, cut an inch deep into the "X". Keep them there for now then move over to the containers, take a marker and write a line on the side about an inch up then fill the container with water up to that line. Next put the four mushroom logs into the containers and fill the one inch hole in the log with water, careful not to overflow it so water doesn't get into the plastic package. Then to create humidity prop a plastic bag on top of each log. Put one mushroom log with water container in a dark cabinet to create a dark space. For the other three mushroom logs, put one under an incandescent light, the second near a window to get natural light, and the third under an LED grow light for the three types of light. Since they shipped us two extra mushrooms logs (total of 6 mushroom logs in the experiment), use those as the control logs in ambient light in the middle of the room not under any direct light. The mushroom log one inch holes need to be filled each morning and evening and also the container needs to be kept at the 1 inch level each day. Measurements for number and height of each mushroom on each log were done daily in the evening and a chart was kept on each growth pattern over 20 days.

For the conclusion of this experiment, my hypothesis was incorrect. It turns out to my surprise that the mushroom log in the dark did not grow at all. The mushroom log in the natural light and the two control mushroom logs in ambient light grew one mushroom each with different heights. The other mushroom logs in the light (incandescent light and LED grow light) did not have mushroom growth either just like the mushroom log in the dark. Control #1 grew 0.875 inches and Control #2 grew 0.75 inches. The kit in the natural light grew the longest mushroom at 1.5 inches. In the end, my hypothesis was incorrect. The conclusion is that mushrooms grow best in natural light and the second best light is ambient light versus in darkness or incandescent or LED grow lighting.

#29

Grade 7-Blue St.Joseph School
Herndon, VA
Mrs. Hurley
Chemistry
Another one Bites the Rust

This experiment was conducted to test what type of liquid removes rust the best. The hypothesis is that if four rusty nails are put into four different liquid, then rust remover will remove the most rust, out of nail polish remover, vinegar, water, and rust remover.

First four nails all equally coated in rust were put aside for later use. Then, 4 ounces of all the liquids were put in glass vases. The nail polish remover used in the experiment did have acetone in it. White vinegar was the vinegar used. The water used was simply taken from a kitchen faucet. Whink Rust Stain Remover was the rust remover we chose to use. All the nails were put in the liquids on Jan. 3, 12:30 P.M. On Jan. 5, 12:30 P.M. the nails were taken out and left to dry for one hour.

The data shows that the hypothesis was correct. The rust remover removed the most rust out of the 4 liquids. It did not eliminate 100% of the rust, however. It only eliminated approximately 89% of the rust. The nail polish remover, surprisingly, did not have that much of an affect on the rust. It only removed approximately 10% of the rust. The vinegar had an amazing effect on the rust, eliminating about 75% of the rust. The water actually made more rust above the original rust. Forming two layers of rust instead of removing any. It did not remove any rust, but it added about 20% more rust.

#30
Sawyer Jenkins

January 13, 2020

7B Science

Abstract

If I use multiple cleaners to remove graffiti then which one will remove it the quickest? When I started the experiment I thought that goo gone would remove it the quickest and most efficiently. One was a four hour, another was a ten hour, and finally one was a 24 hour. The cleaners I used were Goo Gone, Acetone, rubbing alcohol, and dish soap. Each increment of wood was a different color (black, white, yellow, silver, and satin).

When I first applied the cleaners I realized that the goo gone was doing well with the first layer for a little while then it started to spread all of the spray paint around. The other cleaners were sorta useless and didn't do much. When the 10 hour came around I noticed that the acetone was at least doing sort of well while the other cleaners were still useless. Finally when the 24 hour came around I observed that the cleaners were all useless so I decided to scrub a bit more and harder.

In conclusion, the Goo Gone took care of things early while the acetone took a little bit off in a mid time and all of the cleaners I used won't work after 24 hours. So, it's always best to remove graffiti quickly and be sure to do it efficiently .