DCSS Science Fair Handbook

3rd & 4th Grade

DCSS ***SUGGESTED*** SCIENCE FAIR TIMELINE for Grades 3-4

(This is a suggested timeline for successful completion of your Science Fair Project)

CHECKPOINTS	ITEM/EVENT DESCRIPTION
WEEK 1	Science Fair Parent Letter distributed.
WEEK 2	Parent Letter signed & returned. Science Fair Information Packet distributed.
WEEK 3	Topic selected & approved by teacher/ parent.
WEEKS 4-5	**Observe and ask questions.** *Use your senses to make observations. *Record one question that you would like to answer. *Write down what you already know about the topic. *Decide what other information you need. *Do research to find more information about your topic. *Document in Log Book, include date.
WEEK 6	**Form a hypothesis.** *Write a possible answer, or hypothesis, to your question. A hypothesis is an answer that can be tested. *Write your hypothesis in a complete sentence. *Document in Log Book, include date.
WEEK 7	**Plan an experiment.** *Decide how to conduct a fair test of your hypothesis by controlling variables. Variables are factors that can affect the outcome of the investigation. *Write down the steps that you will follow to do your test. *List the equipment and/or materials that you will need. *Decide how you will gather and record your data. *Document in Log Book, include date.
WEEKS 8-10	**Conduct the experiment.** *Follow the steps you wrote. *Observe and measure carefully. *Record everything that happens. *Organize your data so that you can study it carefully. *Document in Log Book, include date.
WEEKS 11-12	**Draw conclusions and communicate results.** *Analyze the data you gathered. *Make charts, tables, graphs, and/or photographs to show your data. *Write a conclusion. Describe the evidence you used to determine whether your test supported your hypothesis. *Decide whether your hypothesis was correct. *Document in Log Book, include date.
WEEK 13	**Complete Science Fair Display and practice oral presentation.**
WEEK 14	**Submit Science Fair Project, including Log Book!**

2014 District Elementary Science Fair

All events will be at DCSS Annex West

Monday, May 4th **(3:00-5:30)** **or** **Tuesday, May 5th** **(7:30Am-10:00AM)**	Douglas County Schools District Science Fair Setup Annex West (Students should place their logbook and any supporting documents on the table in front of the project)
Tuesday, May 5th **(1:30PM-4:00PM)**	Project Judging of Displays
Tuesday, May 5th Students should be at the annex at 4:00PM.	Students' Interview Times in Dogwood Room and Parents' Reception in Magnolia Room
Wed., May 6th **5:15PM-6:15PM**	Public Viewing of the Projects
Wed., May 6th **6:30-7:30PM**	Awards Ceremony

***Interview of students will be conducted by judging teams. Students may be excused to leave the Annex once a judging team completes the interview and dismisses the student.**

Suggested Science Project Components

	K-2	3-4	5
Students do background research on the question topic		✓	✓
Students do an experiment that addresses the question or problem	✓	✓	✓
Students use the scientific method to complete the experiment	✓	✓	✓
Students keep a Log Book		✓	✓
Students complete a research paper			✓
Students create a display for their project	✓	✓	✓

Science Fair Handbook
Grade 3-4

Participation:
Projects: Individual and pairs
Teacher-supported throughout the process

How do students select a topic and identify a related problem or question?

Decide how projects will be selected. Will the project be teacher assigned or will students select from an approved list or will students come up with their own? Consider the information below in making a decision:

- Students should actually design and execute an experiment and collect data. Research topics like black holes are exciting but you can't get data from this topic.
- Students need to have access to all necessary resources and supplies while doing the project.
- Students must be able to measure some aspect of the topic. For example, in investigating how some factor (like beginning temperature) affects the freezing rate of water, how would you measure freezing time since it is a gradual process?

  ✓ Consider using the Topic Wizard at www.sciencebuddies.com to help with topic selection.

What makes a problem or question is acceptable? The checklist below can provide assistance in determining if a problem or question is a good one for a science project. If it is satisfactory, students will be able to do the following:

Checklist to determine if your problem is acceptable

Questions 1-6 should be answered "Yes" & Question 7-9 should be answered "No"

YES	NO	Criteria
		1. Can the student get measurements or some kind of number for data?
		2. Can the student change something to find out what happens? **(TEACHER INFO ONLY: this is the <u>independent variable</u>-the variable that is changed on purpose by the experimenter)**
		3. Can the student measure the effect of this change? **(TEACHER INFO ONLY: this is the <u>dependent variable</u>-the variable that may change as a result of changes purposely made in the independent variable)**
		4. Can the student keep other factors from influencing the results? **(TEACHER INFO ONLY: these are <u>constant variables</u>-factors in an investigation kept the same; not allowed to change or vary)**
		5. Can the student collect a lot of data?
		6. Is it realistic to repeat the experiment <u>at least three times</u>? Will the students have time to do this?
		7. Is the answer to the question already known?
		8. Could anyone be even slightly hurt by the project?
		9. Does the experiment involve humans, animals, or microorganisms?

NOTE TO TEACHERS: *Your students should be able to identify which factors are variables in their project, but they do not have to be able to distinguish between the terminology of independent and dependent variables. They just need to know the factors that are impacting the change and the change that is taking place.*

Examples of Topic and Question Development:

TOPIC	VARIABLES	PROBLEM/QUESTION
PLANTS	Germination and temperature	If temperature is changed, will the rate of germination be affected?
BODY TEMPERATURE	Temperature and time of day	Does your body temperature vary with the time of day?
PENDULUMS	Pendulum and its length	Does the length of a pendulum affect its frequency?

BACKGROUND

What do students include in the background information of their project? How do students research their topic?

The background information should include the following kinds of information:

a) Significance - How is the topic important to us, or how does it make an important contribution to the world around us?
b) Facts - What facts are known about the topic and related terms?
c) Terminology- Definition of important terms included in the project and how they are related to the question or problem.
d) Important concepts- Explanation of key concepts covered in the project and how they are related to the question or problem.
e) Sources of background information include such as books, magazines, newspapers, Internet searches, teacher assistance

The research should be written in the students' own words; ***cutting and pasting from the Internet IS NOT acceptable.***

HOW STUDENTS DEVELOP A HYPOTHESIS

Students should write a specific statement or prediction and give the reasons why they expect this. The hypothesis is a logical and testable prediction about how things work. It should be written like this:

The focus is on applying knowledge of the scientific method (question, hypothesis, procedure, results, and conclusion). The question should lead to a testable hypothesis (If _____, then _____.), that can be explained through experimentation using the scientific method.

"If _____ (I do this), then _____ (this) will happen." The blanks are filled in with appropriate information related to the specific experiment. It should be something students test and they need to be able to measure **both** what they do and what happens.

Example: If I heat a magnet, then it will be able to pick up more paper clips than the same magnet at room temperature or when kept in the refrigerator.

For Teacher Info Only:

Independent variable-what you change on purpose (temperature of the magnet)
Dependent variable-what changes as a result of the independent variable (number of paper clips the magnet picks up)
Controlled variables-what you keep the same so they do not affect the outcome of your experiment-[length of time the magnet is heated or cooled, the size of the paper clips, using new clips after each trial (the clips become magnetized after being exposed to a magnetic field and might affect the outcome of the experiment), etc.]

HOW DO STUDENTS DESIGN THE PROCEDURE OF THEIR EXPERIMENT?

The procedure should be very clear and precise, written step-by-step. Students should be very specific; they shouldn't assume that the reader knows how much, how many, or how long. Another person should be able to closely duplicate the project by following the steps in the procedure. It is a good idea to have another person who is not aware of your experiment to read your procedure and give you feedback on how to revise it, so it is more easily understood.

An example of a procedure for the magnet question:

1. Assemble materials.
2. Make a pile of 25 small paper clips
3. Measure the temperature of the magnet at room temperature by laying the bulb of the thermometer against the surface of the magnet and leaving it there for 60 seconds.
4. Record the temperature.
5. Use the magnet to pick up paper clips from the pile. Lift the magnet into the air and hold it there. After 10 seconds count and record the number of clips that stayed connected to the magnet.
6. Put these magnetized clips away. They will not be used again.
7. Repeat steps 2-6 two additional times for a total of three trials.
8. Place the same magnet into the freezer compartment of a refrigerator for 10 minutes.
9. Make a new pile of 25 small paper clips.
10. Measure and record the temperature of the magnet as described in steps 3 and 4.
11. Use the magnet to pick up paper clips from the pile. Lift the magnet into the air and hold it there. After 10 seconds, count and record the number of clips that stayed connected to the magnet.
12. Put these magnetized clips away. They will not be used again.
13. Repeat steps 8-12 two additional times for a total of three trials.
14. Plug in the hot plate and turn it on to medium heat. Let it heat up for 5 minutes.
15. Place the same magnet onto the hot plate. Leave it there for 3 minutes.
16. Make a new pile of 25 small paper clips.
17. Using the tongs, pick up the magnet and lay it on the hot pad. DO NOT TOUCH THE HOT MAGNET.
18. Measure and record the temperature of the magnet as described in steps 3 and 4.
19. Using the tongs, pick up the magnet and use it to pick up paper clips from the pile. DO NOT TOUCH THE HOT MAGNET. Lift the magnet into the air and hold it there. After 10 seconds, count and record the number of clips that stayed connected to the magnet.
20. Put these magnetized clips away. They will not be used again.
21. Repeat steps 15-20 two additional times for a total of three trials.

HOW STUDENTS DEVELOP A LIST OF MATERIALS

This should be a complete list of all materials including details and amounts. Once the procedure is written, students will have a better idea of the materials they will need.

Bad Materials List	Good Materials List
magnet	1 large all-metal bar magnet
paper clips	225+ small metal paper clips
refrigerator	1 refrigerator
thermometer	1 metal dry bulb thermometer
hot plate	1 hot plate with low, medium, and high
	1 settings marked
	1 hot pad
	1 pair tongs
	1 stop watch

HOW STUDENTS CREATE A LOGBOOK

Logbooks are used in every aspect of real research as a means of keeping an honest, chronological account of an investigation. Everything students do should be logged. They should begin their brainstorming about topics and problems/questions in their logbook. It should also include the notes students take when they do their research, as well as, all they do as they prepare and carry out the experiment. A logbook is like a journal. Students should write the date at the top of the page. They should make an entry every time they work on their project. They must keep up with it. Students should not go back and write all the entries after they have finished the project.

The logbook should include:

- Paragraph summary of what was done on each day (from thinking about the topic to completing the display)
- Notes that the student took when they did research and the bibliographical information of every source used (include the name of the author, year of publication, title, name and location of publisher, page numbers, website address and the date you retrieved it off the Internet, etc.)
- Labeled drawings or diagrams that help show the reader what was done or what happened on that day
- Any data collected during the experiment
- Any conditions that might have caused unexpected results during the experiment

HOW STUDENTS COLLECT DATA

The experiment needs to result in measurable data. **Make sure that all measurements are in metric units: centimeters, grams, milliliters, etc.** Not only is this how scientific data is recorded, but eliminates having to use fractions (just decimals should be used).

Do a short run of the experiment to see if the procedure works and if it produces the kind of data needed.

- If it takes too long to get data, students should shorten the procedure.
- If something is too awkward to measure, students should change the procedure slightly.

Accurate and precise observations and measurements are important. Sufficient data should be collected that relates back to the hypothesis. There is a tendency to hurry or to forget to record everything that happens. Even data from tests that seem not to work should be recorded. **So many projects are ruined because data is lost or good records are not kept.** The records and data are the most important and impressive part of the project.

HOW STUDENTS PUT THE DATA INTO A TABLE

The key to starting to interpret or analyze data is a good Data Table. This allows trends and patterns to be easily seen. A good table should have the following parts:

- ✓ Title
- ✓ Labels for columns and/or rows
- ✓ List all units in metric form

Strength of a Magnet at Different Temperatures								
Magnet Conditions	Trial #1		Trial #2		Trial #3		Average Temp	Total # Clips
	Temp	# Clips	Temp	# Clips	Temp	# Clips		
Cooled Magnet								
Room Temperature Magnet								
Heated Magnet								

Note: If an Excel spreadsheet is used to make a table, it is already arranged in columns and rows. Then a variety of graphs can be created directly from the spreadsheet. Also, the table and/or graph can be cut and pasted into a Word document. For directions: in Excel, click on "Help" and type in a search for "create a table".

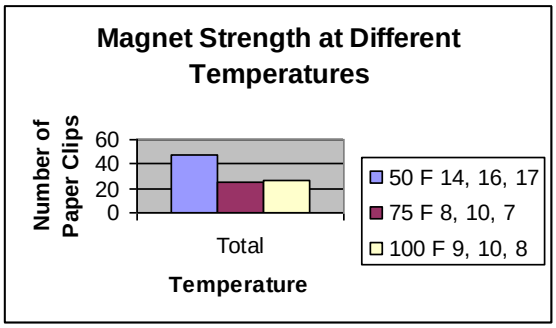
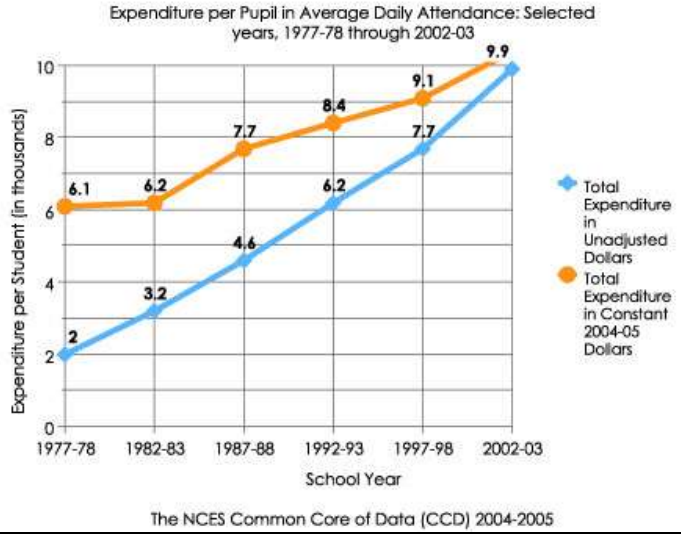
Website students can use to create tables and graphs:
http://nces.ed.gov/nceskids/createagraph/

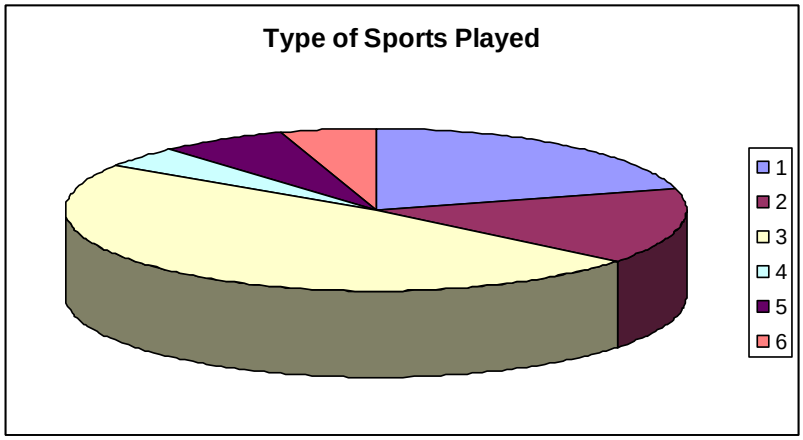
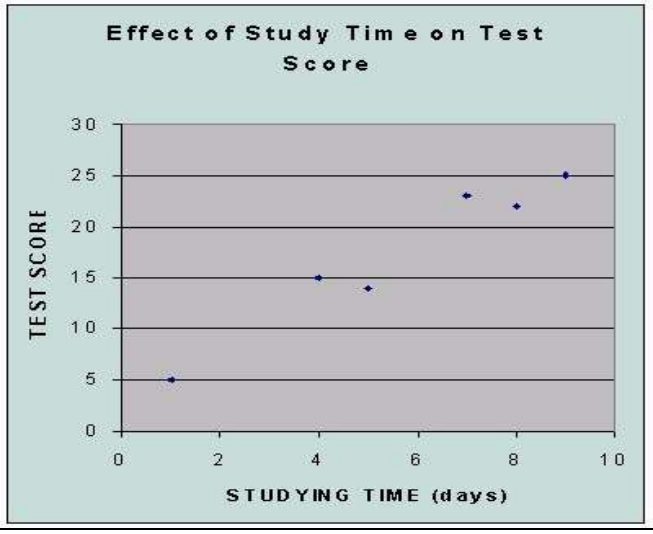
HOW STUDENTS CREATE A GRAPH USING THE DATA

As a result of the experiment, data should be collected and organized in **both tables AND graphs**. Both should have titles and the graphs should have the x and y axes labeled. A key should also be included for the graphs.

Students should be able to explain orally what the tables and graphs show and how they relate to the project.

Examples of graphs:
Remember that the type of data collected will determine the type of graph needed. Data collected for the magnet question is best shown in a bar graph.

	Type of Data Best Shown in This Type of Graph	**Graph**
Bar Graph	For comparing 2 to 4 independent groups	
Line Graph	If the independent variable is numerical, and a trend (upward or downward) is indicated	

Circle Graph (pie chart)	If graphing parts of a whole (percentages)	
Scatterplot (x-y graph)	When trying to show a possible relationship between 2 variables	

HOW STUDENTS ANALYZE DATA THEY HAVE COLLECTED

After students organize data into a table and select an appropriate graph(s), a written summary of the results should be made by looking at the data and considering these things:

- Does the data show a relationship or reveal some pattern?
- Is there a sizeable or significant difference between any of the groups?

HOW DO STUDENTS WRITE CONCLUSIONS?

In this section students will discuss what the project is proving.

- Was the hypothesis correct or not?
- What is the answer to the question based on the data they collected?

HOW STUDENTS CREATE THE DISPLAY?

- ✓ Students don't have to use a fancy display board; one can be made out of cardboard or poster board.

- ✓ The display should be neat, organized, and visually appealing with creative touches.

- ✓ The display should have a catchy title related to the problem or question.

- ✓ Photos, charts, and graphs are clear and have direct application to the experiment topic.

- ✓ All parts of the scientific method should be included in the display. Each part should have a label:
  a. Question

  b. Research- a short paragraph telling what students learned about the topic through their research of the topic (this should be in students' own words- no cutting and pasting from other sources)

  c. Hypothesis

  d. Materials

  e. Procedure- with amounts and numbers of each item.

  f. Results- including the tables and graphs that show the data

  g. Conclusion

Appendix

Elementary Science Fair Rubric

Circle the appropriate rating for each of the following items:					
Superior 5	Excellent 4	Good 3	Partial 2	Attempted 1	Absent 0

Exhibit/Display	Circle the Rating	Total Score
a. The backboard display is age-appropriate and creative.	5 4 3 2 1 0	
b. The layout is neat, organized, and easy to read. (Each element of the scientific method should be appropriately displayed on board)	5 4 3 2 1 0	
c. All data and graphs are labeled properly.	5 4 3 2 1 0	
d. Correct spelling, punctuation, and grammar are used.	5 4 3 2 1 0	
e. The research helped answer a question in a creative way.	5 4 3 2 1 0	
Notes:		25 Points Possible

Scientific Method	Circle the Rating	Total Score
a. The problem or question is stated clearly and specifically.	5 4 3 2 1 0	
b. The hypothesis is clearly and specifically stated. (The researcher(s) should explain what he/she thought would happen & why.)	5 4 3 2 1 0	
c. The variables of the experiment are clearly recognized and effort was made to control the variables.	5 4 3 2 1 0	
d. There is a complete explanation of materials and procedures used to test the hypothesis.	5 4 3 2 1 0	
e. There is adequate data to support conclusions.	5 4 3 2 1 0	
f. A quality logbook is provided with the display.	5 4 3 2 1 0	
g. The conclusion is relevant to the hypothesis.	5 4 3 2 1 0	
h. Multiple trials are used to gather data to support the conclusion.	5 4 3 2 1 0	
Notes:		40 Points Possible

Interview	Circle the Rating	Total Score
a. The conclusions make sense based on the results and they are related back to the hypothesis.	5 4 3 2 1 0	
b. The written material reflects the researcher(s) understanding of the research and that understanding can be communicated orally.	5 4 3 2 1 0	
c. The components of the scientific process are orally communicated clearly.	5 4 3 2 1 0	
d. The data/results and project display are explained clearly.	5 4 3 2 1 0	
e. New information has been acquired as a result of the project.	5 4 3 2 1 0	
f. The researcher discusses how this project can be revised or expanded in the future.	5 4 3 2 1 0	
g. It is evident that the student completed the majority of the work on the project.	5 4 3 2 1 0	
Notes:		35 Points Possible
FINAL SCORE		**POINT TOTAL**
Signature of Judge:		

3rd & 4th Grade Student Science Fair Student Handbook

School Letterhead

Science Fair Parent Letter

Dear Parent(s) or Guardian:

The science fair project is an activity that draws upon basic and advanced skills that have been taught and emphasized in your child's science program. Students generate a problem or question and apply the scientific method to solve the problem or answer the question. Your help may be needed throughout your student's project. For example, your child may ask for your assistance in the following ways:

• Conducting research via libraries or Internet.

• Typing presentation materials for display.

• Retrieving necessary materials needed for their experiment.

One good cite to visit with your child is www.sciencebuddies.com. This website will help guide you and your child through all components of a science fair project.

Please go over the information presented in this student science fair handbook and discuss it with your child. Some of the details not in the handbook have been or will be discussed in class. Contact me at school with any concerns or questions.

Sincerely,

Classroom Teacher

* * * * * * * * * * * *

I have read the Science Fair Parent Letter.
Date: _____
Parent Signature: _____
Student Name: _____
(Please Print)

Third and Fourth Grade Science Fair Project Focus

You or your partner may choose a project which focuses on current class content, or even previews next year's content. In designing your project, you will answer an original question using in-depth research and a well-planned experiment.

STUDENT SCIENCE FAIR PROJECT TIMELINE

Task	Due Date	Teacher Initials	Parent Initials
1. Choose and submit a problem/question to investigate for teacher approval.			
2. Start your log book (Include thinking about a problem/question as your first entry)			
3. Conduct research. (Search for related facts and information)			
4. Develop a hypothesis based on your information			
5. Decide on the procedure that you will use to test your hypothesis.			
6. Make a list of your materials. Gather your materials.			
7. Conduct your experiment. Collect and record data.			
8. Organize your data and results.			
9. Write your conclusion based on the results of your experiment.			
10. Complete your science fair display.			
11. Turn in your science fair project (log book and display).			

SCIENCE FAIR PROJECT

Scientists always write about their research so that others may learn from them. Your research will be shared through your project display so others may learn from you.

PROBLEM/QUESTION

State the problem in the form of a question.

RESEARCH

This part of your project has information that was found by other scientists and relates to your topic. The research contains all the information you collected or learned during the weeks leading up to the actual experiment and science fair. Be sure and write this information in your own words. Cutting and pasting from Internet is not an option. Your research should be AT LEAST one paragraph in length, preferably more.

HYPOTHESIS

State your best guess for answering the question before you perform the experiment. The hypothesis is a logical and testable prediction about how things work. It should be written like this:

"If _____ (I do this), then _____ (this) will happen." The blanks are filled in with appropriate information related to the specific experiment. It should be something that you will **both** test and measure during your project work.

Example:

If I heat a magnet, then it will be able to pick up more paper clips than the same magnet at room temperature or when kept in the refrigerator.

You will measure both the temperature of the magnet and the number of paper clips it picks up.

LOGBOOK

Logbooks are used in every aspect of real research as a means of keeping an honest, chronological account of an investigation. Everything you do should be logged. You should begin your brainstorming about topics and problems/questions in your logbook. It should also include the notes you take when you do your research, as well as, all you do as you prepare and carry out your experiment. A logbook is like a journal. You should write the date at the top of each page. You should make an entry every time you work on your project. Keep up with it. You should not go back and write all the entries after you have finished your project.

Your logbook should include:

- Paragraph summary of what you did on each day (from thinking about the topic to completing the display)
- Notes that you took when you did research and the bibliographical information of every source you used (include the name of the author, year of publication, title, name and location of publisher, page numbers, website address and the date you retrieved it off the Internet, etc.)
- Labeled drawings or diagrams that help show the reader what you did or what happened on that day
- Any data you collected when you did the experiment
- Any conditions that might have caused unexpected results during your experiment

Example of Project Experimental Log:

Date:	Time	Procedures/ Observations

EXPERIMENT

a. MATERIALS

The materials list is a complete list of all materials including details and amounts. Be sure to include quantities (how much), length, volume, and mass. List these in metric units. Be specific in your description of each item.

The Material List should follow these rules:

1. Be specific to amount, size and length.
2. Listed in metric units where appropriate.

Example of a Material List:

Bad Materials List	Good Materials List
magnet	1 large all-metal bar magnet
paper clips	225+ small metal paper clip
refrigerator	1 refrigerator
thermometer	1 metal dry bulb thermometer
hot plate	1 hot plate with low, medium, and high settings marked
	1 hot pad
	1 pair tongs
	1 stop watch

Fill in the blanks below to create a quality Materials List.

Quantity:	Description of Item:

b. PROCEDURES

List the steps of your experiment. Do not use the words "I" or "you".

The Procedures should follow these rules:

1. Label each step with a number or letter.
2. Write your procedures in a step-by-step format
3. Be very specific with quantities, amounts and the order that things need to be done or completed.

The procedure should be very clear and precise, written step-by-step. You should be very specific; don't assume that the reader knows how much, how many, or how long. Another person should be able to closely duplicate the project by following the steps in the procedure. You should have someone else, who doesn't know what you are doing, read your procedure. The procedure may need to be revised based on feedback from that person to make it more easily understood.

An example of a procedure for the magnet question:

1. Assemble materials.
2. Make a pile of 25 small paper clips
3. Measure the temperature of the magnet at room temperature by laying the bulb of the thermometer against the surface of the magnet and leaving it there for 60 seconds.
4. Record the temperature.
5. Use the magnet to pick up paper clips from the pile. Lift the magnet into the air and hold it there. After 10 seconds count and record the number of clips that stayed connected to the magnet.
6. Put these magnetized clips away. They will not be used again.
7. Repeat steps 2-6 two additional times for a total of three trials.
8. Place the same magnet into the freezer compartment of a refrigerator for 10 minutes.
9. Make a new pile of 25 small paper clips.
10. Measure and record the temperature of the magnet as described in steps 3 and 4.
11. Use the magnet to pick up paper clips from the pile. Lift the magnet into the air and hold it there. After 10 seconds, count and record the number of clips that stayed connected to the magnet.

12. Put these magnetized clips away. They will not be used again.
13. Repeat steps 8-12 two additional times for a total of three trials.
14. Plug in the hot plate and turn it on to medium heat. Let it heat up for 5 minutes.
15. Place the same magnet onto the hot plate. Leave it there for 3 minutes.
16. Make a new pile of 25 small paper clips.
17. Using the tongs, pick up the magnet and lay it on the hot pad. DO NOT TOUCH THE HOT MAGNET.
18. Measure and record the temperature of the magnet as described in steps 3 and 4.
19. Using the tongs, pick up the magnet and use it to pick up paper clips from the pile. DO NOT TOUCH THE HOT MAGNET. Lift the magnet into the air and hold it there. After 10 seconds, count and record the number of clips that stayed connected to the magnet.
20. Put these magnetized clips away. They will not be used again.
21. Repeat steps 15-20 two additional times for a total of three trials.

Fill in the blanks below to create quality Procedures.

Procedures:

1) _____
2) _____
3) _____
4) _____
5) _____
6) _____
7) _____
8) _____
9) _____
10) _____
11) _____
12) _____

c. DATA

Show what you observed during the experiment. You may use drawings to help show what you observed. As a result of the experiment, data should be collected and

organized in tables and/or graphs. Both tables and graphs should have titles and the graphs should have the x and y axes labeled. A key should be included for the graphs. You should be able to explain orally what the tables and graphs show and how they relate to the project.

Website you can use to create tables and graphs:
http://nces.ed.gov/nceskids/createagraph/

d. RESULTS
Tell about your data. Tell about what you observed. Even if your data shows that your guess was not right, your project is still good.

You should organize the data into a table and select an appropriate graph(s) to display that data. You will then write a written summary of the results of the data. Your summary must include:

a) Does the data show a relationship or reveal some pattern?
b) Is there a sizeable or significant difference between any of the groups?

Your results should follow these guidelines:

1. Include what you wanted to accomplish and prove during your experiment.
2. Describe and write what you discovered. Be sure to include any data that might have been collected. It is important to show this data even if it did not support your hypothesis. The process of completing the experiment with true data is what is important.
3. The purpose of the results section is to present your key results.

Fill in the blanks below to create a quality Results section.

The original purpose of this experiment was to _____
_____
_____.

The results of the experiment were _____
_____

e. CONCLUSION

Use one or two sentences to tell about all the results of your experiment. In this section, you will discuss what your project is proved.

- Was your hypothesis correct or not?
- What is the answer to your question based on the data you collected?

DISPLAY BOARD

You don't have to use a fancy display board; one can be made out of cardboard or poster board.

The display should be neat, organized, and easy to read. It should be visually appealing.

The display should have a catchy title that relates to what the experiment is about.

Photograph, pictures, and diagrams may be included to help show what was done.

All parts of the scientific method should be included on the display. Each part should have a label:

a) Question
b) Research-a short paragraph telling what you learned about the topic through your research (**this should be in your own words; cutting and pasting from the Internet IS NOT acceptable**)
c) Hypothesis
d) Materials with amount and number of each item
e) Procedure
f) Results-including the tables and graphs that show the data
g) Conclusion

SOURCES

List all books, articles, and other sources that you used for your research. You may also interview experts to help with your studies. If you type in your bibliographic information into the website, www.citationmachine.net, it will create entries automatically in **APA format**.

EXHIBIT SPACE: Maximum size is: Width: (side to side) 92 cm (36.in) Depth: (front to back) 76 cm (30 in.) Height: Table Exhibit 92 cm (36 in.)

1. Anything which could be hazardous to the public, the exhibitor, or other exhibitors (including sharp, pointed objects) is **PROHIBITED**
2. Organisms: **No organisms** may be displayed! This includes any vertebrates, invertebrates, fungi, bacteria, or **plants**. For example:
    - No owl pellets, No mice (live or dead), No fish (live or dead), No insects (live or dead), and No skeletons
    - Microbial cultures- No bacteria, live or dead
    - No Fungi (including bread mold), live or dead
    - No parasites, human or other, live or dead
    - No live plants are allowed with the display!
3. Chemicals: No chemicals may be displayed. For example:
    - No acids or bases, dilute or strong
    - No salt solutions
    - No insecticides or repellents
    - No mercury
    - No medicines, vitamins, over-the-counter drugs
    - No uncovered liquids of any type
4. Flammable substances: No flammable substances may be displayed.
    - No gases
    - No flammable liquids or solid rocket fuel
    - No fumes

An alternative solution to displaying the above items: Take photographs of the substances that were used or use a digital camera and create large pictures with a computer printer for display on your board. No identifiable humans or their parts may be displayed in photos.

All projects will be inspected for adherence to Science Fair Safety Guidelines by the classroom teacher or the school Science Fair Committee.


Blooming Algae!
Question:
How does fertilizer affect algae?
Hypothesis:
The more fertilizer there is, the more the algae will grow.
Background Research:
Eutrophication is caused by Algae Bloom. This happens when nitrates and phosphorous cause the algae over-growth. The bacteria eat the dead algae and use up all the oxygen. This kills the aquatic life.
Algae are very simple plants. They only have one cell. One piece of algae alone is called alga.
Materials
4 8Ooz. jars(2.37 liter)
Fertilizer
Water from pond
Measuring cup
Aluminum foil
Procedure
Conclusion:
Farm run-off definitely has a negative affect on ponds. The algae pollute the water. This eutrophication destroys the aquatic life.
Results:
The jar with 10ml. grew good, but not the best. The jar with none did not grow. The jar with 25ml. grew the best. The jar with 10ml. and the foil cover did not grow very well.
After 75 Days

2014 District Elementary Science Fair

All events will be at DCSS Annex West

Monday, May 4th **(3:00-5:30)** **or** **Tuesday, May 5th** **(7:30Am-10:00AM)**	Douglas County Schools District Science Fair Setup Annex West (Students should place their logbook and any supporting documents on the table in front of the project)
Tuesday, May 5th **(1:30PM-4:00PM)**	Project Judging of Displays
Tuesday, May 5th Students should be at the annex at 4:00PM.	Students' Interview Times in Dogwood Room and Parents' Reception in Magnolia Room
Wed., May 6th **5:15PM-6:15PM**	Public Viewing of the Projects
Wed., May 6th **6:30-7:30PM**	Awards Ceremony

***Interview of students will be conducted by judging teams. Students may be excused to leave the Annex once a judging team completes the interview and dismisses the student.**

Elementary Science Fair Rubric

Circle the appropriate rating for each of the following items:					
Superior	Excellent	Good	Partial	Attempted	Absent
5	4	3	2	1	0

Exhibit/Display	Circle the Rating	Total Score
a. The backboard display is age-appropriate and creative.	5 4 3 2 1 0	
b. The layout is neat, organized, and easy to read. (Each element of the scientific method should be appropriately displayed on board)	5 4 3 2 1 0	
c. All data and graphs are labeled properly.	5 4 3 2 1 0	
d. Correct spelling, punctuation, and grammar are used.	5 4 3 2 1 0	
e. The research helped answer a question in a creative way.	5 4 3 2 1 0	
Notes:		25 Points Possible

Scientific Method	Circle the Rating	Total Score
a. The problem or question is stated clearly and specifically.	5 4 3 2 1 0	
b. The hypothesis is clearly and specifically stated. (The researcher(s) should explain what he/she thought would happen & why.)	5 4 3 2 1 0	
c. The variables of the experiment are clearly recognized and effort was made to control the variables.	5 4 3 2 1 0	
d. There is a complete explanation of materials and procedures used to test the hypothesis.	5 4 3 2 1 0	
e. There is adequate data to support conclusions.	5 4 3 2 1 0	
f. A quality logbook is provided with the display.	5 4 3 2 1 0	
g. The conclusion is relevant to the hypothesis.	5 4 3 2 1 0	
h. Multiple trials are used to gather data to support the conclusion.	5 4 3 2 1 0	
Notes:		40 Points Possible

Interview	Circle the Rating	Total Score
a. The conclusions make sense based on the results and they are related back to the hypothesis.	5 4 3 2 1 0	
b. The written material reflects the researcher(s) understanding of the research and that understanding can be communicated orally.	5 4 3 2 1 0	
c. The components of the scientific process are orally communicated clearly.	5 4 3 2 1 0	
d. The data/results and project display are explained clearly.	5 4 3 2 1 0	
e. New information has been acquired as a result of the project.	5 4 3 2 1 0	
f. The researcher discusses how this project can be revised or expanded in the future.	5 4 3 2 1 0	
g. It is evident that the student completed the majority of the work on the project.	5 4 3 2 1 0	
Notes:		35 Points Possible
FINAL SCORE		**POINT TOTAL**
Signature of Judge:		