Resource & Information Booklet for
School-based, Greater Vancouver Regional, and Canada-Wide

Handbook for Science Fairs & Celebrations

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We did not compile or produce these materials for redistribution but many requests have led us to make these freely available to help our colleagues who want to collaborate in the venture of encouraging our students to their highest potential.

Acknowledgements:

The majority of the material contained in this booklet were originally compiled and tested by Burnaby North Secondary teachers and R. C. Palmer Secondary teachers. Thank you to ALL who have contributed to this resource and who have made science and learning meaningful to our kids.

Helpful information can be found at the Science Fair Foundation of BC at: http://www.sciencefairs.bc.ca from which we extracted much of this material. Visit this site first.

Please also refer to Len Reimer's Science Celebration: A Resource Book for a Non-Competitive Approach to Science Fair Project Work, 1994 [ISBN: 0-9696623-0-0] which is also available on the above website. Len has been a key promoter of "science celebrations" and he was the one who got John involved in his first science project when he was in grade seven.

Some of the following resources were also adapted in part from:

1. From Idea to Exhibit, a guide to Science Fair projects for teachers, students, and parents, a pamphlet produced by the Youth Science Foundation of Canada.

2. Stepp, Anne. Setting Up a Science Project. Edgewood Cliffs, New Jersey, Prentice-Hall Inc., 6th Printing, 1972.

3. Van Deman, Barry, McDonald Ed., Nuts & Bolts: A matter of Fact Guide to Science Fair Projects. Harwood Heights, Illinois. Science Man Press, 1980.

4. So You Want to Do a Science Fair Project, A step-by-step guide to planning & producing a quality Science Fair Project. Central Interior Science Exhibition, 1987.

What is a Science Fair Celebration?

A school science fair is a celebration that features the scientific work of a student, displayed for parents, friends, and public and judged so that students can learn how well they have done. This year Science Fair Celebration will be held in the _____ on _____ .

What is the Greater Vancouver Regional Science Fair?

The Greater Vancouver Regional Science Fair is an exhibition showcasing the various Science Fairs held in schools in the Vancouver/Lower Mainland geographical area. This year's exhibit is being held at U.B.C. from _____. The top projects from our school will be entered into this fair.

What is the Canada-Wide Science Fair?

The Canada-Wide Science Fair is the national showcase and competition for the three hundred best science fair projects from Regional Science fairs held across the country. All-expense paid trips are provided to the winning projects from the Regional Fairs. Students complete for prizes and awards consisting of medallions, money, summer employment, and trips to the International Science Fair. The Canada-Wide Science Fair is being held from _____.

A Word of Caution

Students are responsible for all the materials and equipment brought to school for their sciences fair projects. Expensive and/or valuable items should not be displayed unless students accept full responsibilities for the items' supervision.

What is a Science Fair Project?

A science fair project is many things

- It is deciding if you are willing to make the commitment to see your project through from start to finish.
- It is choosing a topic that seems interesting to you and something that you would like to know more about.
- It is visiting libraries, museums, businesses, hospitals, industries, colleges... wherever you can find useful information.
- It is formulating a purpose for your project and making guesses, or hypotheses, about the outcome of your experimentation.
- It is experimenting to test your hypotheses, making observations, recording your data, and then, repeating your experimentation to verify your results.
- It is analyzing your finding and drawing conclusions.
- It is preparing your scientific research paper, your exhibit, and your presentation.
- It is presenting your project to an audience of judges, and public, and your classmates.
- And finally, it is knowing that you have really accomplished something worthwhile.

From: Nuts and Bolts: A Matter of Fact Guide to Science Fair Projects p.4

The Science Fair Journey - TO THE STUDENT:

The journey you are about to embark on finishes in the same place as for thousands of other students. The way you get to finish will be of your own design. You will have the opportunity to follow your interests in depth, and to communicate your interest to other people from the community and perhaps beyond.

The Science Fair project gives you a framework to showcase your scientific interests and, your ability to think critically, problem-solve, and be creative. The ability to do careful, accurate work will be highlighted, as well as your ability to reason and to take advantage of 'mistakes' or unexpected findings. For any student wanting to study science at university, this is the time to learn skills needed there.

The following package contains information about Science Fair projects. The rules for entry to the Regional Science Fair must be followed exactly as this is what you are expected to strive for. All of the information has come from the Science Fair Foundation of BC website, from previous Science Fair booklets and recompiled. Please remember that students are responsible for all the materials and equipment brought to school for their projects. If materials and equipments are needed from the school, please include them in your proposal and speak to the teacher. It is not guaranteed that the school will supply the necessary equipment.

Your Science Fair project is worth 20% of your Term 2 mark. Your completed project will be judged by volunteers from the community. They will include former/present Science teachers, university professors, scientists from outside the education community and others. Marks will be assessed as follows:

A. Proposal. One paragraph. Due: _____
5 marks

B. Rough draft of Research Paper. Due: _____
20 marks

C. Final Project. Due: _____
100 marks

Project Categories

The Computational and Mathematical Sciences project deals with computer hardware or software innovation, or both.

The Engineering Sciences project involves the design and/ or physical construction of some device, appliance, machine or process that has an application.

The Life Sciences project involves biology, zoology, botany or aspects of pure or applied medicine.

The Physical Sciences project is related to physics or chemistry. Its primary projective is a consideration of the cause and effect of some abiotic process or activity.

The Earth and Environmental Sciences project has as its focus either a topic related to the planetary processes or the relationships of organisms to those processes, or between or among organisms. Projects in this category would include the fields of geology, mineralogy, physiology, oceanography, limnology, climatology, seismology, geography or ecology.

The Biotechnology project demonstrates the application of knowledge of biological systems to solve a problem, create a product or provide a service in one of three subject fields: crop development, animal science or microbials.

Three Major Types of Projects

1. **Experiment**: an investigation undertaken to test a specific hypothesis.

2. **Study**: a collection and analysis of data to reveal evidence of a fact, situation or pattern of scientific interest. It could include a study of cause and effect relationships or theoretical investigation of scientific data.

3. **Innovation / Invention**: the development and evaluation of innovative devices, models, techniques or approaches in technology, engineering, or computers.

Protection of Intellectual Property
Students are encouraged to recognize that their innovation and invention has value and can be owned and registered. The patent process is a mechanism that is used to declare ownership. This ownership can then be a benefit to all and can facilitate technology transfer.

A Summary of the 12 Major Steps in Preparing a Successful Science Fair Project

1. **Brainstorm and select a topic or idea:** make sure it interests you and that you want to learn about (since you will spend a lot of time with this). Talk to teachers, parents, or librarians for ideas. A hobby might lead to a good topic. Do not forget to look through science books, magazines, or visit museums or zoos for ideas.

2. **Research your Topic:** Read books from the library; check the web; observe related events; gather existing information; look for unexplained or unexpected results. Talk to professionals; write to companies; and obtain or construct needed equipment.

3. **Organize and Theorize**: Organize your research. Narrow down your hypothesis by focusing on a particular idea.
   - **Purpose:** The purpose is a description of what you will do.
   - **Hypothesis:** The hypothesis is an education explanation as to what you think will happen.

4. **Make a Timetable**: Choose a topic that can be done in the amount of time you have. Identify important dates. Allow plenty of time to experiment and collect data. Leave time to write a paper and put together an exhibit.

5. **Plan your Experiment, Study or Innovation**: Write a research plan to explain how you will do your experiment.

6. **Consult your Teacher / Supervisor**: Discuss your work with an adult supervisor or mentor on an ongoing basis.

7. **Conduct Your Experiments, Study or Innovation**:
   - Keep detailed notes of every experiment, measurement, and observation in a special notebook that is used only for this project.
   - Change only one variable at a time when experimenting.
   - Include control experiments in which none of the variables are changed.
   - Include sufficient numbers of test subjects in both control and experimental groups.

8. **Examine Your Results**: When you complete your experiments, examine and organize your findings.
   - Did your experiment give you the expected results?
   - Was your experiment performed with the exact same steps each time?
   - Are there other causes that you had not considered or observed?
   - Were there errors in your observations?
   - If possible, analyze your data statistically.

9. **Draw Conclusions**:
   - Which variables are important?
   - Did you collect enough data? Do you need to conduct more experimentation?

10. **Research Paper:** This report will provide interested readers with a comprehensive look at your topic and research. It includes information collected during your research as well as a complete description of your experiment, data, and conclusions. Do not forget the one page summary called an abstract.

11. **Exhibit:** This is the visual presentation of your project, so prepare it carefully. Use graphs, charts, and clear bold lettering to highlight this display.

12. **Presentation and Judging:** Plan how you want to explain your project to the judges. Look neat, speak clearly, and do not fidget or do other distracting things.

Scientific Method

1. Base your idea for a science project on an observation.

2. State the purpose of your project. Usually you will state your purpose in the form of a research question. (e.g. what is the effect of the size of down on its ability to trap air?)

3. Do background research to find out what is already known about your topic.

4. State your hypothesis, an educated guess about your research question. (e.g. Large down clusters will trap more heat than smaller down clusters.)

5. Come up with a detailed procedure.

6. Carry out an experiment and collect data.

7. Record the results. Present your results in tables, charts and graphs.

8. Draw a conclusion (not pictures!) from the results. Did your hypothesis prove true?

9. Write down the steps of the procedure and the results of your experiment.

10. Publish the report.

Variables and Controls

1. **Variables**: the characteristics in an experiment that change (e.g. the size of down clusters and the cluster's ability to trap air)

2. **Independent variables**: the variable you change on purpose, also called the manipulated variable (e.g. the size of the down clusters)

3. **Dependent variable**: the variable the responds to a change in the independent variable, also called the responding variable (e.g. the cluster's ability to trap air)

4. **Constants**: variables in an experiment that are kept the same in all trials (e.g. the down's cleanliness and moisture level)

5. **Control**: the standards for comparisons in an experiment, used to judge the measure of change in the dependent variable (e.g. the down sample previously measured and known to be accurate)

6. **Repeated trials**: the number of times an experiment is repeated; the more trials, the more reliable your results.

Three Written Materials

A science fair project requires the following THREE PIECES of written materials:

1. Abstract: An abstract is written once your research and experimentation are complete. It should include a statement of the problem/ purpose of the experiment, the procedure used, your data and your conclusions. For the Canada-Wide Science Fair, your abstract must not exceed five double-spaced typewritten pages. Check locally for requirements of your regional fair. Abstracts are distributed to the judges to familiarize them with the project. The abstract is evaluated as part of the project.

2. Project Data Book: A project data book should contain accurate and detailed notes to demonstrate consistency and thoroughness to the judges and to assist you with your research paper.

3. Research Paper: A research paper includes the following sections:

- **Title Page**: Centre the project title and put your name, address, school and grade at the bottom right.
- **Table of Contents**: Include a page number for the beginning of each section
- **Introduction**: Includes your hypothesis, an explanation of what prompted your research and what you hoped to achieve.
- **The Experiment**: Describe in detail the methodology used to collect your data or make your observations. Include enough information for someone to repeat the experiment. Include detailed photographs or drawings.
- **Discussions**: Thoroughly discuss exactly what you did in your project. Your results should be compared with theoretical values, published data, commonly held belief and/ or expected results. A discussion of possible errors should be included as well as how the data varied between repeated observations, how your results were affected by uncontrolled events, what you would do differently if you repeated the project, and what other experiments should be conducted.
- **Conclusion**: A summary of your results.
- **Acknowledgements**: Credit individuals, businesses and educational or research institutions which assisted you. Identify financial support or in-kind donations.
- **References**: List any documents that is not your own (i.e. books, journals articles).

The Writing Process

Step 1: Getting started, pre-writing, discovering

- Look for a topic
- Brainstorm
- List your interests
- Check science project books, science fair websites, science magazines, etc.

Step 2: Writing it down, drafting and developing

- Choose one topic
- Draft your proposal answering questions such as:
    - What do you already know?
    - What do you want to find out?
    - What is your purpose? (See science text for lab 'purpose')
    - What materials and procedures will you use?
- Remember! This is a rough drafting of your proposed project

Step 3: Checking it over, revising.

- Narrow the topic
- Write a concise purpose statement
- Rework, revise, shape your work
- Consider the following questions:
    - Is my project experimental?
    - Is it 'doable' with resources available to me?
    - Are there other processes that need to be used?
    - Are all the variables that need to be controlled included?
- Complete a second rough draft

Step 4: Getting it right

- Edit, proof-read, recopy
- Refine your written portion of your project
- Hand-in this third draft to your teacher

Step 5: Polish and celebration

- Finishing touches
- Good copy
- Celebrate completion and a job well done!

Sample Abstract

TITLE:

STUDENT RESEARCHER (S):
SCHOOL ADDRESS:
GRADE:
TEACHER:

I. STATEMENT OF PURPOSE AND HYPOTHESIS:

(Briefly describe or define your topic. What do you want to find out? Use an "I/ We" want to find out more about……"

II. METHODOLOGY:

(How will you test your hypothesis? List all the materials you will need. Identify all variables. Explain how your research is to be conducted in a "step by step" fashion with enough detail so that another student researcher could replicate it.)

III. ANALYSIS OF DATA:

(What did the data you collected indicate about what happened in your research project? What did your charts, graphs, and statistical analysis show? This is especially important in regard to your hypothesis!)

IV. SUMMARY AND CONCLUSION:

(What did you find out? What does your analysis of data say in brief? State whether you accepted or rejected your hypothesis? Why? Describe any limitations or shortcomings in your study.)

V. APPLICATION:

(Utilize what you learned from your research in the world outside of the classroom or student research centre. How will your research findings help people solve problems or make your world a better place to live?)

Tables, Charts, and Graphs

DATA TABLE

1. On a sheep of paper, draw a table.
2. Give your table a title that identifies your variables.
3. Label the column on the left as the independent variable. Underneath, list each item you used for the independent variable.
4. Label the columns to the right as the dependent variable. Draw boxes under these columns in which you can record the results of the trials. Include a column for averages.

BAR GRAPH

1. On graph paper, draw a set of axes (x and y)
2. Give your bar graph a title.
3. Label the horizontal (x) axis with your independent variable.
4. Label the vertical (y) axis with your dependent variable. Place a scale that marks the values of your dependent variable along the y-axis.
5. For each independent variable, draw a solid bar to the height of the corresponding value of the dependent variable. Leave equal space between bars so your graph is easy to read.

LINE GRAPH

1. On graph paper, draw a set of axes (x and y).
2. Give your graph a title.
3. Label the x-axis with your independent variable. Place a scale with the values on the x-axis.
4. Label the y-axis with your dependent variable. Place a scale that includes all the values of the dependent variable on the y-axis.
5. Plot a point on the graph for each piece of data.
6. When you've plotted the points for your data, connect the points, or draw a 'line of best fit'.

PIE CHART

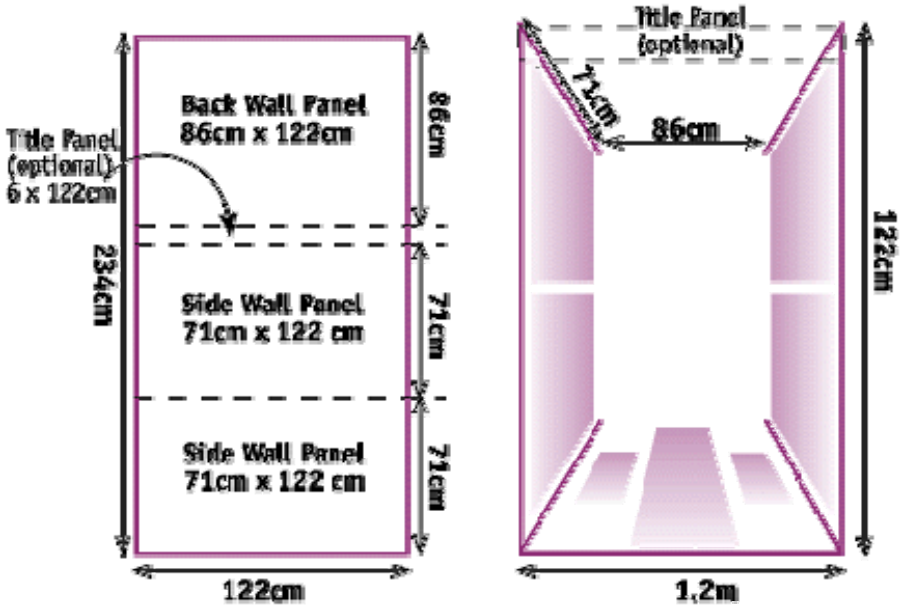
1. Draw a circle using a compass.
2. Give your pie chart a tile.
3. Mark the center with a point; this is the spot where each wedge or 'pie slice' will start.
4. Measure a wedge for each item of the independent variable. To figure out how big to make each wedge, convert your data from percentages to angle degrees.
5. Label the wedge, including its percentage.
6. Measure your next wedge from the edge of the first. When you're finished, the entire circle should be filled. The sum of all the angles must add up to 360^{o}.

Project Display or Exhibit

Your project should attract and inform, be easy to assess the study and results, and make the most use of space with clear and concise displays. It is a communication tool.

The Canada wide Science Fair maximum size restrictions:

- 1.2 metres wide
- 0.8 metres deep
- 3.5 metres high from the floor



The display should include headings that stand out, posters containing written materials and charts, clearly drawn and correctly labeled graphs and diagrams, and some of the apparatus used so that key aspects of the project can be demonstrated.

Backboards are an essential element. The following guidelines apply to science fair projects displayed at the national level. Check locally for requirements of your regional fair. Materials must not be flammable.

Check list – some or all may apply:

- **Wood and wood products** ¼-inch thick or thicker and synthetic materials designed for displays are recommended.
- **Corrugated cardboard, Bristol board, and other paper products** are not acceptable for backboards.
- **Air pockets** should not be left behind any paper used to decorate the board.
- **Overlapping sheets** of paper are not acceptable.
- **Panels may be painted** with any common paint.
- **Peg board** allows flexibility for arranging three-dimensional exhibits.
- **White pine** should be used for bracing, framing and other woodwork.
- **Removable pin hinges and wing-nut bolts** save assembly time and assist maintenance.

Helpful Hints:

- **Your title** should be simple and represents your research accurately.
- If elements of your project cannot be safely exhibited at the fair, incorporate **photographs** of important phases of your experiment to use in your display. Photographs of people required their consent.
- **Your display should be presented logically** and be easy to read. When you arrange your display, imagine you are seeing it for the first time.
- **Make your display stand out.** Use neat, colorful headings, charts, and graphs. Pay special attention to the labeling of graphs, charts, diagrams, and tables.
- Be sure to adhere to the **size limitation and safety rules** when displaying your project.
- Make sure your display is **sturdy**.

How Will My Science Project Be Judged?

Part of the fun of a science fair is talking to qualified judges about the research work done in the project. The judging process can be a good learning experience and judges are asked to be positive and supportive at all times. Many students have found their first summer job or decided on a certain career through the contact with a judge and you can also learn a lot about how to improve or develop your project.

Judges are looking for several things like:

- Originality: is the idea and the approach you have taken original?
- Accuracy: in the collection of information and your use of the scientific method.
- Completeness: in carrying out the experiments and understanding what you have done.
- Results: in ending up with knowledge that is important to you.

**Check out the scoring rubric for specific criteria,

How Should I Present My Project to the Judges?

This is an important part of your project so take the time to plan and practice the presentation you will take to the judges. Plan in advance what you want to say. Write key phrases or ideas on index cards and use them as you reference but do not depend heavily on them.

Here is an approach you may wish to use for **your oral presentation:**

1. Greet the judges and introduce yourselves
2. Give the title of your project
3. Tell how you became interested in this topic
4. Give some background information about the topic
5. State the purpose of your investigation
6. Discuss your review of literature
7. Describe, in a step-by-step fashion, the procedure you follow for conducting your investigation. Point to sections of your display and refer to charts, graphs, and photographs. If you have equipment on display, allow the judges to examine it.
8. Explain the results of your experiment and be sure to discuss controls and variables. Remember to keep all measurements in metric units.
9. Identify the conclusions that you could logically draw from the experiment.
10. Discuss any future plans you may have to continue research or experimentation related to your topic. Include a few statements about any changes you made in your scientific approach during your early investigation.
11. Ask the judges if they have any questions. Remember, if you do not know an answer say so and indicate you will look into it. If judges insist on asking questions in unrelated areas, redirect the conversation back into your specific topic.
12. Thank the judges for their time and any suggestions they may have offered to improve your project.

Good manners, nice clothes, and enthusiasm for what you are doing will help to impress the judges. **Here are some tips:**

1. Dress nicely. (Try to avoid wearing sports clothing)
2. Be polite and practice good manners.
3. Make good eye contact with your judges and be sure to give each judge your attention. Do not just look at one.
4. Stand up straight and to the side of your exhibit.
5. Do not do anything to distract the judges (i.e. Shifting from side to side)
6. Relax, smile, and have FUN!

Project Number: _____

Category: _____

Division: _____

TOTAL SCORE /100

Judge's Tally Sheet

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Greater Vancouver Regional Science Fair

Part A: Scientific Thought (45 Marks)
Part B: Original Creativity (25 Marks)
See reverse side

Part C: Display
(Maximum 20 marks)

1. Skill (maximum 10 marks)
   - Necessary scientific skill shown /3
   - Exhibit well constructed /3
   - Material prepared independently /2
   - Judge's discretion /2

   /10

2. Dramatic value (maximum 10 marks)
   - Layout logical & self-explanatory /4
   - Exhibit attractive /4
   - Judge's discretion /2

   /10

Total /20

Judge's Summary

Part A: Scientific Thought	/45
Part B: Original Creativity	/25
Part C: Display	/20
Part D: Presentation	/10
Total Score (transfer to left)	**/100**

Part D: Presentation
(Maximum 10 marks)

1. Clear and logical presentation /3
2. Enthusiastic presentation /2
3. Ability to answer questions /3
4. Judge's discretion /2

Total /10

Notes and Comments:

Part A: Scientific Thought – 45%			**Mark**
Experiment An investigation undertaken to test a scientific hypothesis experimentally. The variables, if identified, are controlled to some extent.	**Innovation** The development and evaluation of innovative devices, models or techniques or approaches in technology, engineering or computers (hardware or software).	**Study** A collection and analysis of data to reveal evidence of a fact or a situation of scientific interest. It could include a study of cause and effect or theoretical investigations of scientific data.	
Level 1 (low) Mark Range 5 to 15			
Duplicate a known experiment to confirm the hypothesis. The hypothesis is totally predictable.	Build models (devices) to duplicate existing technology.	Study existing printed material related to the basic issue.	
Level 2 (fair) Mark Range 15-25			
Extend a known experiment through modification of procedures, data gathering and application.	Make improvements to or demonstrate new applications for existing technological systems or equipment and justify them.	Study material collected through a compilation of existing data through personal-observations. Display attempts to address a specific issue.	
Level 3 (good) Mark Range 25 to 35			
Devise and carry out a n original experiment. Identify and control some of the significant variables. Carry out an analysis using graphs or simple statistics	Design and build innovative technology or provide adaptations to existing technology that will have human benefit and/or economic applications.	Carry out a study based on observations and literary research illustrating various options for dealing with a revelant issue. Include appropriate analysis (arithmetic, statistical, or graphical) of some significant variable(s).	
Level 4 (excellent) Mark Range 35 to 45			
Devise and carry out original experimental research which attempts to control or investigate most significant variables. Include statistical analysis in the treatment of data.	Integrate several technologies, inventions or designs and construct an innovative technological system that will have human and/or commercial benefit.	Correlate information from a variety of significant sources which may illustrate cause and effect or original solutions to current problems through synthesis. Identify significant variable(s) with an in-depth statistical analysis of data.	

Part B: Original Creativity – 25%			
Rank 1 (low) **Mark Range 5 to 10**	**Rank 2 (fair)** **Mark Range 10 to 15**	**Rank 3 (good)** **Mark Range 15 to 20**	**Rank 4 (excellent)** **Mar Range 20 to 25**
Little imagination shown. Project design is simple with minimal student input. A textbook or magazine type project.	Some creativity shown in a project of fair to good design. Standard approach using common resources or equipment. Topic is a current or common one.	Imaginative project, good use of available resources. Well thought out, above ordinary approach. Creativity shown in design and/or use of materials.	A highly original project or a novel approach. Shows resourcefulness, creativity in design. Use of equipment and/or construction of project.

Mark								

Greater Vancouver Regional Science Fair Safety Checklist

(This is consistent with the Nationals)

Fire Hazards

- Operation of a flame, candle, torch, or any other heating device such as a hot plate.
- Excessive packing material is found under the table.

Electrical Hazards

- Two-pronged plugs without a ground are found on the display (3-pronged plugs are the only ones permitted)
- Modifications to CSA approved electrical equipment
- Wet cell batteries (dry cell batteries such as alkalines or NiCd are permitted)

*Electronic equipment created by participants can be used as long as they have:

- As low voltage as possible
- A non-combustible enclosure
- An insulating gourmet at the point where the electrical service enters the enclosure
- Low electric current in case terminals are touched
- Pilot light to indicate when the power is on.

Biohazards

- Biological toxins
- Cell or tissue samples (include blood and blood products, except on sealed microscope slides, which may be displayed)
- Plants or plant tissue
- Soil containing organic material
- Cultures – (No Petri dishes, no Ziplocs with spores, etc.) – Photos are a good substitute

Images of Humans

- Displays must avoid sensational or offensive images

Animals and Animal Parts

- Live animals or micro-organisms

*Items naturally shed by an animal or parts properly prepared and preserved are permitted [eg: quills (safely contained), shed snake skin, feathers, tanned pelts and hides, antlers, hair samples, skeletons or skeletal parts] Tissues are not permitted.

Firearms, Hazardous Materials, and Equipment

- Firearms, ammunition, dangerous goods, or explosives
- Images of humans or animals injured by firearms or explosives

*X-ray and radiation producing equipment may be displayed but NOT turned on.

Structural and Mechanical Safety

- Any structurally unsound backboard or display
- Sharp edges such as the corners of prisms, mirrors, glass, or metal plates that are not in a case
- Dangerous moving parts such as belts, gears, pulleys, and blades that are not in a guard
- Motors that do not contain safety shut-offs
- Pressurized vessels or compressed gas cylinders
- Moving exhibits (such as robots) that are using more than their allocated space

Chemical Safety

- Flammable, toxic or dangerous chemicals

  *Any other chemical than water or table salt is strongly discouraged. Water can represent "simulated alcohol". Salt (NaCl) can be used to simulate other powders. Write "simulated _____". Molasses can be used to simulate petroleum products. Food colouring may also be used.]
- Prescription drugs or over the counter medications
- More than 1 litre of liquid being displayed

Any projects involving ethical issues must ideally be approved by the Greater Vancouver Regional Science Fair Committee before the project has started.

Safety Checklist –
The More Thorough But Unofficial Version

Project #_____ Safety Officer_____
The student and teacher must complete and sign this safety checklist before a project arrives at the Science Fair. A member of the safety committee will do an additional safety check once project set-up is complete but prior to the start of judging. The checklist must be present at your exhibit for the duration of the fair.

General Structural and Mechanical Safety

___Exhibit will not collapse: It is freestanding, well-balanced, and f solid construction, no more than 1.2m wide, by 0.8 metres deep by 3.5 metres from the floor.
___All display posters are completely and securely fastened to the exhibit baseboard.
___All moving parts are securely affixed and will into separate from the exhibit (i.e.: belts, gears, pulleys) and blades should be in a guard
___ Motors contain safety shut-offs
___All sharp edges or corners (such as those on prisms, mirrors, glass, or metal plates) are covered or in a case
___All hoses and cords required in the exhibit are securely taped and of minimal length.
___All pressurized vessels have safety valves.
___Exhibit does not contain any compressed gases or pressurized vessels
___Aisle and area under table are clear of any debris.
___ Moving exhibits (such as robots) should only use no more than their allocated space

Fire Hazards

___No combustible material is near a heat source.
___No open flames (candle, torch, or any other heating device such as a hot plate) are present in the exhibit.
___No excessive packing material or any other unnecessary flammable material is present in the exhibit hall or under the table.
___No burning or smoldering substances are present in the exhibit hall (including cigarettes).

Biohazards (including Animals and Animal Parts)

___No biological toxins, cell or tissue samples (including blood and blood products, except on sealed microscope slides), microorganism, or cultures ((no Petri dishes, no Ziplocs with spores, etc.) are displayed in the exhibit. Where such displays are integral to the project content, visual substitutes (ie: photographs may be used).*
___No matter subject to decomposition is present in the exhibit.
___No live animals are present in the display (but properly housed, non-decomposing animal parts may be displayed (ie: a snake skin).* Note: Items naturally shed by an animal or parts properly prepared and preserved are permitted [eg: quills (safely contained), shed snake skin, feathers, tanned pelts and hides, antlers, hair samples, skeletons or skeletal parts] Tissues are not permitted.
___If any vertebrate animal is part of an experiment, collection and use of thereof must be humane. Such treatment cannot stress the animal or be otherwise deleterious to its health.
___No radioisotopes are present in the exhibit.

** No project will be penalized due to the replacement o f hazardous material with innocuous substitutes.*

Chemical Safety

___No toxic, dangerous, or flammable chemical (including chemical preservatives) are present in the exhibit.
___No drugs, whether prescription or over-the-counter, are present in the exhibit.
___Where chemicals are required for illustrative purposes, appropriate safe substitutes have been used(ie: water for alcohol), which may be labeled with the intended name followed by 'simulated' (ie: either simulated)).* Any other chemical than water or table salt is strongly discouraged. Water can represent "simulated alcohol". Salt (NaCl) can be used to simulate other powders. Write "simulated _____". Molasses can be used to simulate petroleum products. Food colouring may also be used.
___ No more than 1 litre of liquid being displayed

Electrical Hazards and Radiation
____ Electronic equipment created by participants can be used as long as they have:

- As low voltage as possible
- A non-combustible enclosure
- An insulating gourmet at the point where the electrical service enters the enclosure
- Low electric current in case terminals are touched
- Pilot light to indicate when the power is on.

____Voltages used represent minimal quantities required to run any electrical components of the exhibit.
____All electrical components are entirely housed by an enclosure insofar as such remains practical.
____Such an enclosure is of a non-combustible material.
____All metal parts are not intended to carry a current but present in an exhibit that uses electrical components are grounded.
____All cords are CSA approved and in good repair (no exposed wires or breaks in insulation). Modifications are a hazard.
____All cords are three pronged.
____An insulating grommet has been installed at the interface of a cord and any electrical component(a grommet keeps the cord from being frayed by the edges of the component housing).
____Wet cells (ie: car batteries) have not been used (dry cell batteries such as alkalines or NiCd are permitted)
____Exhibit is capable of being turned off at the end of the viewing period.
____No exposed part carries a voltage greater than 36V.
____No radiation-producing component is displayed without proper governmental authorization and adherence to governmental radiation safety protocols (exhibits involving voltages above 10kV are considered to be radiation-producing).
____ X-ray and radiation producing equipment may be displayed but NOT turned on.

Firearms, Hazardous Materials, and Equipment
____ No Firearms, ammunition, dangerous goods, or explosives
____ No Images of humans or animals injured by firearms or explosives

Images of Humans
____ Displays must avoid sensational or offensive images

Ethical Note:
Any projects involving ethical issues must ideally be approved by the Greater Vancouver Regional Science Fair Committee before the project has started.

By signing here, I verify that I have checked this project and that t meets all safety guidelines outlined above.

Student's Signature: _____
(must be signed prior to arrival at the fair)

Teacher's Signature: _____
(must be signed prior to arrival at the fair)

*No project will be penalized due to the replacement of hazardous material with innocuous substitutes.

Final Note: *when assessing the hazards of exhibits, the exhibitors should ask themselves the question, "could a viewer—particularly a small child—touch or spill materials and hurt themselves?" If so, additional safety precautions will be required.*

What are the Rules and Regulations of the Science Fair?

General Rules

1. Only one entry is allowed for any individual or group. A group shall be no larger than two students.
2. All displays are to be work of students. Advice from outside sources should be acknowledged.
3. Placement of Projects in categories will be at the discretion of the Science Fair Organizing Committee.
4. A judge's decision is final.

APPENDICES:

Some of these sections are detailed examples, templates or alternate examples of previous sections

Stay Organized With a Schedule

This may be the first time you have attempted a long-range project, so it is very important to prepare a schedule and stay organized. Science fair projects often require several weeks for completion. For that reason, organizational meetings are often set up months before the actual fair. Do not let a due date that is many weeks away throw your planning off; there are many things to do. Here is suggested schedule that provides ample time to complete all phases of the project:

Sept.-Oct.	Identify your topic and establish a purpose
	Use the library to research your topic.
Nov.-Dec.	Plan your experiment and collect supplies.
	Conduct your experiment and collect data and results. Do not forget to repeat your experiment to verify your results.
Jan.-Feb.	Analyze your results and establish your conclusion
	Write the research paper and abstract
March.	Build your display and practice your presentation for judging.

Getting the info

Once you have identified your topic, the next step is to conduct your research. You want to collect as much information as possible. Begin getting an overview of your topic. Encyclopedias contain general information about many topics and are a good starting point. However, they should be used only get a general idea.

When you find a book on your topic, do not feel you have to read the whole thing. Look at the table of contents and the index of information related to your subject. Check the book's bibliography for other sources you may wish to review. The Internet can be an excellent resource of ideas and information.

SAMPLE TIMELINE 1: PALMER SCIENCE FAIR TIMELINE

WEEK 1: November 19-23	Identify a topic Establish a purpose
WEEK 2: November 26-30	Research your topic (use a graphic organizer to take complete notes in your own words) Use a minimum of 5 credible websites and 3 scientific books/journals
WEEK 3: December 3-7	Hypothesis and prediction Show proof of research and your defined purpose
WEEK 4: December 10-13	Materials and procedure Thursday, December 15 your proposal is due at 3pm. (NO LATES ACCEPTED!!!)
WEEK 5: December 17-21	Proposal conference Start doing your experiment over the holidays
WEEK 6 & 7: January 7-18	Conduct experiments & collect data – test minimum 3 times (No data = Fail)
WEEK 8 & 9: January 21 – February 1	Analyze data Retest if necessary
WEEK 10 & 11: February 4 – 15	Lab report write up
WEEK 12: February 18-22	Create board display Practise oral presentations
WEEK 13: February 26	Palmer Science Fair
WEEK 14: February 27 – March 7	Fix up Projects If you choose to redo your experiment - must include a rationalization and self - evaluation
WEEK 15: March 13	Science Expo – Aberdeen Centre Mall

SAMPLE TIMELINE 2:

SCIENCE FAIR

12-Week Timetable (Burnaby South)

due January 28, 2008

Week 1 (October 22, 2007)

- Start a logbook for recording your progress of your project. You should record into the logbook at least twice a week.
- Choose a topic or problem to investigate
- Make a list of resources (school library, community library, places to write, people to interview, internet sites, …)

Week 2 (October 29, 2007)

- Select your reading material
- Begin preliminary investigations
- Write for additional information from business firms, government agencies…
- Write down or sketch preliminary designs for your display

Week 3 (November 5, 2007)

- Complete initial research
- Interview experts for more information
- Decide how to set up your investigation or experiment (remember the steps of the scientific method - i.e. you must include a control)
- Decide what materials you will use in the display. Make a list.
- Set up an experimental design

Week 4 (November 12, 2007)

- Begin organizing and reading the materials sent in response to your letters
- Decide whether you need additional material from outside sources
- Begin collecting or buying materials for your display
- Begin setting up your experiment or demonstration
- Add information to project notebook as you get it
- Start your collection or experiment

Week 5 (November 19, 2007)

- Learn how to use any apparatus you need
- Continue recording notes and observation in your notebook
- Set up outline for written report

Week 6 (November 26, 2007)

- Work on first draft of written report

Week 7 (December 3, 2007)

- Start assembling display unit
- Check books, pamphlets, magazines for additional ideas
- Verify information with experts: teacher, professors, scientists, parents

Week 8 (December 10, 2007)

- Begin designing charts, graphs, or other visual aids for display
- Take any photographs you need
- Begin preparing signs, titles, and labels for display unit

Week 9 (December 17, 2007)

- Have photographs developed and enlarged
- Talk with experts again to make sure your work is accurate and on schedule
- Begin writing second draft of your report

Winter Break (December 24, 2007 - January 4, 2008)

- Continue recording observations in logbook
- Continue writing your report

Week 10 (January 7, 2008)

- Write text for background of display and plan its layout
- Complete graphs, charts, and visual aids
- Finish constructing your display
- Work on final draft of written report

Week 11 (January 14, 2008)

- Complete your experiment or collection
- Write and type final copy of written report
- Do lettering of explanations and mount them on your display
- Mount graphs, charts, drawings, photographs
- Assemble apparatus or collection items; check against your list

Week 12 (January 21, 2008)

- Proofread your written report
- Practice your oral presentation for the judging
- Set up display at home and check for any flaws (leave standing for 2 days)
- Carefully take display apart and transport it to your science class on Monday, January 29

Week 13 (January 28, 2008)

- **SUBMIT PROJECT TO TEACHER** for in-class presentation and critique. Make last final touches.

Week 14 (February 4, 2008)

- Set up display in the Multi-Purpose Room (C248/C249) on Monday, February 4 during science class or after school. Everything must set up by Tuesday morning ready for in-school viewing. The Science Fair will be open for viewing from Tuesday to Thursday.
- Check and double-check everything
- Be prepared to be judged on Wednesday, February 6 at 8:45 am
- Take display apart on Thursday after school or on Friday morning. The Multi-Purpose Room must be cleaned up before the end of lunch time on Friday.

Congratulate yourself on a job well done!!!

A Controlled Experiment

To conduct a scientific investigation, care must be taken to follow experimental procedures. You must design an experiment to test your hypothesis. When planning your experiment, remember to keep everything the same expect for the single variable being tested. A variable is something that can be changed in the experiment. It is what you are testing. Everything else must be the same and only one variable or condition is altered or changed. A control group should be used when conducting an experiment. This group receives the same attention as the test groups; however, it will not be influenced by the variable the other groups are testing.

Here is an example:
Purpose: how the amount of fertilizer used will affect plant growth
Hypothesis: Increased dosages of fertilizer will cause greater growth in tomato plants

The test variable will be the amount of fertilizer used. So all other variables and conditions must stay the same. That means the following:

1. The seeds must all come from the same package and should be randomly selected.
2. All seeds must be planted in the same sized pots with similar soil
3. All plants must receive exactly the same amount of water and light.
4. The temperature should be the same for all test plants.
5. More than one plant should be used in each test group.
6. Set one group as the CONTROL GROUP. This group is not given any fertilizer.
7. Set up two other test groups. One receives a certain amount of fertilizer each week. The other group receives twice as much.

Recording Observations and Data

Use a separate notebook for recording all measurements and observations. Record information on a daily basis and consider the following things:

- Making sure that accurate metric measurements are given in your data. Give masses in grams, volumes in milliliters, and linear measurements in centimeters.
- It is better to have too much data than not enough so keep a lot of notes
- When making an observation, write down the date and time
- Keep tract of the materials used, their quantities, and cost.
- Consider taking photographs to be used in your research paper or as part of your display.

Graphs and Charts

Your daily log of observations will be the best means for sharing the data and information collected during the experiment. Charts and graphs will provide a fine way to share data and in an easy to read and understand fashion. There are different kinds of charts and graphs.

The Abstract and Research Paper

It is important to be able to share your project writing with others. One way to share information is in written form. Here are some guidelines for writing the abstract and research paper.

1. The abstract is one-page summary of your work. IT should include:
    a. A statement of purpose
    b. A brief description of the procedure
    c. A conclusion based on results collected

2. The research paper should be typed with double spacing. It should include.
    a. Title page which should include your topic, name, school's name, and grade.
    b. Table of contents
    c. Purpose: this is a statement of what you plan to do. It can include a hypothesis of education guess as to what you think the outcome will be.
    d. Acknowledgements – In this section, you can identify people who have helped you.
    e. Review of literature – Here you describe the work and findings of other related to your topic
    f. Materials and Procedure- Describe the materials you used and then provide a step-by-step explanation of how you conducted the experiment. Include drawings or photographs to help clarify your procedures.
    g. Results – The outcome of your experiments and the data collected is shared in graphs, charts, or as a daily log of observations
    h. Conclusion – In this section you will interpret your findings and results. Refer back to your purpose and indicate whether or not your findings support your hypothesis.
    i. Bibliography – List the books, magazines, pamphlets, or other communications you used to research your topic.

12 Steps to a Successful Science Fair Project

1. Choose a topic or problem!

This is often the hardest part of the whole project especially as you try to come up with something that others have not already done many times over.

Start with things you are interested in. Make up a list: People, animals, plants, diseases, television, computer programming, robotics, music, weather, ppollution, nutrition, electromagnets, and so on. Then decide what you are really curious about with some general questions like:

How can plants best be projected from insect pests?
What do the different colours in rocks mean?
Why and how does the weather change?
How can pollution be controlled in my town?

Now you are getting closer to finding the one question that will be the start of your project. Pick out a specific aspect of a topic and develop an experiment to find the answer.

Can companion planting protect roses from aphids?

What are the sources of pollution in the river and how can they be cleaned up?

If you cannot decide on a definite topic, begin by looking through books and magazines for ideas. Your teacher or friend may have a suggestion for you. Since you are going to work on this project for some time, you owe it to yourself to choose a topic in which you are genuinely interested. It might be a topic that you know something about but would like to know more.

Whatever topic you choose, it must be one that you can experiment with yourself. A good way to start it to ask a question that can be answered only by experimenting. Here are good examples of topics chosen by other students and why they can or cannot be selected as good topic:

POOR TOPIC:
"Motors" The topic is too general. If the student just describes how motors work, they are merely doing a demonstration and not experimentation.

"How Volcanoes Erupt" This topic will not allow experimentation without visiting real volcanoes. If students make a model that erupts, then they are doing a demonstration and not experimentation.

GOOD TOPIC:
"The effect of Chemical Fertilizers on the Bean Plants" or "How do Pill Bugs react to Various Surfaces?" This could be a good topic because it suggests experimentation. Students would use the scientific method to complete the project.

These are just examples of topics. You will have to choose the topic and narrow it to a specific question or problem that allows experimentation.

2. **Plan Your Work Schedule**

A science project can be a wonderful experience, but it takes TIME, so plan a work schedule and stick to it!

3. **Research Your Topic and Keep Good Records**
    a) Find out as much possible about your topic. Here are some suggested resource to use:
        - School library
        - Public Library
        - College/university library
        - Newspaper particles
        - Science/chemical companies or labs
        - Forestry/engineering firms
        - Science magazines
        - People (parents, teachers, friends, family, etc.)
    b) Keep a record of everyplace you go, everyone you talk to, and everything you learn!
    c) Keep a bibliography.
    d) Keep a JOURNAL. This is like a science diary where you keep a record of everything about your project. Your first entry should be some notes you take on your reading. Make daily/weekly entries.
4. **Plan Your Project**
    a) Purpose: what question do you want to answer?
    b) Hypothesis: what do you think the answer will be?
    c) What materials will you need to do your project?
    d) Where will you get the materials you need?

5**. Gather the Materials You need**

Materials do not have to be expensive or of laboratory quality. Science does not take place in a lab only – practicality is important.

You might need to purchase some items well in advance. Some items may need to be purchased from a scientific supply company. Ask your teacher to place an order for you.

When performing your experiment, keep an accurate word of what, how much, and what kind of materials you used. When writing your list of materials, keep in mind that quantities are important.

Poor listing of materials:

Water
Thermometer
Sphygmomanometer
Test Subjects

Good listing of materials:

25mL of distilled water

130cm thermometer, 0 to 100 degrees Celsius
1 mercurial sphygmomanometer
40 test subjects

6. Do your experiment
Make sure you do a controlled experiment. You want to keep all variables exactly the same and change only what it is you want to observe.

7. Record Your Results:
Use charts, graphs, tables, drawings, photos, etc. if possible.

8. Write a conclusion
This should answer your question. You might not be able to answer your original question. Do not be afraid to say so but be sure to tell what you have learned.

9. Prepare your exhibit (see diagram and guidelines)

Suggestions:

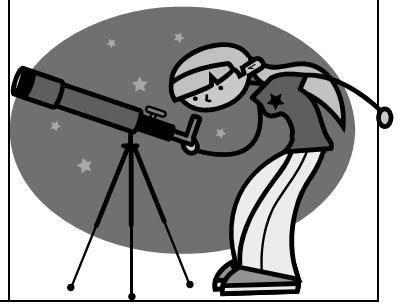
- Put your name and grade on your project
- Make the title LARGE, CLEAR, and NEAT. Labeling should be neat and informative. Explanations should be clear and concise. Add appropriate pictures of diagrams.
- Hint: emphasize the use of green and yellow on your project if it pertains to nature. Use reds, blues, and black if your project is technical.
- Photographs, diagrams, graphs, sketches, etc. help your project "come alive"
- Apparatus used in your experiment should be displayed or used for demonstration purposes.

10. **Check your project:** make sure it is within the size guidelines and safety regulations

11. Prepare Your Written Report

12. Prepare your Presentation to the judges

Science Fair Proposal Rubric

	IRON SCIENTIST	SCIENTIST WHO'S ALMOST THERE	SCIENTIST IN TRAINING	NEED MORE RESEARCH
PURPOSE & HYPOTHESIS X__	**Purpose:** clearly states what the experiment is about in complete sentences. **Hypothesis:** relevant and clearly in an "if ____, then" statement.	**Purpose:** clearly states what the experiment is about in complete sentences, but may be vague at times. **Hypothesis:** relevant and clearly in an "if _____, then" statement.	**Purpose:** unclear and/or incomplete. **Hypothesis:** included but not in an "if____, then" statement.	**Purpose:** is missing or irrelevant. **Hypothesis:** is missing, not testable or irrelevant.
MATERIALS X__	List of **all** materials used.	Listed but missing 1-2 items.	Listed but missing more than 2 items.	Listed but missing more than 5 items or included items not used.
PROCEDURE X__	Logical order Numbered steps Complete sentences	Logical ordered, but not numbered and or not in complete sentences.	Listed but not in a logical order or difficult to follow.	Inaccurate representation of steps.
DATA X__	Uses appropriate charts or graphs. Charts, graphs and tables are labelled and titled.	Fair representations of the data in tables and/or graphs. Missing labels and/or titles.	Represented in written form but not organized in charts, graphs and/or tables.	Difficult to follow, inaccurate, disorganized, missing titles and labels.
CONCLUSION & ANALYSIS X__	Includes whether the findings supported the hypothesis, possible sources of errors, an what was learned from the experiment	Includes whether the findings supported the hypothesis and what was learned from the experiment. Missing possible sources of errors.	Only includes what was learned from the experiment	No conclusion was included in the report OR shows little effort and reflection.
RESEARCH X__	Minimum of 5 credible websites and 3 scientific books/journals Correctly sited in a bibliography section Accurate graphic organizers used to take complete notes in own words.	At least 8 references. All from credible sources. All references cited with no more than 3 citation errors. Accurate graphic organizer used to take complete notes, with the majority in your own words.	At least 8 references. Lacks variety of reference materials used. Not all materials are from a credible source. Bibliography included not in the correct format. Some organization of notes shown majority in own words.	Less than 8 references used. No bibliography included. Notes are incomplete, disorganized and not in your own words.
WORK HABITS (G/S/N)	Uses time wisely, consistently on task. Cooperative, helpful, and contributes willingly to class and group activities If absent, student takes the responsibility to find out what was missed.	Generally uses time wisely and usually on task. Cooperative and participates in class and group activities. Will complete missed work when reminded.	Often off task. Often not productive in class and group activities. Fails to find out or complete missed work. May disrupt others in class.	

Peer-Student Evaluation Forms

Palmer Science-Math Fair

Evaluation completed by: _____

Project Title: _____ Number: _____

Author(s): _____ Grade: _____

What is this project about OR what is the **main question or purpose**?

What were the **results** or most important findings?

What are some of the positive things about this project?	How could this project be improved?

On a scale of 1 to 10, what would you rank this project? (Circle)

(Poor) 1 2 3 4 5 6 7 8 9 10 (Perfect)

Other Comments? (Use back page if required)

Class Registration Form

PALMER SCIENCE-MATH FAIR REGISTRATION

- PRINT CLEARLY!
- Please ensure that the Project Number matches that on your display!

Project Number:	***NAME(S):***	***Project Title:***
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		
16.		

POSTER AD

You are invited to the

Palmer Science-Math Fair & Open House

Wednesday February 27th, 2008
4 - 7 pm

Expand Your Mind

Refreshments provided
Top Projects will be going to the Vancouver Regional Science Fair, April 10-12 @ UBC
Look for us at the Science Expo and Career Fair @ Aberdeen, Thursday March 13th 3:30-6:30pm.

PRE- and POST- Science Fair Planning Checklist

Pre-Science Fair Dates / Checklist:

In June/ September:

- ❑ Checkout: Science Fair Booklet & Materials (add schedule)
- ❑ Schedule TOC's for Science Fair & planning days (with Principal)
- ❑ Fair Date: _____ should be *at least three weeks* before Spring Break (since two weeks before Spring Break is the usual GVRSF deadline).

Post- Science Fair / Pre-GVRSF Entry Checklist:

- ❑ Student announcements: report of winners
- ❑ School newsletter announcement of winners and progress

- ❑ Students register themselves online at GVRSF web registration (www.gvrsf.ca) → Done by Monday Mar.3. Registration is in PAIRS. (*Note: Grade 8 & 9's may need help with the registration process).
- ❑ Students participating have printed off, parent has signed and you have signed permission forms → Bring in by _____.
- ❑ Parent permission and transportation concerns

- ❑ Science Trophies returned for engraving

- ❑ Science Expo:
    - o Parent Field Trip Form
    - o Confirm transportation for the event

Science Fair To Do List

Descriptor	Action Taken By	Date to Accomplish By
GALLERY-reserve		
GALLERY-order tables		
GALLERY-set/dismantle		
GALLERY-**project placement**		
FOOD-order judges' lunch		
FOOD-open house		
BUDGET-student council		
BUDGET-PAC		
BUDGET-donations		
ADVERTISING-sc.teachers		
ADVERTISING-Viking		
ADVERTISING-Bby Now		
ADVERTISING-sign-up		
ADVERTISING-elementary		
ADVERTISING-school sign		
ADVERTISING-web page		
ADVERTISING-posters		
TROPHIES-plaques		
TROPHIES-ribbons		
TROPHIES-engraving		
JUDGING-contact		
JUDGING-materials mailed		
JUDGING-timetable		
JUDGING-parent letter		
JUDGING-name tags		
JUDGING-follow up		
STUDENT-name tags		
STUDENT-field trip form		
STUDENT-setup date		
PRINCIPAL-coverage		
PRINCIPAL-$$$		
UBC-field trip forms		
TEACHER-T.O.C.'s (2)		
TEACHER-LOA forms		
TEACHER-LOA UBC		

Sample Schedule / Agenda

Science Fair 2008 Agenda

Thank you for volunteering to judge the science fair projects!

Agenda for the Day

8:00 – 8:50am	Judges' Orientation – Room ___
9:00 – 11:35am	Round 1 of Judging - Lounge
11:40-12:55pm	Lunch (provided!) – Room ____
1:00-2:15pm	Round 2 of Judging - Lounge
2:15-2:45pm	Judges' Conference – Staff Room, (across from the Office)
2:50-3pm	Awards Ceremony – Lounge
7-9pm	Open House

We hope you enjoy your day! ☺

Name: _____

Contact #: _____

Email or Address: _____

SAMPLE Science Fair Volunteer's List & Timeline

Student Judges:

1.

Teacher Judges (note those judging own class)

1.

External Judges:

1.

Score Table (2) (include a notebook computer & spreadsheet to compile scores)

Advertisements

Photos

Food, Trophies, Hosting & Misc.

Outside Sources / Guests:

Timeline

2:30-2:45	Projects setup/ Judges prep for evaluation
3:00	Judging begins (open house begins 3:15)
5:15-5:45	Food/meeting for Judges
6:00-6:15	Awards Ceremony

Letter / Sample Handbook to Parents:

BURNABY NORTH SECONDARY SCHOOL

SCIENCE FAIR HANDBOOK

for

PARENTS

A question and answer guide for helping your growing scientist with a Science Fair Project

Burnaby North Secondary School Science Fair:

Greater Vancouver Regional Science Fair:

(Portions of this Handbook have been reproduced from: "It's Science Fair Time Again, Parent Handbook, Central Interior Science Exhibition, 1987.)

Burnaby North Secondary School Science Fair (_____)

Burnaby North Secondary School is holding a Science Fair this academic year for all students enrolled in the Science 9/10H course. As a complement to your child's regular classroom work, it seemed appropriate to provide them with a more in-depth and practical application of science. What better way than with a science fair!

Students will be given approximately three months to organize a project that will be presented at Burnaby North Secondary School during the week of_____.

Keep a watchful eye for further information as the fair approaches.

Vancouver/Lower Mainland Regional Science Fair (_____)

Top projects from Burnaby North will be entered in the Greater Vancouver Regional Science Fair to be held at UBC from_____. Students from other school based fairs will be competing with these students from Burnaby North for various prizes and awards, with a chance to receive an all expense paid trip to the Canada-Wide Science Fair later in the spring. Since the organizers of the GVRSF provide travel funds for each CWSC project, if a two-person project is selected, then the funds will be divided between the partners. The remaining travel funds will have to be raised.

Canada-Wide Science Fair (_____)

The Canada-Wide Science Fair is the national showcase and competition for the three hundred best science fair projects from the many regional fairs held around the country. Students compete for prizes and awards such as medallions, money, summer employment, and trips to the International Science Fair.

How Can I Help my Son/Daughter in Doing a Science Project?

We hope the following suggestions will be helpful for this year's science project:

- Please remember that the most important ingredients in any project are the amount of work that the student accomplishes, how much knowledge he or she acquires, and how much initiative is displayed. Many abilities are developed: researching, organizing, outlining, measuring, calculating, reporting, and presenting. These involve the reading, writing, arithmetic, and social skills so much a part of successful daily living.

- Although it is to be the student's effort, there is no substitute for a parent's support

- Do not worry about the project's performance at a science fair. If strengthened thinking skills and increased knowledge have occurred, then a prize has truly been won.

- Areas in which parent's assistance will be necessary include:

    - Safety: Be sure that poisons, dangerous chemicals and open fires are avoided. Learn and practice electrical safety if electricity is used in the project. If any aspect of the project appears to be dangerous, it is not be included.

    - Transportation: Help will be needed for transportation of materials to the science fair, although it is better if the student can set up and take down the exhibit with a minimum of assistance.

- Areas in which a parent's assistance may be welcome include:

    - Suggesting project ideas (these may be connected with your work)

    - Transportation to libraries, businesses, museums, nature centers, universities, or any source of project information

    - Technical work such as construction and photography

    - Help with project expenses

    - Being an interested listener.

Invitation Letter to Open House and Science Expo for Parents

SCHOOL LETTER HEAD

DATE

Dear Parents/Guardians,

Over the past few months, your son/daughter has been working on a Science Fair project. **On Thursday, March 8, 2007, students will be showcasing their individual and group projects at the Palmer Science Open House**. Students will highlight and summarize their research, explain their experimental results and describe their importance and application to everyday life. At the same time, teachers will be evaluating the projects for the Term 3 marks and judges will be evaluating and choosing the winners that will represent Richmond at the Vancouver Regional Science Fair which will be held at UBC on April 10-12.

At this time, we would like to invite family and friends to come view the Science Fair project. Please come and support your child. Your support and encouragement is very important and greatly appreciated.

Schedule of Events: Thursday, March 8, 2007

2:30 – 2:45 Project set up: students will be designated specific areas for the set up.

3:00 – 5:00 Judging and Evaluation: students will be required to make a short 5 minute presentation to the judges, parents, and friends (Public Welcome)

5:00 – 6:00 Refreshments and Science Fair Open House

6:00 – 7:00 Awards Ceremony & Clean-up

In addition to the Palmer Science Open House, as apart of the Incentive program and the Term 3 mark, students will showcase their work to the public at the **Science Expo and Career Fair which will be held at Aberdeen Center on Thursday, March 29th from 4-7pm.** At this time, students will get another opportunity to practice their oral presentations in preparation for the Regional Science Fair. Students will also get to watch a Science World Presentation on the Center stage and interact with a panel of professionals in science-related careers. In addition to enrichment, each student will receive a Science Expo t-shirt and a goodie bag.

As the Science Expo will be held at Aberdeen Center, parent drivers will be needed to help transport students and projects to and from the mall. Please fill in the form below indicating whether you will or will not be able to help with transport. Please come and support your child at this inaugural event.

We look forward to seeing you at the upcoming Palmer Science Open House and the Science Expo and Career Fair at Aberdeen Center. In you have questions or concerns, please contact Ms. _____ @ 604-_____ or email….

Sincerely,

Ms. _____

Student Name: _____ Grade: _____

_____ I will be able to help transport projects and students to Aberdeen on March 29, 2007

_____ I will not be able to help transport projects and students.