



Edna Louise Spear Elementary Science Fair Student Packet

Monday, April 8th, 2024

Deadline to
sign up for
Science Fair
March 8th

Science Fair
resource centers

Edna Louise Spear &
PJ Free Public
Libraries

Scraggy's Annual
Science Fair!!!

April 8th, 2024

7:00-8:00 PM



We are very excited to announce the **2024 Edna Louise Spear Elementary School Science Fair**.

Every student from kindergarten through fifth grade is invited to participate in this fun yet challenging event. Participation is optional and all entrees will receive a ribbon and certificate.

WHY DO A SCIENCE PROJECT?

Science surrounds us in almost every aspect of our daily lives, but we are often too busy to notice! Preparing a simple science project will give you an opportunity to learn more about the world around us and let you become the expert on a topic that interests you. Besides that, science projects are a lot of fun!

WHAT DO I HAVE TO DO?

First, sit down with your parents and read through the general guide on the following pages. This will give you the basic idea of how to select a topic. A helpful list of science project topic ideas can also be found within this packet. The general guide will tell you how to carry out your project, how much time you should take, and how much detail you should include. You may choose to work on your project alone or with a friend/sibling of the elementary school as a team. One student per grade will be selected to compete in Brookhaven National Lab's Annual Science Fair taking place on **Saturday, June 8, 2024**. Children will have the option on whether they would like to be judged for this competition, however only individuals will be considered (team projects do not qualify). For further information, please view Brookhaven National Lab's website (www.bnl.gov/sciencefair).

HOW DO I SIGN UP?

Complete the attached Science Fair registration form and return it your teacher by **Friday, March 8, 2024**.

THE SCIENCE FAIR- Monday, April 8th 7-8 PM

Part of a scientist's job is to tell people about the work they have done. The science fair will be a time when you can share your project with other students and their families.

- Bring your project to the Gymnasium on **Sunday, April 7th from 5-6 pm or Monday, April 8th from 8-9 am**. If your display has any valuable or breakable items, remove it from the display until the evening of the science fair so you can be there to supervise.
- On Monday evening, doors will open at 6:45 PM. Please be prepared to answer questions or explain your project to your friends, teachers, and parents. Remember, it's your project and you are the expert!
- You will remove your project and take it home at the conclusion of the science fair on Monday evening at 8 PM.

SAFETY RULES

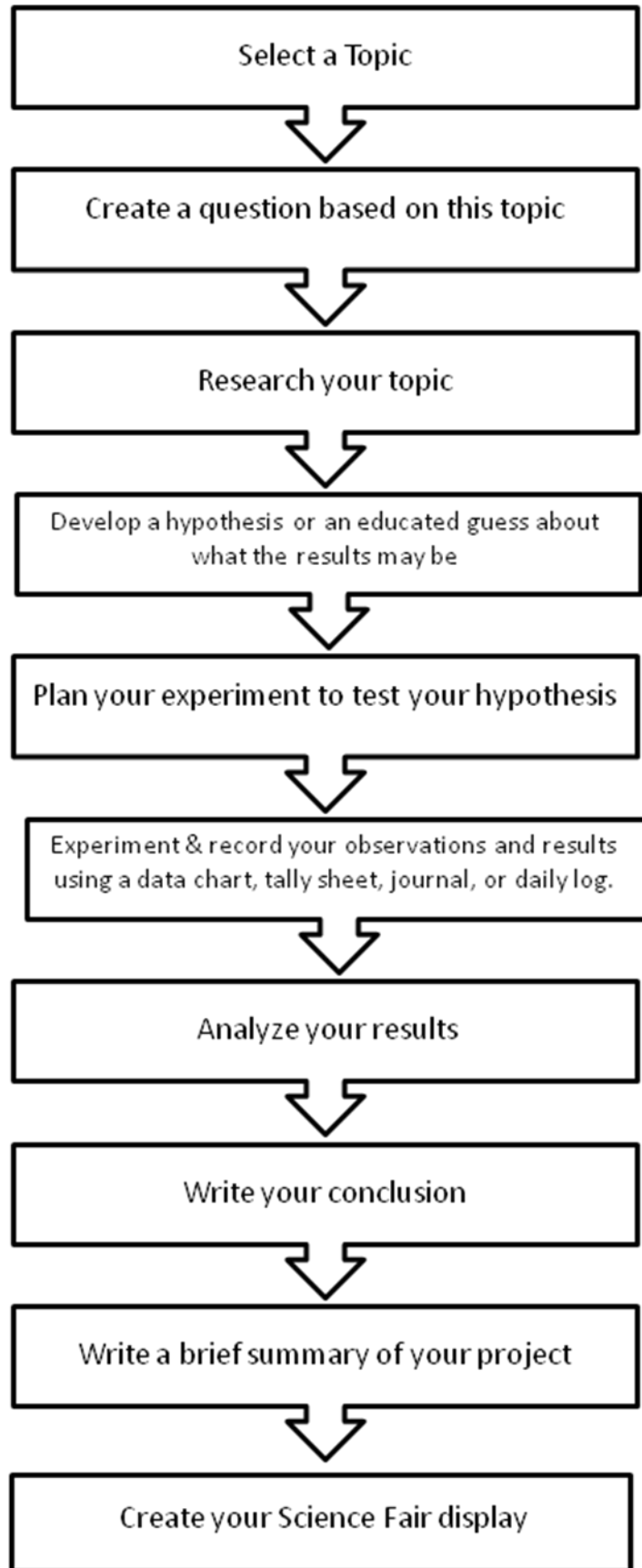
- No dangerous objects or flammable/toxic chemicals allowed and no open flames are permitted. Questionable material should be discussed with your classroom teacher and/or Mrs. Antenucci.
- No live or dead animals may be used.
- All experiments should be supervised by an adult.

YOU CAN DO IT!

If you would like to try a project, but aren't sure you can do it; the Edna Louise Spear Elementary Library and the PJ Free Library are wonderful resource centers. There are librarians available to answer questions regarding your project. A science project really only requires items you probably already have at home and a short time commitment.

Steps to Science Fair Project Success

Using the Scientific Method



Science Fair General Guide

1. SELECTING A TOPIC

Where to look for topic ideas:

- The Port Jefferson Public Library has a variety of resources to aid in the creation of your science project. The librarians are prepared to assist you and answer any questions at 631-473-0022.
- Science Fair Web Sites, such as:
 - www.ipl.org/youth/projectguide/
 - www.pbskids.org/dragonflytv/scifair/index.html
 - www.scifair.org
 - www.school.discoveryeducation.com/sciencefaircentral
 - www.sciencemadesimple.com
 - www.energyquest.ca.gov/projects/index.html
 - www.education.com/science-fair/elementary-school
- Select a topic from things you like and are of interest to you. Make a list of these things and think of questions related to each. Choose one topic/question for your project

Things I Like

Question

Example: Basketball

Example: How will the temperature outside affect the bounce of my basketball?

- In addition, take a look at the list of "Topic Ideas" included in this packet.

Remember, your question must be answered through testing or experimenting, not by looking in a book or building a model. Can your topic be investigated through experimentation?

2. CREATING A QUESTION

Your question should be worded so that it is clear and precise. Use the following examples to best express what you are trying to find out.

The Effect Question:

What is the effect of _____ on _____?
sunlight on the growth of plants
eye color pupil dilation

The Affect Question:

How does the _____ affect _____?
color of light the growth of plants
humidity the growth of fungi

The Variable Question:

Which/What _____ (verb) _____?
paper towel is most absorbent
foods do meal worms prefer

3. RESEARCH YOUR TOPIC

Resources: library, books, magazines, films, newspapers, pamphlets, organizations, stores, museums, internet, etc.

Record all the places you did research. What books did you use? What magazines did you use? Remember to record your resources in a bibliography so the authors get credit for their ideas.

4. DEVELOP A HYPOTHESIS

A hypothesis is an educated guess of what you think the answer to your question will be based on your research.

EXAMPLES OF SOME HYPOTHESES

1. If _____ then _____.
2. I predicted that _____ would occur when I _____.
3. I think that _____.
4. My hypothesis was that _____.

5. PLAN YOUR EXPERIMENTS TO TEST YOUR HYPOTHESIS

Make a list of Materials for your experiments.

Create "The Recipe" for your experiments.



Make clear and specific step-by-step procedures for your science experiment. Your "recipe" or procedure should allow someone else to duplicate your experiment and get similar results. Refer back to your question and hypothesis to make sure your experiments will answer your question.

Write down experimental procedures (your recipe for the experiment). Things to think about while planning your experiment:

- How much time will you need?
- Will you do repeated trials or use duplicate test subjects?
- What will you be observing and recording?
- What materials will you need?
- Where will you conduct your experiment?
- What are the exact steps to follow in running a test or trial?

6. EXPERIMENTING AND RECORDING YOUR DATA

Do your experiment and collect the data!

Collecting Data (the information you learn by doing your experiments)

Three ways to observe and record:

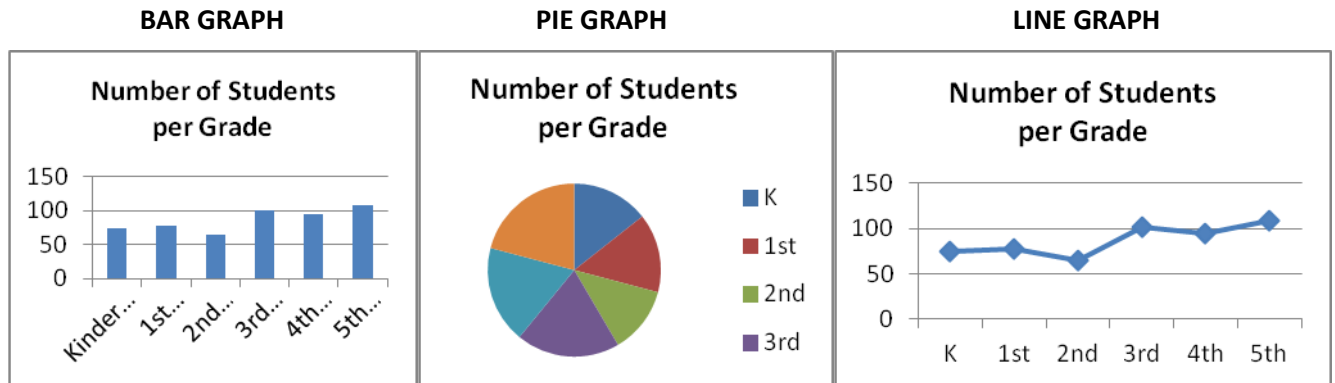
1. Measuring (data chart)
2. Counting (tally sheet)
3. Describing (journal or diary) – be sure to date entries

7. ANALYZE YOUR RESULTS

Look at your data. Is it complete? Are the entries dated and in order? Is everything labeled with titles and units? Is your log easy to understand?

Demonstrate your results in a graph. A graph is a picture of your results. What kind of graph should you use?

Examples of Graphs



8. WRITE YOUR CONCLUSION

The conclusion is your chance to share your results. It is where you let everyone know if your original hypothesis was correct or incorrect. You need to be honest in reporting your results.

Conclusion Guidelines:

1. The conclusion needs to be in paragraph form and needs to be put on your science fair display board with your graph.
2. Your conclusion should only be based on your actual data.
3. It should include:
 - a. Your Question
 - b. Hypothesis
 - c. Actual results (data)
 - d. Do the results agree or disagree with your hypothesis?
 - e. Do your results lead to any further questions?

9. WRITE YOUR SUMMARY

The summary is your chance to give a brief overview of your project. Write your summary once your research and experimentation are complete.

Your summary should include:

1. A statement of your Science question
2. A statement of your Hypothesis
3. A short outline of your Experiment
4. Your actual end results

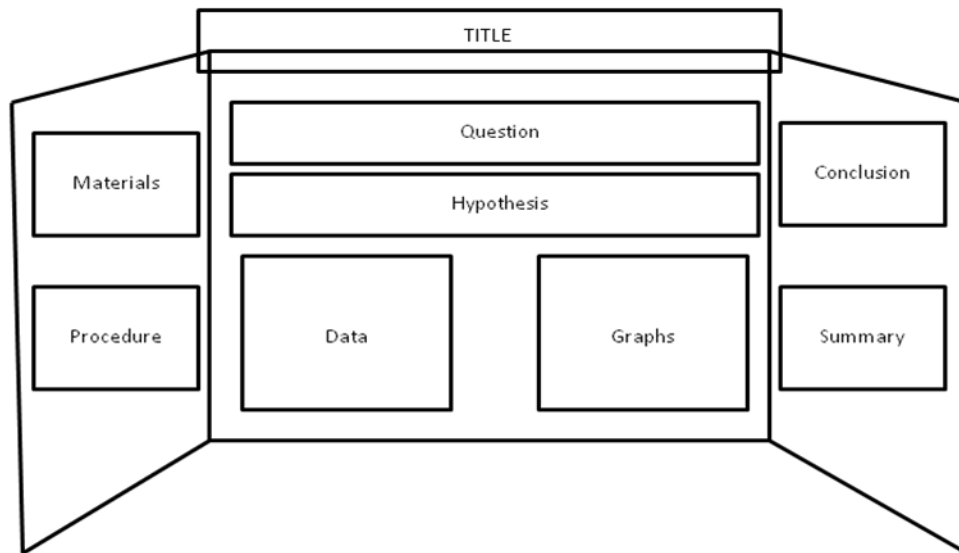


10. CREATE YOUR SCIENCE FAIR DISPLAY (BACKBOARD)

Your display should be on a tri-fold board which may be purchased from stores such as Staples or Michaels.

Your display board should include:

- Title of project
- Your Question
- Hypothesis
- List of Materials
- Procedure
- Data (may include daily log, pictures, research summary, etc)
- Graphs (pictogram)
- Conclusion
- Summary
- Display Board label on back of board (label is included in packet)

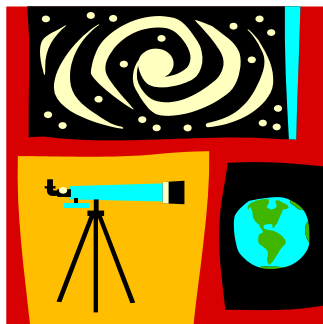


You may display on the table:

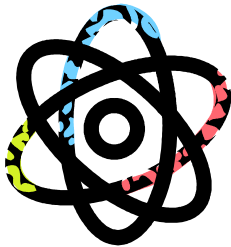
- Your daily log
- Research folder
- Experimental equipment
- Models or samples

Congratulations! You did it!!!

*Any questions regarding the Science Fair,
please contact your child's classroom teacher!*



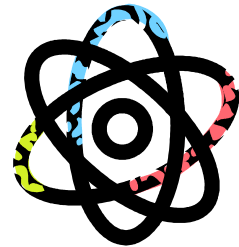
ATTACH THIS LABEL TO THE BACK OF YOUR COMPLETED DISPLAY BOARD



SCIENCE FAIR 2024

Display Board Label

April 8th, 2024



Student #1

First Name: _____ Last Name: _____

Grade: _____ Teacher: _____

Student #2

First Name: _____ Last Name: _____

Grade: _____ Teacher: _____

Student #3

First Name: _____ Last Name: _____

Grade: _____ Teacher: _____

Student #4

First Name: _____ Last Name: _____

Grade: _____ Teacher: _____

Project Title: _____

Is this project being judged for the Brookhaven National Lab's Science Fair contest? YES or NO

(*remember only INDIVIDUAL projects may be considered)

EDNA LOUISE SPEAR ELEMENTARY SCHOOL

2024 SCIENCE FAIR

Registration Form



Please complete the following information and return to your teacher by:

Friday, March 8th

**If you are working with another student, complete one Registration form per project*

Student #1

First Name: _____ Last Name: _____

Email address: _____

Grade: _____ Teacher: _____

Student #2

First Name: _____ Last Name: _____

Email address: _____

Grade: _____ Teacher: _____

Student #3

First Name: _____ Last Name: _____

Email address: _____

Grade: _____ Teacher: _____

Student #4

First Name: _____ Last Name: _____

Email address: _____

Grade: _____ Teacher: _____



Topic Ideas

- | |
|--|
| - Which types of cereals get soggy the fastest? Stay crunchy the longest? How come? |
| - How does adhesive tape react on different surfaces? |
| - How many times can you re-stick Post-it notes? How do they work? |
| - Demonstrate the effect of gravity on objects with different weights, shapes, and sizes. |
| - How do bees make honey? |
| - How do cows produce milk? |
| - What causes a shadow? How do shadows change with variations in light? |
| - Shake up different brands of soda and see if they spill differently. |
| - Buy several different kinds of bubble gum and see how the bubbles are different. |
| - Which brands of diaper hold the most water? |
| - Which dissolves better in water: salt or baking soda? |
| - Do differently shaped ice cubes melt at different speeds? |
| - Crush a few potato chips on a paper towel. Measure and count the grease spots. |
| - Which types of plants live in the desert? |
| - What causes air pollution? |
| - Is there a relationship between the size of people's hands and the size of their feet? |
| - Do suction cups stick equally well to different surfaces? |
| - Do ants like cheese or sugar? |
| - How much salt does it take to float an egg? |
| - How much vinegar and baking soda needs to be used to produce the best volcanic reaction? |
| - Does a ball roll farther on grass or dirt? |
| - Will more air inside a basketball make it bounce higher? |
| - What kinds of things do magnets attract? |
| - Does exercise affect heart rate? |
| - How does an antihistamine work? |
| - How is yogurt made? |
| - Is there a relationship between the size of a plant and the size of its leaves? |
| - Paper airplanes: which design flies further? |
| - How does an electric guitar work? Build a model. |
| - Can you tell what something is just by touching it? |
| - What materials dissolve in water? |
| - Is the frequency of a pendulum's swing affected by the length of the pendulum? |
| - Which cotton balls have more absorbency: cotton or synthetic? |
| - Which breakfast cereal absorbs the most milk? |
| - Do different lights give off different temperatures? |
| - Does temperature affect the amount of fizz when you pour soda? |
| - Which are the fastest rollers: wheels, spheres, or cylinders? |
| - Does the mass of a cylinder affect its speed? |
| - Does the diameter of a wheel affect its speed? |
| - Is the time it takes an object to fall to the ground affected by the mass of the object? |
| - Does the size/shape of the object affect if it floats or sinks? |
| - Which bags will support the most weight? (plastic, brown paper, or cloth reusable) |
| - Does the thickness of a rubber band affect its strength? |
| - Which wing shape makes a paper airplane travel farther? |
| - Does changing the type of paper affect the flight of a paper airplane? |
| - Does the drop-height of a ball affect the number of times it will bounce? |
| - Does the material of a ball affect the bounce-height? |
| - How does a heat pump work? |
| - Does the size of an orange affect the number of seeds it contains? |
| - If you refrigerate an onion before chopping, will you still cry? |
| - What brand of plastic wrap best reduces evaporation? |

- What brand of plastic wrap best reduces oxidation?
- Why do night insects like light so much?
- Do white candles burn slower or faster than colored candles?
- If you put detergent in water, will plant growth be the same?
- Compare different brands of popcorn and see which produce the most unpopped kernels.
- You can also see which type of oil used has more grease (sunflower oil vs. soybean oil)
- What types of mold grow on different kinds of bread?
- Place different food in different light and see how it affects how they turn bad.
- Using a household water filter, see if it can remove liquid and color from other liquids.
- Use invisible ink to draw on different types of paper. Does it still show?
- See how long it takes for different brands of batteries to run out of power. Try it with different devices (flashlight, digital camera, etc.)
- Using different types of dish detergent, see which ones clean the most amount of dishes.
- Will adding bleach to the water of a plant reduce fungus growth?
- Do children's heart rates increase as they get older?
- Which dish soap makes the most bubbles?
- Does a green plant add oxygen to its environment?
- What kind of glue holds two boards together better?
- Do sugar crystals grow faster in tap water or distilled water?
- Which type of oil has the greatest density?
- Do bigger seeds produce bigger plants?
- Will bananas brown faster on the counter or in the refrigerator?
- Do the roots of plants always grow downward?
- Do different kinds of caterpillars eat different amounts of food?
- What materials provide the best insulation?
- Will bananas brown faster on the counter or in the refrigerator?
- Do the roots of plants always grow downward?
- Can things be identified by just their odor?
- Does the color of a material affect its absorption of heat?
- How far can a person lean without falling?
- How far does a snail travel in one minute?
- Will water with salt evaporate faster than water without salt?
- Can you use a strand of human hair to measure air moisture?
- Can same type balloons withstand the same amount of pressure?
- Do children's heart rates increase as they get older?
- Which student in class has the greatest lung capacity?
- Does anyone in my class have the same fingerprints?
- Does sugar prolong the life of cut flowers?
- Which grows mold faster: moist bread or dry bread?
- What type of soil filters water best
- For how long a distance can speech be transmitted through a tube?
- Does sound travel best through solids, liquids, or gases?
- How does omitting an ingredient affect the taste of a cookie?
- Which dish soap makes the longest lasting suds?
- How much weight can a growing plant lift?
- Does a plant grow bigger if watered by milk or water?
- What common liquids are acid, base, and neutral?
- Does an ice cube melt faster in air or water?
- Do plants grow bigger in soil or water?
- Do different types of soil hold different amounts of water?
- How accurately can people judge temperature?
- Which metal conducts heat best?
- Can you separate salt from water by freezing?

- Can plants grow from leaves?
- Which cheese grows mold the fastest?
- How does the road surface affect the stopping-distance of your bicycle?
- Does tire pressure affect the distance your bicycle will coast?
- Is a magnet's strength affected by exposing it to extreme temperatures?
- How does the number of coils in an electromagnet affect its strength?
- Does rain affect the pH of your swimming pool?
- How much chlorine is needed to inhibit algae growth in your pool?
- Does lubrication affect the distance a car rolls?
- Does the outside color of a container affect the inside temperature?
- Which roof color stays the coolest?
- What material is the best sound insulator?
- Does the pitch of a sound affect the distance the sound travels?
- Is crystal growth affected by light?
- Does the number of blades affect the cooling effectiveness of a ceiling fan?
- Which type of French Fries absorb the least amount of grease when fried: shoestring, steak fries, or waffle cut fries?
- Which lubricant is most effective on rust prevention of metal tools?
- Is the falling time of a parachute affected by the material used to make the parachute?
- Is the falling time of a parachute affected by the surface area of the parachute?
- Is the falling time of a parachute affected by the mass of the object connected to it?
- Which is more energy-efficient: drying one large load of clothes or two small loads?
- Does the temperature of the rinse water affect the drying-time of a load of clothes?
- Does the temperature of an aluminum bat affect its performance?
- Does the weight of a bat affect hitting distance?
- Does the material the bat is made of affect hitting distance?
- What is the effect of temperature on rubber band strength?
- Will your cola stay cold longer in a can or in a bottle?
- What is the relationship between the charging time and working time of a rechargeable battery?
- Does the length of wire in a circuit affect the brightness of the lights?
- Does the viscosity of a liquid have an effect on its rate of evaporation?
- Which fabric absorbs moisture best?
- Which fabric absorbs dye best: natural or manmade materials?
- What fabric dries quickest?
- From which soil does water evaporate slowest?
- Which soil is best for seed germination?
- Does tire tread pattern affect the stopping distance of a bicycle?
- How does speed affect the stopping-time of a bicycle?
- How does the number of coils in an electromagnet affect its strength?
- How does the size of a nail affect the strength of an electromagnet?
- How does temperature affect the ripening time of bananas?
- Which plowing patterns prevent erosion best?
- Does heat affect the sticking time of first-aid bandages?
- Does the distribution of weight affect the distance a skateboard travels?
- What surface gives the longest skateboard ride?
- Are Styrofoam cups best suited for: keeping hot liquids hot or keeping cold liquids cold?
- Is the evaporation rate of liquid affected by the size of its container? The thickness of the liquid? The presence of moving air?
- Does the size of a light bulb affect the amount of heat produced?