

# Science Fair Project

Due Dates: \_\_\_\_\_  
                  contract                    experiment design    final

Science Fair Date & Time: \_\_\_\_\_

This quarter you will design and conduct a **controlled** experiment. Your scientific investigation must follow the *scientific method*. You may work with one other person if you wish. Each student or student team of two will be responsible for displaying the results of the experiment in a professional manner during the Science Fair. Quality, careful craftsmanship and creativity will be essential for a good display. The following criteria must be met.

The display must:

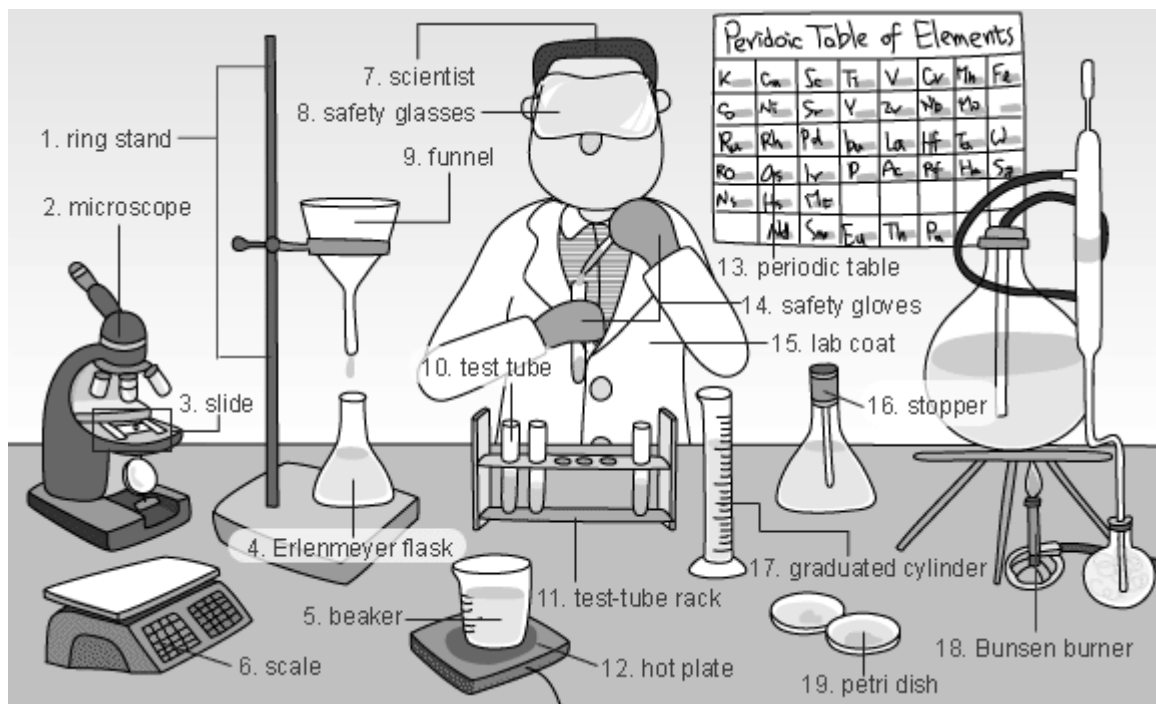
- be your own **original work** of the highest quality
- not exceed **one cubic meter** in size
- be **self-standing**
- be designed with **safety** in mind (spill-proof, public not exposed to hazards)  
*Materials mounted on a finished base are safer.*
- be **clearly labeled** with an identification key and other important information (including your name)
- include your experiment notebook & bibliography
- include the following information on your display board:
  - **Purpose:** The purpose of your investigation should be summed up in two or three sentences and must include a statement of the **problem**. In addition to these two or three sentences you must include your **hypothesis**, a testable prediction in the "If...then..." format.
  - **Procedure:** List the **materials** that you used. Then explain **step-by-step** what you did in your experimentation. If drawings and/or photographs will make it more clear, include them on your display board. Explain any materials that you constructed in detail. You must discuss your **independent** and **dependent variables** in this section. You must also include some explanation about your **control** and **experimental groups**.
  - **Results:** In this section you should discuss what happened in your experiment. What were your observations? How did you collect your data and what did it look like? You must organize your data into graphs, charts, or tables. Make sure that you label your graphs or charts so that the reader can understand them.

- **Conclusion:** This section is your evaluation and interpretation of your results. Look over your graphs, charts, tables, or daily log and then write what you think the data shows or seems to indicate. You may include your opinions. Don't be afraid to admit where you might have made mistakes. *Negative results are not bad; if you did not prove your hypothesis, then say so.*

Use the **Science Fair Judge's Worksheet** to check your work before turning in your project. Ask a parent or friend to check your project for any areas you could improve before the Science Fair.

Please **do not wait** until the last week to get started. A good project takes time to plan and complete. Most excellent experiments take at least 2-4 weeks to conduct after the initial set-up.

Need help? Don't forget to check out the resources and links on the TVJA Science Fair Web Pages at [http://www.tvja.org/science/science\\_fair.htm](http://www.tvja.org/science/science_fair.htm).



# Science Fair Judge's Worksheet & Display Board Template

<input type="checkbox"/> <b>Procedure</b> <i>(heading)</i> <input type="checkbox"/> <b>Materials List</b> <input type="checkbox"/> <b>Step by Step Procedures</b> <input type="checkbox"/> <b>Independent Variable</b> <i>Identified &amp; Described</i> <input type="checkbox"/> <b>Dependent Variable</b> <i>Identified &amp; Described</i> <input type="checkbox"/> <b>Controlled Variables</b> <i>Identified &amp; Described</i> <input type="checkbox"/> <b>Experimental &amp; Control Groups</b> <i>Identified &amp; Described</i>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <input type="checkbox"/> <b>Project Title</b> </div> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border: 1px solid black; padding: 5px; vertical-align: top;"> <input type="checkbox"/> <b>Purpose</b> <i>(heading)</i>  <input type="checkbox"/> <b>Introduction of Content &amp; Background Information</b> <i>(rational)</i>  <input type="checkbox"/> <b>Problem Statement</b>  <input type="checkbox"/> <b>Hypothesis</b>  <input type="checkbox"/> <i>Written in prediction form, "If...then..." statement.</i> </td> <td style="width: 50%; border: 1px solid black; padding: 5px; vertical-align: top;"> <input type="checkbox"/> <b>Data Table(s)</b> <i>(contains same data used to create graph)</i>  <input type="checkbox"/> <i>Computer Generated</i>  <input type="checkbox"/> <b>Graph(s)</b>  <input type="checkbox"/> <i>Computer Generated</i>  <input type="checkbox"/> <b>Photographs &amp; Illustrations</b>  <input type="checkbox"/> <i>Created by Student</i> </td> </tr> </table> <div style="border: 1px solid black; padding: 10px; text-align: center; margin-top: 10px;"> <i>More Pictures, drawings or graphs</i> </div>	<input type="checkbox"/> <b>Purpose</b> <i>(heading)</i> <input type="checkbox"/> <b>Introduction of Content &amp; Background Information</b> <i>(rational)</i> <input type="checkbox"/> <b>Problem Statement</b> <input type="checkbox"/> <b>Hypothesis</b> <input type="checkbox"/> <i>Written in prediction form, "If...then..." statement.</i>	<input type="checkbox"/> <b>Data Table(s)</b> <i>(contains same data used to create graph)</i> <input type="checkbox"/> <i>Computer Generated</i> <input type="checkbox"/> <b>Graph(s)</b> <input type="checkbox"/> <i>Computer Generated</i> <input type="checkbox"/> <b>Photographs &amp; Illustrations</b> <input type="checkbox"/> <i>Created by Student</i>	<input type="checkbox"/> <b>Results</b> <i>(heading)</i> <input type="checkbox"/> <b>Observations &amp; Analysis Discussed</b>
<input type="checkbox"/> <b>Purpose</b> <i>(heading)</i> <input type="checkbox"/> <b>Introduction of Content &amp; Background Information</b> <i>(rational)</i> <input type="checkbox"/> <b>Problem Statement</b> <input type="checkbox"/> <b>Hypothesis</b> <input type="checkbox"/> <i>Written in prediction form, "If...then..." statement.</i>	<input type="checkbox"/> <b>Data Table(s)</b> <i>(contains same data used to create graph)</i> <input type="checkbox"/> <i>Computer Generated</i> <input type="checkbox"/> <b>Graph(s)</b> <input type="checkbox"/> <i>Computer Generated</i> <input type="checkbox"/> <b>Photographs &amp; Illustrations</b> <input type="checkbox"/> <i>Created by Student</i>			
<input type="checkbox"/> <b>Student Name(s)</b> <input type="checkbox"/> <b>Grade / Class</b>		<input type="checkbox"/> <b>Conclusion</b> <i>(heading)</i> <input type="checkbox"/> <b>Evaluation, Interpretation &amp; Hypothesis Discussed</b> <input type="checkbox"/> <b>Outcomes &amp; Applications Discussed</b>		
		<input type="checkbox"/> <b>Bibliography</b> <i>(heading)</i> <input type="checkbox"/> <b>APA Style Format</b> <input type="checkbox"/> <b>3 or More Sources</b>		

- Creative & Original** *(shows your own work & ingenuity)*
- Quality Craftsmanship** *(neatness & attention to detail)*
- Identification Key** *(items on display clearly labeled)*
- Display Presentation Board / Finished Base** *(self-standing)*
- Display Organization** *(follows the above Science Project Display Board template / format)*
- Meets Size Requirements** *(1 meter x 1 meter x 1 meter or smaller)*
- Safety First (nothing unsafe)** *(procedure shows safe use of materials & items on display fastened to base and/or sealed, no sharp objects, bare wires, biohazards, or open chemicals)*
- Experiment Notebook** *(Legible, includes student notes throughout the planning, data gathering and analysis process)*
- No Spelling, Punctuation, Grammar, or Typographical Errors, All Text is Typed**
  - Other (Judge's Discretion) Exceptional or Significant Effort Demonstrated:** \_\_\_\_\_
  - Other (Judge's Discretion) Exceeded Expectations:** \_\_\_\_\_

Score Tally:	Total Number of <input checked="" type="checkbox"/> 's =
<i>Add up the checks for each project criteria plus any extra discretionary points if any were awarded to find the total score.</i>	<div style="border: 3px double black; width: 100px; height: 40px; margin: 0 auto;"></div>

*38 's possible*

**Judge's Comments:** \_\_\_\_\_

Score	Ribbon
39+	Best of Show*
38	Grand Prize*
37-35	1 <sup>st</sup> Place
34-31	2 <sup>nd</sup> Place
30-27	3 <sup>rd</sup> Place
26-23	Honorable Mention
22-16	Participant

**Judge's Initials:** \_\_\_\_\_

# Student Science-Project Schedule

Week	Goals / Assignments	Due Date	✓
1	<ul style="list-style-type: none"> <li>* Make sure you understand what you need to do. Ask questions if you're not certain about any aspect of the assignment.</li> <li>* Find a topic: use books, encyclopedias, magazines, and other library resources. Keep bibliographic notes on all sources. You could also visit museums, hospitals, universities, zoos, science centers, stores, and so on.</li> </ul>		
2	<ul style="list-style-type: none"> <li>* Complete your contract &amp; planning guide.</li> <li>* Discuss your project with your parents &amp; teacher.</li> </ul>		
3	<ul style="list-style-type: none"> <li>* Complete your experiment design form. With your topic in mind, write the purpose, hypothesis, materials list, and procedure for your project.</li> <li>* If your project is approved by your teacher, gather materials and begin project.</li> </ul>		
4	<ul style="list-style-type: none"> <li>* Seek advice and help from professionals (teachers, doctors, nurses, researchers, engineers, librarians, veterinarians) to refine your project and procedure.</li> </ul>		
5	<ul style="list-style-type: none"> <li>* Conduct your revised experiment and collect data.</li> <li>* Keep careful written records of results in a notebook. Be as specific as you can. Include: time of observations, amount, size, type of materials, and so on.</li> </ul>		
6	<ul style="list-style-type: none"> <li>* Make data tables and graphs to organize your results.</li> <li>* Draw conclusions from your results.</li> </ul>		
7	<ul style="list-style-type: none"> <li>* Write your project summary sheets: Purpose, Procedure, Results, and Conclusion.</li> </ul>		
8	<ul style="list-style-type: none"> <li>* Construct a display. Build a back-drop to mount graphs, charts, illustrations, photographs, signs, and summary sheets.</li> </ul>		
9	<ul style="list-style-type: none"> <li>* Add finishing touches to your project.</li> <li>* Present your project in class and at the Science Fair.</li> </ul>		

Name: \_\_\_\_\_

# Design an Experiment

1. What is your *research question*? \_\_\_\_\_

\_\_\_\_\_

2. State your *hypothesis* using the "If...then..." format. Underline your independent variable and circle your dependent variable.

\_\_\_\_\_

\_\_\_\_\_

3. Describe the *independent* (manipulated) variable. \_\_\_\_\_

\_\_\_\_\_

4. Describe the *dependent* (responding) variable. \_\_\_\_\_

\_\_\_\_\_

5. Describe the *materials you* will need to do the experiment. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

6. Write a *procedure* to test your hypothesis. Remember to include step by step details.

7. Describe your *control group*. \_\_\_\_\_

\_\_\_\_\_

8. Describe the variables that you will hold *constant*. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

9. Design a *data table* to collect and display your results. Make a sketch of your data table below. A final copy of this data table must be put in your project notebook and on your display board.

10. What kind of *graph or chart* will you use to present your data? \_\_\_\_\_

\_\_\_\_\_

11. What computer program will you use to generate your graph or chart?

\_\_\_\_\_

# Science Project Contract

I have read the Science Fair Project information. I am aware that in order to get a top grade on my project I must:

- ✦ plan ahead to do a quality job
- ✦ do original work (*parents & friends may advise and proofread*)
- ✦ pay close attention to details (*includes following the Scientific Method*)
- ✦ follow project criteria
- ✦ turn everything in on time (*no late paper coupons accepted*)

I understand that by following these steps I will be given a top grade and the opportunity to display my project in the Science Fair.

I have chosen to do the following controlled experiment: \_\_\_\_\_

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The steps I will take to conduct this controlled experiment include (*give specific details*):

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Three sources of information I will use include (*give specific titles, Web addresses, names, etc.*):

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Name of partner (*if applicable*): \_\_\_\_\_  
(*partner must turn in separate contract & parent signature*)

\_\_\_\_\_  
Student Signature                      date              Parent Signature                      date              Teacher Signature                      date