

8th Grade Science Fair
Design and Conduct an Experiment: Topics

Name: _____ Date: _____ Sec: _____

Select a topic from the list below. Post your decision to Ms. Sudol's Google classroom.

Animal Science *Special forms must be filled out to make sure no animals were injured during the experiment

- Behavioral Conditioning using Auditory or Visual Triggers
- Effects of Types of Wood on Amount of Insect Activity
- Comparative Study of Ant Preference of Various Types of Sugar

Behavioral and Social Sciences (students are responsible for conducting surveys outside of school) *These experiments require special paperwork called IRB forms to ensure that no one is harmed during these experiences

- Effect of gender on memory (minimum of 50 subjects)
- Effect of color on mood (minimum of 50 subjects)
- Effect of Music or Background Noise on Memory (minimum of 50 subjects)
- Behavioral Conditioning using Auditory or Visual Triggers

Plant Science * Plants take time to grow, be sure to start these experiments early

- Effect of light on plant growth (minimum of 10 plants for each type of light and control) (DIFFERENT COLORS OF LIGHT OR VARY AMOUNT OF LIGHT)
- Effect of various fertilizers on plant growth. (minimum of 10 plants for each fertilizer and control) (PLEASE DO NOT USE MANURE OR CERTAIN CHEMICALS)

Chemistry

- Stain Removal with Various Detergents (minimum if 10 trails for each detergent, use only one stain but several detergents or stain removers)
- Rate of Melting using Different Substances (sugar, salt, etc...)
- Comparative Study of the Carbonation of Various Sodas

Earth and Planetary

- Crystal Growth with Various Solutions
- Orbital Period vs. Distance (Kepler's 3rd Law)
- Chemical Weathering of Rocks using Different Acid Solutions

Environmental Science

- Effect of acid rain on plant growth (minimum of 10 plants for each type of acid rain and control) (USE VINEGAR AND WATER DILUTIONS FOR ACID RAIN)
- Decomposition Rate of Different Plastics
- Testing Soil Pollution near Gas Stations

Physics

- Effectiveness of various insulators, either for heat/cold retention or for protection of fragile items (minimum of 10 trails for each type of insulation)
- Effect of Temperature on the Performance of Various Sports Balls (minimum of 10 trails of each temperature)
- Effect of airplane design on distance (minimum of 10 trails for each airplane design)
- Effects of different material on sound proofing a room

- Other: _____

Other topics to consider: BIO (BioChem), CELL (Cellular and Molecular Bio), COM (Computer Science), ENG-EM (Engineering- Electrical-Mechanical), ENG-MB (Engineering- Materials and Bioengineering), ET (Energy and Transportation), ENVMG (Environmental Management), MATH (Mathematical Sciences), MED (Medicine and Health), MIC (Microbiology)

** Note:

IF you are conducting an experiment involving people, animals, or hazardous substances you will have to fill out additional paperwork before you can conduct your experiment.

- The topics with this type of bullet are commonly chosen and not recommended for those of you interested in continuing on to the science fair.

8th Grade Science Fair
Design and Conduct an Experiment: Grading Rubric

Basic Format:	
Must be typed, double spaced, have a font size of 12, Times New Roman font style, have sections labeled (with the title being an exception), and be in APA format. Sections are listed below and must appear in this order:	
Title Abstract Introduction Methods and Materials Results Discussion Conclusions References	
Use the proper formatting (grammar, past tense, etc...)	_____/ 5 pts.

Title:	
Title must be a statement (not a question)	
Is self-explanatory, exact, with independent and dependent variables	
Title must be on its own title page (according to APA format)	
	_____/ 5 pts.

Abstract:	
Includes 1-2 sentences from each section (introduction, methods and materials, discussion, and conclusion) of the paper	
Effectively summarizes the content of the research paper; it's a summary	
	_____/ 10 pts.

Introduction:	
First paragraph (introductory) needs 4-6 complete sentences <ul style="list-style-type: none"> • One sentence must be the question to be answered, hypothesis at the end of this paragraph 	
At least 3 additional paragraphs, for each major source. Summarize the information into 7-8 complete sentences. <ul style="list-style-type: none"> • using 3 in-text citation 	
	_____/ 15 pts.

Methods and Materials:	
Complete description of the experimental process	
Includes the control group and constants used in the experiment (clearly stated)	
In paragraph format, not a list (avoid words like First, Next, Then, etc...)	
SI units used with the appropriate number of trials	
	____/10 pts.

Results	
Must include at least one data table <ul style="list-style-type: none"> a title, labels, units of measurement, and brief description below the table 	
Must include at least one graph <ul style="list-style-type: none"> a title, labels for both 'x' and 'y' axes, units of measurement, and brief description below the graph 	
Graph must be appropriate to the type of data collected (line, circle, bar)	
Data must be numerical, organized (Ex: averages compared)	
	____/ 15 pts.

Discussion:	
Analyze the data from the result section, relating it back to the original hypothesis	
Discuss how your result compare to the information gathered during your research	
Possible explanation for results, and error analysis	
	____/ 20 pts.

Conclusion	
Must have a conclusion statement accepting or rejecting the hypothesis based on the results	
No personal pronouns or adjectives <ul style="list-style-type: none"> Ex: I, you, we, mine, ours, me, us, them, he, she, yourselves 	
	____/ 5 pts.

References	
Uses correct APA format (check citing sources page on YC Library site)	
Use reputable sources (sites with .edu, .org, .gov) No encyclopedias and dictionaries	
Must have at least three sources <ul style="list-style-type: none"> • At least one book 	
	____/ 10pts.

Logbook	
LIST the dependent, independent, control group, and constants	
Logbook entries <u>dating</u> each step of the process (research dates, details about experiment as it is being conducted, etc...)	
Record publishing information from research sources <ul style="list-style-type: none"> • Notes taken from each source 	
Rough draft of measurements and data	
	____/5pts

Total: ____/ 100 pts.

Timeline:

	<u>Due Date</u>
Topic for Experiment (start logbook)	Friday of week 1
Introduction: Rough Draft	Friday of week 3
Title: Rough Draft	Friday of week 4
Methods and Material: Rough Draft	Friday of week 5
Conduct Experiment *	Friday of week 6
Results: Rough Draft	Friday of week 7
Discussion and Conclusion: Rough Draft	Friday of week 8
References and Abstract: Rough Draft	Friday of week 9
Complete Final Lab Report	Day before Thanksgiving Break **

* When you conduct your experiment will vary.

** If you would like me to look at any draft of your report you must email it to me according to the above timeline. For instance, I will not look at a rough draft of your introduction the week before the paper is due.

**8th Grade Science Fair
Science Fair Poster Rubric***

Content:	
Title: descriptive, centered, and easy to read from a distance	
Abstract:	
Hypothesis: testable statement	
Results: Tables and Graphs with clearly labeled titles and axis	
Conclusion: rewritten and easy to understand	
	____/ 10 pts.

Format:	
All aspects of the <u>trifold</u> board must be neat <ul style="list-style-type: none"> • Neatly cut, glued, and arranged on the board 	
Must avoid unprofessional accessories <ul style="list-style-type: none"> • NO glitter, NO informal font styles, NO spelling or grammar errors 	
Must have at least 3 visual elements (Ex: Picture, Graph, Table, etc...) <ul style="list-style-type: none"> • That are meaningful to the hypothesis/conclusion and are clearly labeled • Eye catching (think marketing techniques, uniform color schemes, proper proportions, etc...) 	
	____/ 6 pts.

Paperwork:	
A new/revised paper, neatly stapled <ul style="list-style-type: none"> • Simple and professional 	
A copy of your logbook	
	____/ 4 pts.

____/20 pts.

*this is an optional assignment in 8th grade and is for bonus points

