Science Fair Project Checklist

Dates	Objectives	✔
On Going	-Think about what kind of a science project you'd like to do.	✔
Nov. 6th	-Parent approval form due with parent signature.	✔
Nov. 13th	-Science Top 3 List due.	✔
Nov. 26th	-Science Project Proposal due with parent signature.	✔
Dec. 4th	-Start experiment testing projects. Scientific write up of your project: Problem, Hypothesis, Variables, and Materials. -Start research projects. Research your topic start to plan models or posters to help explain your topic.	✓
Dec. 11th	-Experiment testing projects. Start your experiment: record observations and data. -Research projects. Start to make models or posters.	
Dec. 20th – Jan. 5th	-Christmas Break - Hopefully you're enjoying the holidays! This would be a good time to work on your project when you're looking for something to do over the break.	
Jan. 31st	-Finish your experiment: develop your conclusions and reflections for your experiment. -Research projects: finish any models; put together any final touches for your report.	
Feb. 3rd	-Plan your display board.	
Feb. 10th	-Start your display board.	
Feb. 18th	-Display board and good copy of your report are completed. (You're done early just in case something happens)	
Feb. 25th	-SJB Science Fair.	
Mar. 27th & 28th	-Science project displays during Parent/Teacher Interviews.	
Apr. 10th – Apr. 12th	-Calgary Youth Science Fair (Olympic Oval – University of Calgary).	

Projects for the science fair take a lot of commitment and work at home. Each of the above items should be accomplished by or before the assigned date, but don't panic if you haven't got to that point yet. This list is designed to keep the students on track and to guide them with time management. It does allow for flexibility because the students finish a week early before the SMG Science Fair (you never know what could come up at the last minute).

This page will be the first page of a **Science Project Logbook** which is kept in a duo tang. Students are asked to **date and record a brief outline of any work that they do** in the logbook. This is also where they will record any thoughts that they have about their projects and even problems that occur. It is important that the students document **all of their work**, no matter how small the amount of work was that day.

SCIENCE FAIR LOGBOOKS

Every science fair project **must include a logbook**, also sometimes called a research notebook, which is a complete, permanent record of how you did your experiment/research project; it shows what you did and thought every step along the way.

LOGBOOK POINTERS:

- write your logbook in a notebook
- make an entry every time you work on your project
- date each entry
- make your notes in point form
- don't worry about neatness; you do not need to re-copy your logbook to make it look "tidy"
- organize your logbook into sections such as: schedule, daily notes and ideas, background research, contacts and references, experimental procedure/method, data collection sheets, observations/results in tables and graphs, conclusions
- Write everything down, even if it seems insignificant at the time; the information may be useful later on
- Make sure that you describe things in enough detail that you and anyone else reading your logbook in the future will be able to understand your thoughts and repeat the entire experiment exactly like you did it in the first place, just using your logbook.
- You must create your logbook as you go; it is unacceptable to create your logbook on the computer after you have finished your project
- NOTE: The text that appears on your backboard/tri-fold is just a summary of what you write in your logbook; there is much more information in your logbook than what appears on your backboard/tri-fold.

LOGBOOK CONTENT:

- **Timetable :** Come up with a timetable for doing each of the steps of your project and try to stick to it
- **Choose a Topic**: make a list of topics that interest you, things that you are really curious about and that you want to find answers to; explain how you came up with your topic, why you decided to do it.
- **Background Research**: Record your background research about your topic from books, magazines, TV programs, the Internet (with supervision), people and companies. Keep a record about where you gathered your information for your bibliography/list of references and acknowledgements.
- **Testable Question/Purpose:** Based on your background research, write down your testable question/purpose

- **Hypothesis**: write down what you think the results of your experiment will be based on the research that you've done
- **Materials:** List everything that you will need to do your experiment, such as equipment, ingredients, quantities of ingredients, measuring tools etc. Be very specific - give lots of details
- **Procedure**: List the steps you will go through to do your experiment. If you make any changes to the procedure after you start your experiment, describe them in your logbook with an explanation about why you made the change(s) and if the change(s) will affect the results collected prior to the change.
- **Variables**: list the controlled variables, the manipulated variable, and the responding variable
- **Data:** record all of your measurements/raw data that you collected on data sheets in your logbook
- **Results:** record your collected data in charts, tables, graphs, pictures and use these to help you explain what happened in your testing; describe any problems you might have had while you were testing , any changes that you had to make to your original plans, and whether those changes would affect the results collected before you made the changes
- **Conclusions:** write down your conclusions, whether or not your hypothesis was correct and why. It is OK if your results do not support your hypothesis - the information you collected still supports science.
- **Recommendations/Applications**: Make recommendations for improving your project, for further study, and applications I can make from my research

ELEMENTS OF AN EXPERIMENTAL PROJECT

- **Background Research**: helps you understand your topic; helps you come up with a problem/testable question to investigate in your experiment.
- **Problem/Testable Question**: the specific question you will investigate in your experiment. For example: How can soil erosion be controlled?
- **Hypothesis**: what you think will happen in your experiment based on your background research. You will design your experiment to test your hypothesis. Write your hypothesis using the "If, then, because" format. For example: **If** grass and nasturtiums are planted in separate containers on the same slope angle, **then** the grass will prevent erosion better **because** grass shoots will grow more densely spaced and hold the soil in place.
- **Variables:**
  - ✓ Controlled variable: a quantity, value or state that is held constant throughout the experiment; what you keep the same in experiment; e.g., time for growth, temperature, amount of water for plants, etc.
  - ✓ Manipulated variable: ONE quantity, value or state that is purposely changed in the experiment; what is changed in order to see what happens in the experiment; e.g. type of plant planted in the container
  - ✓ Responding variable: a quantity, value or state that changes when a variable is manipulated; what happens as the result of changing something; e.g., the amount of soil eroded in the containers of grass and nasturtiums.
- **Materials**: a list of all materials used in the experiment, e.g. nine plant trays, nasturtium seeds, etc.
- **Procedure**: a step-by-step explanation of how you did your experiment, including the number of trials and sample size in each trial. You should do at least three trials (whole procedure conducted three times) to show the "reproducibility" of results. A good sample size would be, for example, three containers of grass and three containers of nasturtiums per trial.
- **Results/Observations**: collect your data and record it in a logbook. Then summarize the data in a table or a graph with the axes labelled correctly, and the units of measurement indicated.
- **Conclusion**: the final outcome of your investigation as confirmed by your data/observations; your conclusion should prove or disprove your original question/hypothesis.
- **Application/Extension**: explain why people would be interested in knowing your results and how they can use your results. Also explain how you would do your experiment differently in future or how you could do it better another time.

2020 CALGARY YOUTH SCIENCE FAIR
RULES and INSTRUCTIONS

MUST BE READ AND UNDERSTOOD BEFORE SIGNING THE ENTRY FORM

1. If your entry involves the study of live animals including humans or use of animal tissue you must fill out the *Ethics and Due Care Form* and send it in before beginning your project.
2. If your entry involves the use of human subjects, each person in your study must fill in and sign an *Informed Consent Form.* These forms should be kept in your Log Book.
2. Questions regarding any aspect of the fair should be directed to your *SCHOOL COORDINATOR.*
3. Entries are limited to *GRADE 5 & ABOVE.*
4. An individual may be involved in only one project.
5. Group projects may consist of only *TWO STUDENTS*.
6. *NO LIVE ANIMALS SHALL BE EXHIBITED* at the fair.
7. No project previously entered in Calgary Youth Science Fair may be re-entered unless it has been drastically modified.
8. Exhibits should be constructed so that valuable components can be removed for safekeeping when the exhibit is unsupervised. Every effort will be made to prevent damage to exhibits, however, the Society and/or its sponsors will not assume any responsibility for loss of or damage to any exhibit.
9. Continuous running water and/or natural gas will NOT be supplied.
10. Your project will be inspected for safety. You will receive a copy of our safety regulations. You and your parents must confirm that they have been seen, read, and understood by all of you, by signing the entry form.
11. The society reserves the right to disqualify, or expel from the fair, any project for which a breach of rules, safety regulations, plagiarism, or animal use guidelines has occurred.
12. ALL PROJECT BACKBOARDS MUST COMPLY WITH THE FOLLOWING SIZE RESTRICTIONS:

    Front to back - 76 cm (2.5 FEET)
    Side to side - 122 cm (4 FEET)
    Floor to top - 366 cm (including table) (12 FEET)

    Please be aware that there are two sizes of white commercial cardboard backboards available. The smaller size is the one you should use (60" by 96" when laid out flat).
13. All exhibitors must provide the necessary backdrop and side panels for their project as well as electrical extension cords, (one outlet only will be provided to those requesting electricity). ELECTRICITY WILL NOT BE SUPPLIED TO PROJECTS UNLESS IT IS ABSOLUTELY ESSENTIAL TO THE PROJECT (I.E., ELECTRICITY IS NOT TO BE USED JUST TO ENHANCE THE DISPLAY).
14. Every exhibit must be attended at all times during the Fair and entrants must provide adequate supervision during their absence. Seating for TWO persons only will be provided at each exhibit.
15. IT IS EXPECTED THAT ALL EXHIBITORS WILL BEHAVE APPROPRIATELY DURING THE FAIR. FAILURE TO DO SO MAY RESULT IN EXPULSION FROM THE FAIR.

TOP TEN WAYS TO IMPROVE YOUR SCIENCE PROJECT FOR THE CALGARY YOUTH SCIENCE FAIR

1) Read the Judging Form and use it as a guideline when preparing/revising your project.

- Get a copy of the elementary and/or secondary judging forms from our website (www.cysf.org) at the bottom of the **Project Tips** page (http://cysf.org/science-fair-project-tips.htm). Review them to see what the judges will be looking for when they come and evaluate your project and presentation.
- Evaluate your performance, or have a friend, teacher, or parent evaluate your performance while you do a practice project presentation. This will show you where you need to improve the most. Note: A perfect score is not a possible outcome of this evaluation!
- If your project is an experiment, it is important to understand responding (or dependent) versus controlled (or independent) variables. Responding or dependent variables are the things that change (they depend on the conditions at which you run the experiment). Controlled or independent variables do not change; you control them. It is not uncommon for experimenters to realize that what they thought would be a controlled variable is in fact a responding variable. This may make a change of procedure necessary to ensure that a controlled variable is, in fact, controlled. There should be a control sample that is not manipulated in the experiment to serve as a point of reference.
- Sample size should be big enough to ensure the results are valid. The exact sample size depends on the experiment. The experiment should be repeated a minimum of three times to get full marks for number of trials. Variations in results between trials should be thoroughly discussed.
- Summarize your results on graphs. There will likely be one graph that relates most to your hypothesis. This should be emphasized on your backboard and referred to in your presentation.

2) Be sure to include some new ideas/original thought/conclusions that you have come up with as a result of your experimenting, research or study.

- For a project to score well at the science fair, whether it is experimental or non-experimental/research, it must demonstrate that you have done some creative thinking on your own.
- Original experiments, by definition, are creative because you have designed a procedure for testing your hypothesis, and when you have your results, you interpret them and come up with an explanation.

- It is a bit trickier to come up with a non-experimental/research project that includes some creative, new ideas. It is VERY IMPORTANT to include some original scientific ideas in your non-experimental/research project if it is going to be the best it can be for the science fair.
- **Here is an example of how you can make your non-experimental/research project more creative.** Let's say you love cats and you want to research cats. The easy way to do this project is to read some books about cats, do some research on the internet, and then report all of the facts that you learned about cats in your project. Although this is good, a better way to do a non-experimental/research project about cats would be to choose one aspect of cats, such as how fast they run (your question could be: What is the fastest cat in the world?), then choose 10 or 20 different cats from around the world, research how cats run and what the factors are that influence how fast a cat runs, find out how fast each different cat runs, determine which one runs the fastest, and then see if you can come up with your own idea about why the "winner" runs faster than all of the other cats in the world.
- Another creative approach to a non-experimental/research project is to get permission to use the experimental data collected by someone else and then do your own interpretation of the data.
- Non-experimental/research projects are more open ended, and often more difficult to judge than experimental projects. The more you know about your subject, the more you have thought about the relevance of your research, and the more you include your own ideas and interpretations in your project, the easier it will be for the judge to evaluate what you have done.
- You could present your findings in a new and creative way. This might involve the application of your new ideas or using a small experiment to show an aspect of your research project.

3) Review your school fair judges' suggestions and make revisions, if appropriate, to strengthen your project, backboard, or presentation.

- Every project can be improved.
- If your school judges did not indicate any areas for improvement, ask your teacher or science fair co-ordinator for suggestions.
- Make sure that your backboard is self-explanatory, yet contains all of the props that you will need for your presentation.
- The most common problem with backboards is that they contain too much information, in too small a type size. The backboard should not contain all of the text you would print in a written report. Rather, it should contain brief summaries of your concept/question, hypothesis, background, procedure, observations (including graphs), conclusions, and implications. The text should be printed in a large type size that is easy for the judges to read.

- Focus your backboard and your presentation on the portion of the subject matter that relates directly to your hypothesis.

4) Practice making your presentation to your friends, parents, or other relatives so that you are confident on fair day.

- You have from ten to fifteen minutes to make a great impression on a judge.
- The more you practice in advance, the better your presentation will be.
- Most judging teams report that student confidence and presentation quality improves as judging proceeds. Preparation and practise before the fair will increase your self-confidence and improve all of your presentations.

5) Bring your logbook.

- It is best to use a bound notebook for your logbook, although printouts of rough notes from a computer are also acceptable.
- Your logbook should be like a diary: it should include entries for every day you worked on your science fair project.
- Judges will know if your logbook is authentic. Creating a logbook after you have done your work is not good science and is not acceptable.
- The types of information to record in a logbook include: background research, hypothesis, procedure, data collection sheets, tables and graphs summarizing data, observations, conclusions, acknowledgements—in other words, everything a person needs to know to do your experiment the same way you did. In addition, conditions such as temperature, atmospheric pressure, and humidity can affect the results of many experiments. If you think they could affect your results between trials, or your overall result, record them in your logbook.
- Your immediate reactions and observations are important to help reconstruct what you actually did and to keep things clear in your mind. If you jump to a conclusion, write it down, but be prepared to reassess it and even change it, as you gain more knowledge and experience through experimenting.
- Remember to bring your logbook to the fair for the judges to review.

6) Discuss your project with an "expert."

- If you did not discuss your project with an expert before your school fair, make sure you do it before the city fair. The more you know about your subject, the more impressed the judges will be.
- An expert does not have to be a specialist in the exact field of your study. He or she may be a parent with a strong science background, a teacher with a keen interest in science, or a neighbour or family friend who works in the broad discipline of your study. An expert may suggest that you investigate related topics that you didn't think of yourself.

- We encourage parents to be involved in students' science fair projects, but students should do the work themselves where it is safe and practical to do so. Sometimes by looking at a project, judges think there may have been too much hands-on parental input. We encourage judges to have an open mind and not to pre-judge projects—the work of many students is truly amazing. Judges will use a student's depth of knowledge of the subject and intimate details of the experiment to assess whether there was too much parental involvement.

7) Be curious and think about where your project fits into the "big picture."

- To really impress the judges, demonstrate a thorough knowledge of your subject matter by relating your project to recent world events, the context or history of the experiment (if it is a classic experiment with a minor change), or how it might change life on earth in the next millennium.
- You can also impress the judges by talking about what industrial or academic research/experimentation is presently happening in your field in Canada, the USA, or other countries.
- How well you relate your project to the "big picture" really sticks in the judges' minds when they are discussing and marking your project later.

8) Remember to relate your conclusions to your hypothesis.

- Your hypothesis should provide the focus for all of the activities surrounding your project. This will help you to stay on topic.
- In an experimental project, your controlled and manipulated variables, procedures, observations, and graphs should all be related to your hypothesis.
- **For example**, when testing growth rates of sunflowers, a student predicts that plants receiving the most hours of light per day will grow fastest, the conclusion will relate to the hypothesis if it reads something like: "My experiment shows that sunflowers receiving the most hours of light per day grew the fastest. Sunflowers receiving 10 hours of sunlight per day grew twice as fast as those receiving only 5 hours of sunlight per day." If, using the same example, a student concludes that "The plant grown hydroponically grew the fastest," a judge will see immediately that the conclusion does not relate directly to the hypothesis and that the student likely manipulated more than one variable. In this example it would seem that in addition to testing how the number of daylight hours affects the growth rate in sunflowers, the student has also tested how the medium for growing sunflowers (hydroponics vs. no hydroponics) affects the growth rate. These two experiments should have been conducted separately and the results reported separately, and then contrasted. There would be two hypotheses presented and two conclusions. The hypotheses could have read, "The plants receiving the most hours of light will grow fastest." and "The plants grown hydroponically will grow fastest." And the

conclusions might have been: "The plants grown hydroponically grow faster than those grown using a traditional soil medium.", AND "The plants receiving the most hours of sunlight a day grow the fastest."

9) Focus on your subject and on the judge to whom you are presenting.

- You will make your presentation to at least three individual judges.
- Use good presentation skills when explaining your project to the judges. This results in good communication that will impress the judges and help them do a better job of evaluating your project.
- Be polite; introduce yourself and your partner (if appropriate). Speak with confidence—you are the expert on your project. Use a pointer. Don't fidget with the pointer or anything else.
- Try and use your backboard as a cue card for your presentation; a well-organized and clear backboard will provide the cues you need so you can more fully explain each aspect of your project in a logical order.
- There will be a lot of activity around your project area. Do not be distracted or act as if you would rather be somewhere else.

10) Smile and relax.

- We want you to have a fun, memorable day at the Calgary Youth Science Fair.

SCIENCE FAIR ORAL PRESENTATIONS

WHAT HAPPENS WHEN THE JUDGES ARRIVE ON FRIDAY MORNING?

- You will be judged at least three times on Friday morning.
- Each judge will spend from 20 to 30 minutes at your project.
- When judges come to your project, they will introduce themselves and then ask you (and your partner if you have one) to explain your project.
- A complete presentation includes the information on your backboard/tri-fold, your log book, and your oral presentation
- Your backboard should contain all information discussed in "Elements of an Experimental Project" or "Elements of a Non-experimental/Research Project" on the Project Tips page of our web site (http://cysf.org/science-fair-project-tips.htm).
- Your log book should contain all of the information described in "Science Fair Log Books" on the Project Tips page of our web site (http://cysf.org/science-fair-project-tips.html).

ORAL PRESENTATION POINTERS

- If you worked on your project with a partner, then both of you will be responsible for preparing and giving your oral presentation, and for answering the judges' questions. It is up to you to figure out the best way of doing that, but usually taking turns is a good idea.
- Before the fair, prepare a five-to ten minute speech that is a summary of the information on your backboard/tri-fold; explain your project in simple terms so anyone can understand it. Start by introducing yourself, the title of your project and how you came up with your idea for the project. Then go through your project in the same order that your information is presented on your backboard/tri-fold and end with a discussion of the project's practical applications and what you might change if you were to do the experiment again. Emphasize how you were creative/unique/innovative with your project. Finally, ask the judge if he/she has any questions or feedback for you.
- Do your best to memorize your presentation, but also prepare cue cards with the main points of your presentation written on them to help you remember if you are a bit nervous and worried about forgetting. Remember to number your cards, in case you drop them!
- Then practise, practise, practise your presentation to your parents, friends, and teacher so you will be relaxed and confident by Friday morning when it's time to give your talk to the judges.

- On fair day, do not rush through your presentation. Speak clearly and slowly enough so that it is easy for the judges to understand you.
- Look straight into the eyes of your judges; make eye contact with them.
- Make good use of your board. Point to diagrams and graphs when you are discussing them.
- Stand in front of your project and move off to the side when showing the judge different aspects of your board (i.e., graphs, diagrams, photographs, model or display).
- Always be positive and enthusiastic! Show the judges you are interested in your research and they will be more likely to remember you.
- When answering judges' questions, be confident with your answers. You are the expert!
- Be serious about all the judges' questions, even i f they sometimes ask the same question several times. Remember this is the first time they are looking at your project and they want to learn all they can from you, the expert!
- If you do not understand what a judge is asking you, ask them to rephrase their question, to ask their question in a different way, or ask them to be more specific.
- If you still have no idea what the judge is asking, or do not know the answer to their question, it is okay to say "I don't know." You might also say: "I never thought of that before but I will look into it. That's very interesting." Then write it down in a notebook so they know you are serious about checking it out.

THINGS TO AVOID DURING YOUR ORAL PRESENTATION

- Do not read directly from your backboard/tri-fold.
- Do not chew gum or eat food while presenting your project.
- Do not mumble.
- Do not fidget or wring your hands.
- Do not use slang or swear words.
- Don't say filler words "like" or "you know" or "um" if you can help it. Instead, pause for a moment if you need to collect your thoughts.
- Do not talk facing your backboard/tri-fold with your back to the judges.

CALGARY YOUTH SCIENCE FAIR

Entry No: _____ Location: _____
Project Title: _____
Student Name(s): _____

Elementary Project – Judging Tally Sheet

Please use the following scale:

5 Excellent
4 Good
3 Satisfactory
2 Weak
1 Poor
0 Not Present

1. SCIENTIFIC CONTENT (maximum 50 marks)

***Complete* EITHER** *1A - Experimental Project* **OR** *1B – Non-Experimental Project.*
Circle the score for each statement and note the subtotal on page 2.

1A. EXPERIMENTAL PROJECT – an investigation undertaken to test a scientific hypothesis using experimentation, usually featuring the identification and control of variables.

PROBLEM/HYPOTHESIS

1. The problem/hypothesis was clearly stated 0 1 2 3 4 5
2. Adequate background reading was evident in the presentation 0 1 2 3 4 5

METHOD

3. Experimental design reflected understanding of the scientific method and underlying scientific principles..... 0 1 2 3 4 5
4. Controlled, manipulated and responding variables were identified and understood 0 1 2 3 4 5
5. Repetition of tests (minimum three trials) and/or appropriate sample size were used to achieve reliable results.... 0 1 2 3 4 5
6. Logbook recorded the project progress including detailed procedures, results, and original data 0 1 2 3 4 5

ANALYSIS/CONCLUSION

7. Observations were clearly summarized in tables/graphs and were consistent with data collected..... 0 1 2 3 4 5
8. Results were logically explained and understood 0 1 2 3 4 5
9. Conclusions and summary remarks were based on experimental data and related to the problem/hypothesis..... 0 1 2 3 4 5
10. Possible sources of error were recognized 0 1 2 3 4 5

SECTION 1 SUBTOTAL / 50 _____

1 B. NON-EXPERIMENTAL PROJECT - the collection and analysis of data to reveal evidence of a fact or situation of scientific interest.

PROBLEM/HYPOTHESIS

1. The topic was clearly stated and provided direction and appropriate scope for the project 0 1 2 3 4 5

METHOD

2. Evidence of extensive research including reading and contacting knowledgeable people was demonstrated 0 1 2 3 4 5
3. The scientific information presented was accurate 0 1 2 3 4 5
4. The information was effectively gathered, combined and organized..... 0 1 2 3 4 5
5. Logbook recorded project progress including detailed research notes, contact names and discussions 0 1 2 3 4 5

ANALYSIS/CONCLUSION

6. Key points and concepts of the research topic were identified 0 1 2 3 4 5
7. Problems or issues related to the subject were understood 0 1 2 3 4 5
8. Critical analysis/interpretation of research material was presented 0 1 2 3 4 5
9. A logical conclusion/summary based on the research was reached 0 1 2 3 4 5
10. New ideas were formulated as a result of the research project 0 1 2 3 4 5

SECTION 1 SUBTOTAL / 50 _____

2. CREATIVITY AND INSIGHTS (maximum 25 marks)

Complete this section for ALL projects.
Circle the score for each statement and note the subtotal at the bottom of the page.

1. The project was imaginative and creative 0 1 2 3 4 5
2. There was resourceful use of equipment/information gathered 0 1 2 3 4 5
3. Creativity was shown in the interpretation of the data/information gathered (i.e. outliers noted, unexplained findings examined) 0 1 2 3 4 5
4. Thought was given to how the project could be improved or done differently..... 0 1 2 3 4 5
5. Future spin-offs or potential applications of the project were identified 0 1 2 3 4 5

SUBTOTAL / 25 _____

3. COMMUNICATION (maximum 20 marks)

Complete this section for ALL projects.
Circle the score for each statement and note the subtotal at the bottom of the page.

1. The oral presentation was clear, concise and logical 0 1 2 3 4 5
2. Questions were answered competently and accurately 0 1 2 3 4 5
3. Outside sources were properly credited and a bibliography was properly cited 0 1 2 3 4 5
4. The display board effectively presented the project 0 1 2 3 4 5

SUBTOTAL / 20 _____

4. DEGREE OF DIFFICULTY (maximum 5 marks)

Complete this section for ALL projects.
Circle the score for each statement and note the subtotal at the bottom of the page.

1. The degree of difficulty of this project was exceptional 0 1 2 3 4 5

SUBTOTAL / 5 _____

SUMMARY OF MARKS

1. SCIENTIFIC CONTENT (**50**) ..... _____
2. CREATIVITY AND INSIGHT (**25**) ..... _____
3. COMMUNICATION (**20**) ..... _____
4. DEGREE OF DIFFICULTY (**5**)..... _____

TOTAL / 100 _____

Scientific Method

1. **Problem/Question**
   -determine what you would like to find out.
   -every part of the experiment is done to answer your question.

Problem/Question:

2. Hypothesis/Prediction

-use previous knowledge and/or experiences to predict what a *reasonable* answer to the question might be.

-start your hypothesis with "If..." "then..." "because..."This allows for a complete thought.

Always explain why you think something is the way it is.

Hypothesis/Prediction:

3. Apparatus/Materials

-what is being used to perform the experiment.

-be as specific as possible to ensure accuracy when doing the experiment.

Apparatus/Materials:

4. Procedure

-list the steps needed to complete the experiment.
-missing just one step leads to inaccurate results just like missing one ingredient when baking a cake leads to a yucky tasting cake.

Procedure:

5. Observations

-gather and write down information about the experiment using the *five senses*.

-observations should include a reference to some standard unit of size, weight, temperature.

-make quantitative observations like "long", "short", "heavy", "light".

Observations:

6. Communicating Data

-showing your information from the experiment.

-use graphs, charts, maps, before and after illustrations.

Communicating Data:

7. Conclusion

-your conclusion is the summary and results of the experiment.
-your conclusion should always have the answers to these 3 questions:

- Did I get an answer to my question?
- Was my hypothesis correct?
- What did I learn from the experiment?

Conclusion:

7. Conclusion (continued)

Understanding variables in an experiment

- **Constant/Control Variable**
  - What does not change in the experiment to ensure a consistent result?
- **Manipulated/Independent Variable**
  - What has been changed to affect the experiment?
- **Responding/Dependent Variable**
  - The result of the experiment and how it responds to the manipulated variable.

Constant Variable:

_____

_____

Manipulated Variable:

_____

_____

Responding Variable:

_____

_____

8. Open-endedness

-take what you have learned and apply that knowledge to other situations.

-time permitting, this can be an optional, yet incredibly important part to enrich knowledge and peak curiosity.

Open-endedness:

Science Process Skills

Observing-gathering information through use of the 5 senses.

Comparing-looking at similarities and differences between items.

Classifying-sorting items according to certain properties.

Communicating-expressing and gathering knowledge through speaking, listening, reading, writing and questioning.

Predicting-guessing what may happen or what is going to happen, based on observation or common knowledge.

Science Process Skills (continued)

Measuring-discovering the amount of change that occurs in an object; distance, mass, capacity, temperature, speed, etc.

Inferring-making a statement based on observations and past knowledge. Inferences are simple explanations of observations. It is possible to have several inferences for a given set of observations. The key is that they are logical and reasonable.

Hypothesizing-authoring an explanation to an event based on prior knowledge.

Did I encounter any problems with my research and/or experiment? How did I solve my problems?

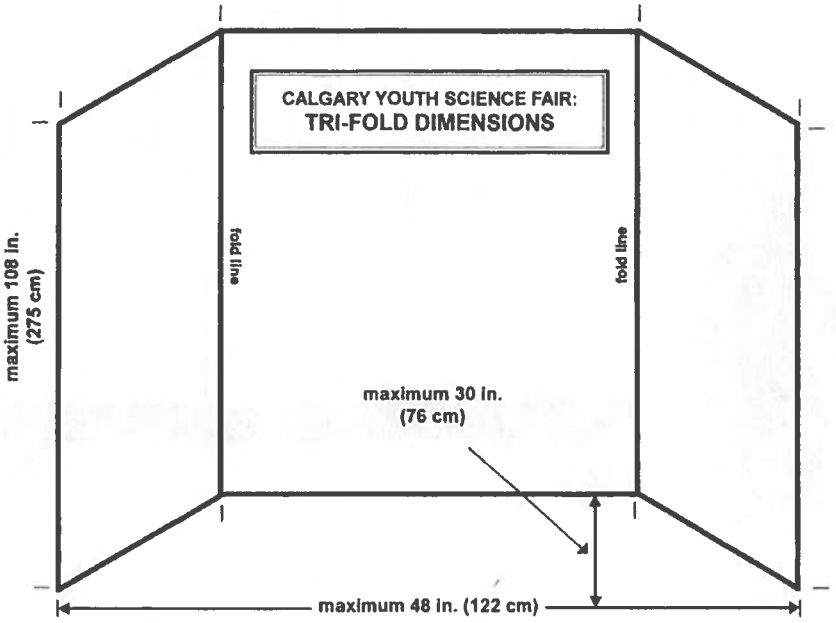
If I had to change the way I approached my project, what would I do?

What are the real life applications of my project?

BACKBOARDS/TRI-FOLDS

ALL PROJECT BACKBOARDS (TRI-FOLDS) MUST COMPLY WITH THE FOLLOWING SIZE RESTRICTIONS WHEN SET UP ON THE DISPLAY TABLE:

- **Front to back (measured on the table): maximum 76 cm (30 inches)**
- **Side to side (measured on the table): maximum 122 cm (48 inches)**
- **Bottom to top (of the tri-fold): maximum 275 cm (108 inches)**
- **Floor to top (including table): maximum 366 cm (144 inches)**



The ideal trifold display board to use in our fair can be ordered from a couple of sources depending upon what school board you are part of. When laid flat on the floor the outside dimensions are 60 inches by 96 inches (152.4 cm by 243.8 cm).

If you are part of CSSD, they can be ordered from your stores department.

If you are a CBE school, you can purchase the tri-folds (display panels) from Supreme Basics. The stock number for the trifolds is **N0447-18**. Schools can email or phone their orders to **Anna Shafley (403-204-6007, anna.shafley@supremebasics.com)**. Do **not** order online. You will need the school name, alias code and number of trifolds needed. Be advised that you should place your order as early as possible to guarantee availability.

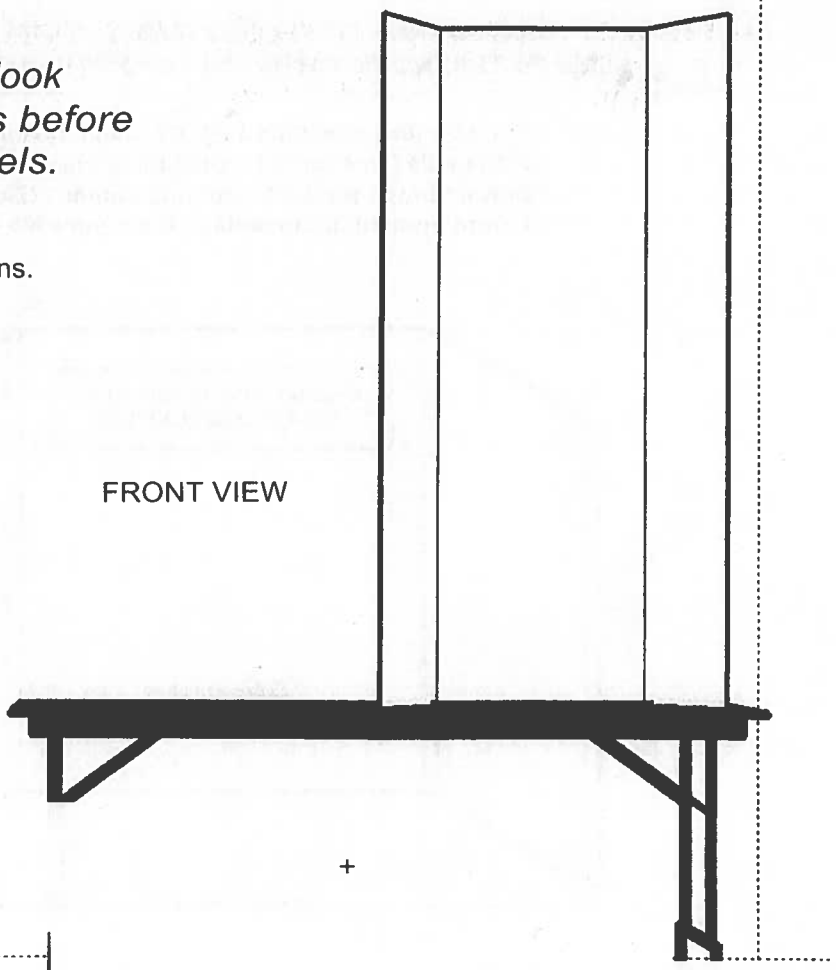
If you are not representing schools in either of the Calgary public systems, the correct tri-fold can be ordered through George Pastirik at Science Is. His phone number is 403-547-4422. Tri-folds can be delivered or picked up from their showroom in NW Calgary. Their business mail address is P.O. Box 64291, Calgary, AB, T2K 6J0. Email address is pastirik@science-is.com. In the past, some parents have purchased the small display boards sold at Michaels. This display board is far too small for a science fair project.

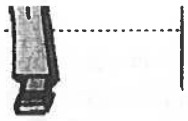
For more important information about tri-folds please see page 2.

Please take a good look at these illustrations before designing any models.

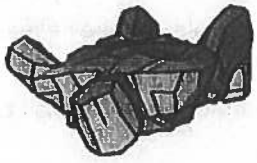
See other side for dimensions.

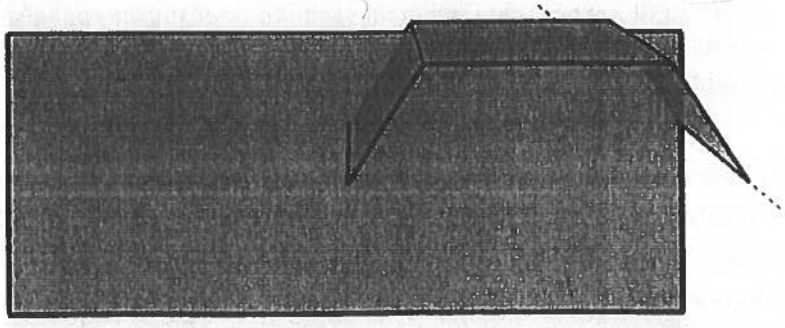
FRONT VIEW





TOP VIEW





Note that the tri-fold effectively cuts off the back two corners of your available space. This can be a problem if your project includes a large model that you are planning to fit a table top space that is 76 em x 122 em (30" x 48"). *You need to be sure your tri-fold and model can both fit the allowable space.*

- Started at 5:30pm ended at 8:20pm (Day - Jan 2 2025)
  - First I watched a video called Kids learning hub for a good start of intel.
  - I found some of my facts from the internet.
  - Then I chose some pictures to print out.

- Started at 3:00pm ended at 4:00 pm (Day - Jan 15 2025)
  - Now that I found some information I went to more rare type's of stars and not as rare types.
  - I also found something new to addon to my facts.

- Started at 3:15pm ended at 4:00pm (Day - Jan 22 2025)
  - I went back to getting some more facts.
  - Secondly I kind of searched up a new topic.
  - Now I need to get some of my variable's for my project.
  - Then I found something interesting about black hole's.

- Started at 3:10pm ended at 4:00pm (Day - Jan 27 2025)
  - When I searched up How stars are formed it was similar but still diffrent at the same time
  - Since all my information was all mixed up.

- Started at 3:05 pm ended at 4:00pm (Day - Feb 10 2025)
  - I through away all of my information because everything was everywhere, but I've already found a website that I got my infomation from NASA STARS. I am still going to be using my facts and important infomation.

- Started at 11:30 am ended at 5:00pm (Day - Feb 18 2025)
  - I started to past pictures on my trifold and printed my Title,
  - I never finished due my Title yet though.

- Started at 1:00pm ended at 3:00pm (Day Feb 21 2025)
  - Today I finished posting my Title.
  - I had to go over my reshurch.