5th Grade - Spring Science Fair Packet

Step 1: Choosing a Topic

A good science fair project answers a question in which you are interested. The following is a list of some good places to start:

- Talk to adults (parents, teachers, librarians, relatives).
- Visit the library.
- What are your interests and hobbies? For example: do you like sports? Are you interested in astronomy (looking at the stars at night, food chemistry (baking or nutrition), construction (Legos, K’Nex), or ecology (environmental concern)?
- Your yard. For example: how do things grow? What growing conditions are required for certain plants?
- TV news, science, and nature programs.
- Your house – look around the kitchen, basement, laundry room, garage, and other rooms). For example: what products work best? Can you prove what a TV commercial says is true?
- Look at newspaper current events articles, science books, magazines.

Scientific Categories
The following categories give a broad overview of the categories in which students typically find projects:

<table>
<thead>
<tr>
<th>Biology</th>
<th>Physical Science</th>
<th>Environmental and Earth Sciences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology</td>
<td>Electricity</td>
<td>Astronomy</td>
</tr>
<tr>
<td>Microbiology</td>
<td>Motion</td>
<td>Ecology/Environment</td>
</tr>
<tr>
<td>Chemistry</td>
<td>Magnetism</td>
<td>Geology</td>
</tr>
<tr>
<td>Biochemistry</td>
<td>Physical Forces</td>
<td>Meteorology</td>
</tr>
<tr>
<td>Chemistry</td>
<td>Botany</td>
<td>Oceanography</td>
</tr>
</tbody>
</table>
Step 2: Finding a Project

Look at the list of projects on the following pages and choose 5 that you might be interested in for a science fair project. If you find an experiment on your own or have a different idea, you must get discuss the project with and get approval from your teacher.

1. ____________________________________________________________
   ____________________________________________________________

2. ____________________________________________________________
   ____________________________________________________________

3. ____________________________________________________________
   ____________________________________________________________

4. ____________________________________________________________
   ____________________________________________________________

5. ____________________________________________________________
   ____________________________________________________________

Look at the list of 5 projects. Which of the projects is the one you would like to do as a science fair project? Remember that no student can have the same project as another student so you may need to change your project (with your teacher’s help).

Circle the number on the list above of your favorite project.

Questions for my teacher:

________________________________________________________________
________________________________________________________________
________________________________________________________________
The next thing you need to do is gather information about the source (book, website, encyclopedia) in which your project is located. This is what is called a model project. You will use this model to help write your own science fair experiment. You will make improvements to your model experiment in step 4. You must collect the following information in this step:

- Attach an MLA source citation sheet from the library to this paper.
- Attach a printout or copy of the experiment to this paper.
- THIS SOURCE WILL BE INCLUDED IN YOUR PROJECT’S WORKS CONSULTED!

Do you understand your project? Carefully read through your model experiment to find out what is required to do the experiment. Talk to your science teacher immediately if you do not understand your model experiment or you discover that you might need a different project.

Teacher comments about model experiment:
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Teacher Approval of Step #2 (initials and date) _____________________________

Scientific Category________________________________________

***Note that the study of bacteria and mold (not fungi) requires a scientist as a mentor and entails the completion of special forms as well as the use of a scientific lab to ensure student safety during the project. Any project chosen here requires Mrs. Lannutti’s pre-approval as well as the completion of additional documents to describe safety measures and disposal of microorganisms.
Step 3: Project Proposal

Please explain what you plan to do for your science fair experiment. Description must be in paragraph form with complete sentences:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

List the materials you plan to use for this experiment:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Will you need to build anything in order to do your experiment? If so, describe what you will need to build.

________________________________________________________________________
________________________________________________________________________

When do you plan to do your experiment? __________________________________

Where do you plan to do your experiment? __________________________________

How long will your experiment take? ________________________________________

How will your parent need to help you with this experiment?

________________________________________________________________________
________________________________________________________________________

Parent or guardian:

Yes  or  No   Circle yes if you approve of your child’s science fair project selection or no if your child needs to look for a different project.

If you don’t approve of this project, what type of experiment should your child do?

________________________________________________________________________

Sign and date to indicate that you have reviewed the requirements of this project proposal: ____________________________________________
Step 4: Your First Draft

The fourth step is to TYPE a preliminary draft that will be reviewed and approved by your science teacher.

Some things for you to remember:

1. Your typed experiment **MUST** have a problem (question), hypothesis, materials list, and procedure.
2. Your problem is the question that you want to solve.
3. Your hypothesis is your best guess about what might occur when you perform the experiment.
4. The procedure should include a series of tests to solve the problem or support your proposed hypothesis.
5. Most experiments will require a control group and experimental group(s) each with something that you vary (variables) in order to test your hypothesis systematically.
6. Do not use pronouns (I, me, my, mine, you, your, yours, he, she, they, them, it, etc.)
7. Use only metric measurements.
8. Write the procedure in a **step-by-step**, very detailed manner. Step-by-step means that you do not write in paragraph format, but write thorough instructions about how to do the project in a list format.
9. Your procedure must explain **how many trials** you will have to complete in order to obtain accurate data to determine if your hypothesis is proven correct or incorrect. You will need to use the same number of trials (repeat the experiment) for the control and each variable.
10. You must be able to **measure your results** of your experiment. It is very important that you use a method that allows you to compare the results for your control group and each variable group. In almost all cases, this means a numerical measurement.

- The experiment MUST be typed on the computer and include your problem, hypothesis, materials list, and procedure.
- Attach a copy of the typed document to this sheet for your teacher to approve.

**Teacher Approval of Step #4 (initials and date) ____________**

**Note:** Step #4 will not be reviewed by your teacher until your project choice (step #2) has been approved by your science teacher and your project proposal (step #3) has been approved by your parent(s).

This part of the project will be assessed; the rubric is in the reverse side and will help you to achieve the best grade possible. Use it as a checklist!
# First Draft of Science Fair Experiment Rubric

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment has problem, hypothesis, materials list, and procedure</td>
<td>5</td>
</tr>
<tr>
<td>Procedure is designed with test(s) to solve the problem and determine the accuracy of the proposed hypothesis</td>
<td>5</td>
</tr>
<tr>
<td>Experiment has a control group and an adequate number of variable groups - appropriate for grade level</td>
<td>5</td>
</tr>
<tr>
<td>Pronouns were not used</td>
<td>5</td>
</tr>
<tr>
<td>Metric measurements only</td>
<td>5</td>
</tr>
<tr>
<td>Procedure written in <strong>step-by-step, very detailed manner</strong></td>
<td>30</td>
</tr>
<tr>
<td>Procedure explains number of trials, which must be appropriate to the grade and experiment</td>
<td>5</td>
</tr>
<tr>
<td>Procedure explains how the results will be measured using a numerical method to compare results for control and variable groups.</td>
<td>10</td>
</tr>
<tr>
<td>Experiment is typed</td>
<td>5</td>
</tr>
<tr>
<td>Science fair packet is included with submittal of experiment for teacher reference</td>
<td>5</td>
</tr>
<tr>
<td>Parent signature obtained on step #3, Project Proposal</td>
<td>5</td>
</tr>
<tr>
<td>First draft of science fair experiment submitted on time.</td>
<td>15</td>
</tr>
<tr>
<td>Due __________; submitted __________</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100</td>
</tr>
</tbody>
</table>
Step 5: Determining the Scientific Concepts You Will Research

The **fifth step** is to identify the main scientific concepts you will be researching (examples: electricity, crystals, physical forces, photosynthesis, water pollution, etc.).

**Main Scientific Concepts to Research:** ____________________________

Students entering the 6th grade in the fall must have 3 research questions. The questions must be about the topic (scientific concepts and principles), not about the experiment itself. The questions will help you decide what to learn to help you understand the science related to your project.

**Question #1:** ________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________

**Question #2:** ________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________

**Question #3:** ________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________

Teacher Approval of Step #5 (initials and date) ________________
Step 6: Finding Your Research Sources

The final step in this current school year in preparing for your science fair project is to find good research sources. Follow these steps for success!

- You will need a minimum of two sources for each of your three questions for a total of (6) sources minimum. You may use only one general encyclopedia for each question. Internet sources may not comprise more than half of your sources and must have teacher approval.
- When you find a good source that will help you to research your science fair topic, you must copy or print out the information. Record information about each source on the forms available in the library and you will use that information when you write your Works Consulted.
- Attach the citation sheet to the copy or printout.
- Attach all copies and printouts to this packet.

Librarian/Teacher Approval of Step #6 (initials and date) _____________

Additional Things to Remember!

1. You must purchase a science fair binder in the school store. The binder will be used to hold for all science fair information.
2. Your science fair binder will be kept in the library over the summer.
3. You should have a copy of your experiment typed and saved electronically if you (hopefully) decide to begin your experiment over the summer.
4. The science fair binder will serve as your logbook for your science fair project.