



Science Fair Requirements

A. Description of the Project

Students will choose a question or a problem to answer. They will then conduct a controlled experiment to answer or solve the problem/question.

- Question/Problem:
 - Must be testable
 - Models are not science fair projects
 - Choose a problem that you can collect data in a small window of time to answer your question or solve the problem
 - Should be of interest to the student, something you want to know more about
- Controlled Experiment:
 - Should have a control group and an experimental group
 - Choose an appropriate amount of time to collect data that will give you a valid result
- Data:
 - All data should be recorded in a journal/notebook during the entire project.
 - Make sure you make observations during the different stages.
 - Logs should be in a spiral notebook or a research journal.
- Analyze Data:
 - Must include charts and graphs in order to draw conclusions from the experiment.
- Display Board:
 - Present your data and conclusions on ONE 3-panel freestanding board. (*only one board will be accepted per project*)
- Presentation (*High School ONLY*):
 - Present at the ASD Science Fair to a panel of judges.

B. Written Requirements

- Journal: This is your hand written copy of your work as it is being done.
 - It should be in your notebook
 - Follow the lab report given in class
 - This should show progression and be a part of the scientific process
- Report: PowerPoint of the project.
 - Sections include:
 - **Title Page (Slide 1)** – Create a title page using a 1-15 word description of your project. The title must be specific enough for someone to know what your project is about. Also include your name, period and date.
 - **Problem (Slide 2)** – List your problem that was the topic your teacher approved
 - **Abstract (Slide 3)** – This should be one of the last things you do so leave an empty page for it. The abstract is a 250 word description of your project.
 - A brief description of why you chose this subject. Include why you chose it and what you expected to learn from it.
 - Describe what you did by giving a general description of your project.

- State whether the data proved your hypothesis right or wrong. Give some reasons as to why you think it was right or wrong. If you had a chance to do it again, what would you change and how?
- **Research/Background Information (Slide 4)** – This is where you put all the research that you found in relation to your topic.
 - The purpose of the research is to acquaint the reader with important background information about your topic and should include the following
 1. A broad overview of the general topic you are investigating. History of your topic.
 2. The specific reason you are interested in your topic.
 3. Identify your exact topic, and should end with a statement of the problem you are investigating.
- **Hypothesis (Slide 5)** – Hypothesis should be a tentative explanation based on experience of a phenomenon, event, or the nature of the object. Consider *WHY* you are predicting that your experiment will cause something to change enough to show numerical results. You need to use numbers or percentages to describe what you think will happen.
- **Materials (Slide 6)** – A complete list of what you used in your experiment. Write this in a numerical list. Include anything that was used to prove your hypothesis. Do not include things used to write up or display the project (i.e. journal, display board, computer). Include a diagram of your experimental set-up or an example questioning form.
- **Variables (Slide 7)** – List your manipulated variable and discuss which factors are being controlled or kept the same. Identify your control in the experiment (the situation that you are considering normal for comparison).
- **Method/Procedure (Slide 8)** – List in numerical form what you did. This is your step by step procedure that the teacher approved. Procedure should be detailed and specific so the experiment can be completed/recreated by someone else.
- **Data/Results (Slide 9)** – Here is where you list all the data collected in the experiment. Organize your data in tables so it is easy to identify the information that you present.
- **Analysis (Slide 10)** – Make a graph of your data. Remember: bar and pie graphs are for comparing, line graphs are for showing change over time (average plant growth).
- **Conclusion (Slide 11)** – In your experiment you should be trying to prove or disprove your hypothesis. In your conclusion you will state
 - Whether your prediction came true or not
 - Support your statements with your data or explain how you could tell if the hypothesis was right or wrong by referring to your data and graphs
 - Explain anything that may have affected your results (things that could have gone wrong).
 - Describe how you would do things differently if you were to do this again.
- **References (Slide 12)** – List all of the sources that you used to get information for your project in proper APA format. Should include at least 3 sources.

C. Getting Started

- Things to consider as you try to choose a problem or question (a.k.a. a topic) for your science fair project:

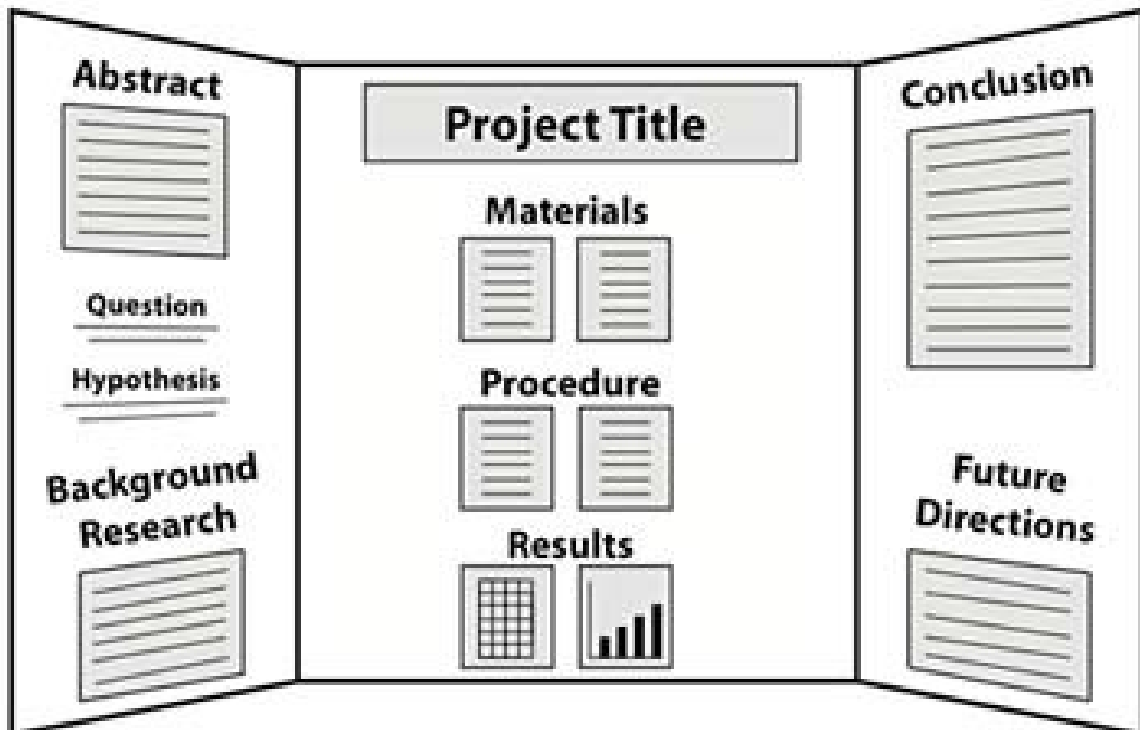
- It should be an area that interests you
 - Do some research on the internet for ideas
 - Make sure you get your idea approved
- You must be able to accurately measure both variables
- You must have access to the necessary equipment and materials
- You must consider the cost involved in the purchase of equipment and materials
- Data collection must be completed within two weeks.

- Writing your hypothesis:

- Your hypothesis is a statement of what you are testing by doing your experiment
- It should make a measurable explanation based on experience of a phenomenon, event, or the nature of the object.
- Your hypothesis needs to explore the relationship of the dependent variable vs. the independent variable
- Should be based on research and consider *WHY*.
- A hypothesis is not the same thing as a prediction, which is an expected outcome of a specific event. A hypothesis can be used to explain specific events.

D. **Display Board** – **students attending ASD District Science Fair, you will complete ONE display board**

There are TEN specific elements that you must have on your board. Include Abstract, Question (Purpose), Hypothesis, Background Research, Materials, Procedure, Variables, Results, Conclusions, Future Direction. Here is an example of a display board.



What is NOT allowed?

- Any topic that requires dangerous, hard to find, expensive, or illegal materials.
- Blood or bodily fluid.
- Projects where safety is a concern.
- Bacteria or fungus growth, unless working under supervised laboratory facility.
- Projects using prescription medication.
- Testing on animals where animals may potentially be harmed including drugging, pain or injury.
Pre-Approval must be obtained prior to conducting the experiment involving living vertebrates.
- Projects that creates physical or psychological risk to a human subject.
- Projects that involve collection of tissue samples from living humans or vertebrate animals.

The following includes a list of props not allowed with the display:

- 1) Living organisms, including plants
- 2) Soil, sand, rock, and/or waste samples, even if permanently encased in a slab of acrylic
- 3) Taxidermy specimens or parts
- 4) Preserved vertebrate or invertebrate animals
- 5) Human or animal food
- 6) Human/animal parts or body fluids (for example, blood, urine)
- 7) Plant materials (living, dead, or preserved) that are in their raw, unprocessed, or non-manufactured state (Exception: manufactured construction materials used in building the project or display)
- 8) All chemicals including water (Projects may not use water in any form in a demonstration.)
- 9) All hazardous substances or devices [for example, poisons, drugs, firearms, weapons, ammunition, reloading devices, and lasers
- 10) Dry ice or other sublimating solids
- 11) Sharp items (for example, syringes, needles, pipettes, knives)
- 12) Flames or highly flammable materials
- 13) Batteries with open-top cells
- 14) Glass or glass objects unless deemed by the Display and Safety Committee to be an integral and necessary part of the project (for example, glass that is an integral part of a commercial product such as a computer screen)
- 15) Any apparatus deemed unsafe by the Scientific Review Committee, the Display and Safety Committee, or Society for Science & the Public (for example, large vacuum tubes or dangerous ray-generating devices, empty tanks that previously contained combustible liquids or gases, pressurized tanks, etc.)
- 16) Any inadequately insulated apparatus producing extreme temperatures that may cause physical burns is not allowed.
- 17) Any apparatus with unshielded belts, pulleys, chains, or moving parts with tension or pinch points must be for display only.

PJAS Forms

Forms and a full description of rules may be: <http://www.pjas.net/isef-forms>

Every project requires Condensed Forms 1, 1A, 1B, and a Research Plan. As mentioned above, the guidelines for the Research Plan can be found on Form 1A. Download and complete the applicable forms as instructed by your Sponsor. Give a copy of the completed forms to your Sponsor for submission to SRC/IRB and keep originals safe.

Condensed Form 1, 1A, 1B: REQUIRED FOR ALL PROJECTS (This one is attached)

Form 1C: Registered Research Institutional/Industrial Setting Form

Form 2: Qualified Scientist Form

Form 3: Risk Assessment Form

Form 4: Human Subjects and Informed Consent Form (NEED 30 Participants for PJAS)

Sample 1: Informed Consent Statement

Form 5A and 5B: Vertebrate Animal Form

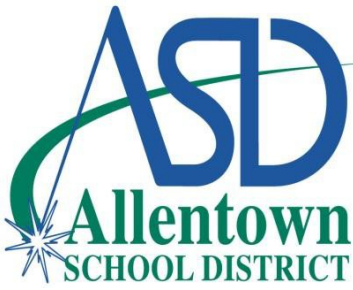
Form 6A: Potentially Hazardous Biological Agents Form

Form 6B: Human and Non-Human Vertebrate Animal Tissue Form

Form 7: Continuation Projects Form

NOTE: ISEF forms returned from the SRC/IRB with signatures become your new originals. Always retain the latest original; send only copies.

For PJAS: These forms must be filled out before the students begin the science fair project. Please see the following website for the checklist of forms for any given project. <http://pjasregion3.org/>. For all students attending PJAS, Condensed form is attached.



ASD Science Fair Notification Form

Parents and Guardians:

The Allentown School District is holding a Science Fair on May 30, 2018 - June 1, 2018. A Science Fair is a wonderful and exciting experience. Participation in the science fair will require students to conduct a controlled experiment, keep notes, and reflect data using graphs and displays. Some work may need to be completed at home. Science Fest will be open to the public on May 13, 2018 from 6pm - 8pm and we will be joined by many vendors from around the Lehigh Valley, like, DaVinci Science Center and Wildlands Conservancy.

In addition, we will be holding after school sessions on: _____.

Please read the checklist below and sign as evidence that you understand the requirements of this project. If you have any questions or concerns, please email me at _____ @allentownsd.org.

Thank You!

Sincerely,

Student Section:

Name: _____

The question I plan to investigate for my project:

Please review the questions below and circle YES or NO.

1. Some experiments are restricted in a school environment. Have you discussed your experiment with your teacher to make sure you can conduct the project in school? YES NO
2. Is the topic interesting enough to research and work on for at least 2 months? YES NO
3. Can you measure changes to important factors (variables) such as count, percentage, dimensions, energy, time, weight, voltage, etc.? YES NO
4. Can you design a "fair test" to answer your questions? YES NO
5. Is your experiment safe to perform? YES NO
6. Do you need an adult to help or supervise the experiment or demonstration? YES NO
7. Will you be able to get all the materials you need for little or no cost? YES NO
8. Will your experiment be conducted "live" or will you need to record your results? YES NO
9. Will you need a computer or other electronics to present your project? YES NO

I understand I will be provided ONE display board. I have discussed the project idea and the checklist with my teacher and parent(s).

I am willing to commit the time to complete this project to the best of my ability.

Student Signature

Date

Parent/Guardian Section:

I have reviewed the project, supply list, and the checklist with my student and I believe he/she is able to complete the project.

I understand the requirements both in and out of school and am willing to help my student meet deadlines and complete this project.

Parent/Guardian Signature

Date

Contact phone number: _____

ASD Science Fair Project Supply List

Student Name _____

Project Title _____

	Item Description	Item Cost	Qty	Purchase Information	Supplied by Student	Supplied by School	Purchased by ASD
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

Parent Signature: _____ Teacher Approval: _____

ASD Science Fair/PJAS Research Plan

Name: _____ Date: _____

Partner(s): _____

A Research Plan is a detailed experimental design that includes the rationale, question (statement of the problem), variables, all materials needed, detailed procedures, how will you measure and collect data, and a risk assessment. This should be completed at the beginning of the project and approved by before experimentation begins.

Rationale: _____

Question: _____

Hypothesis: _____

Variables: _____

Materials: _____

Parent Signature: _____ Teacher Approval: _____

PJAS Region 3 Research Plan

School		Grade
Student First Name	Student Last Name	
Sponsor	Sponsor email	
Research Category <i>Must be one of the thirteen PJAS research categories</i>		
Title of Project (maximum of 60 characters)		
If Mathematics or Computer Project: State your Goals/ Expected Outcomes. If Science Project: State your Hypothesis.		
For science experiments only. Where will you conduct your experiment? Circle all that apply. School Field Home Research Institution Other:		
Description of methods and procedures that you will use. If this is a science project, detail your experimental design and how you will analyze your data. If you need more room, attach a second sheet.		
Bibliography: On the back of this paper list your references (science journals, magazines, books, internet sites). Students in grades 7 and 8 minimum of two. Students in grades 9 – 12 minimum of three.		
Student signature and date.		
Sponsor signature and date.		