

Science Fair – Research Paper

Due Monday, November 21, 2011

- **General instructions**

- Double-space all pages (either set line spacing to 2.0, or hit enter twice after every line)
- Use one-inch margins on all sides
- Number **ALL** pages at the bottom in the middle
- Use a plain font (like Calibri, Times New Roman, or Arial)
- Except for the title page and section headings, use 12 pt font
- All sections (except the title page) should have a title in **bold** 16 pt font

Your paper should have the following sections **in this order**:

- **Title Page (6 pts)**

- Put on a page by itself
- Center vertically & horizontally it on the page
- In 16 pt font or larger, put the following (in order), each on a new line:
 - Name of your project (maximum of 6 words – must fit on 1 line)
 - Your name
 - Your grade & section

- **Table of Contents (5 pts)**

- Put on a page by itself
- List all sections on the left side of the page, except title page & table of contents
- List the corresponding page numbers on the right side of the page (you should check these after you finish your entire paper, to make sure pages haven't shifted)

- **Abstract (7 pts)**

- Put on a page by itself
- Summarize your entire project
- **Maximum** of 250 words
- Include your question, **very** brief procedures, and your most important data and conclusions

- **Background Research (10 pts)**

- **In paragraph form**, give information to help others understand how your project works and why it is important
- Base your writing on your **research**, not your **opinion**

- **DO NOT** directly copy/quote from one of your sources – it should be written in your own words. Very short quotes (1-2 sentences) are acceptable if placed in quotation marks.
- Minimum of half of a page (11 full lines)
- **DO NOT** include a summary of your question, hypothesis, or procedure
- **Question or Engineering Goal (5 pts)**
 - The question you are answering in your experiment
 - Write it as a **question**, not a statement. Your independent variables should be clear from your question.
 - If you are doing an engineering project (one where you are attempting to construct something, rather than answer a question), you should write your goal as a statement, not a question.
- **Hypothesis (5 pts)**
 - Make a prediction about **ALL** of your independent variables
 - Include a brief reason why you are making that prediction
 - Use complete sentences
- **Variables (10 pts)**
 - **NOT** complete sentences
 - Include the following
 - Independent variables
 - Factors you are **directly changing** in your experiment
 - Each project must have at least 2
 - List the **general** variable you are changing, not the specific substances/conditions you will test (Ex: “type of liquid”, not “Sprite, orange juice, and water”)
 - Dependent variable(s)
 - Things you are **observing** or **measuring** in your experiment **in order to answer your question**
 - **DO NOT** write as a question
 - Constants
 - Factors that stay the same throughout all parts of your experiment
 - Give **at least 2** constants; most experiments will have more
 - **DO NOT** include methods of measuring/calculating as constants
- **Materials (5 pts)**
 - Make a bullet-point list
 - Include ALL materials you **actually used** in your experiment

- **Procedure (10 pts)**
 - Type up as a numbered list
 - Write in 2nd person present tense (like you are telling someone what to do)
 - Correct: 1. Measure 200 mL of water and pour into bowl
 - Incorrect: 1. I measured 200 mL and poured it into the bowl
 - Include diagrams, if necessary, to explain the setup
 - Be **detailed** – one of your classmates should be able to read your procedure and do your experiment!
 - If you repeat the same steps but just use a different chemical/liquid/size of object, etc., it is fine to say “Repeat steps x to xx using [new material] instead of [original material]”
 - Steps should be no more than a few lines long – if they are longer, break them up into simpler steps
 - **DO NOT** copy and paste steps from any source – if you got ideas for your procedure from another source, you should rewrite them in your own words. (The source should be listed in the bibliography.)
- **Pictures (5 pts extra credit)**
 - Pictures of **YOUR** experiment – results, procedure, or both
 - All pictures must have a caption, explaining what is in the picture
- **Data Tables & Observations (20 pts)**
 - Give EACH data table a descriptive title – one that indicates what data is in the table
 - Clearly label all rows and columns
 - Include units either in the row or column label, or in each individual cell
 - **DO NOT** put more than one type of data in a single cell – one measurement per box!
 - Include **ALL** of your ACTUAL data from your experiment – you may not use predicted data.
 - If you made other important observations that are not easy to put into a data table, write them out in complete sentences and include them here.
 - **DO NOT** explain the importance of your observations/data in this section.
- **Graphs (20 pts)**
 - Choose the correct type of graph for your data. If you are not sure, discuss it with Mr. Turhan
 - Give EACH graph a descriptive title – one that indicates what data is on the graph
 - Label the y-axis and include the units
 - Label the x-axis and, when necessary, include units. Bar graphs need an x-axis label that is separate from the individual category labels!

- The data in your graphs must match the data in your tables
- If you choose to graph the average of your trials, also include the average on your data tables
- **DO NOT** try to include more than one type of data on a single bar graph. Remember – you must be able to clearly label & give a unit for the y-axis.
- **Analysis (15 pts)**
 - In **sentences** and **paragraphs**, summarize your data
 - If you made any mistakes or had any difficulties that you think may have affected your results, discuss them here
 - If you did any calculations, include a few full examples of how the calculations were done
- **Conclusion (15 pts)**
 - In **sentences** and **paragraphs**:
 - Explain whether or not your data support your hypothesis
 - Answer your question
 - Give at least one idea for improving your project **or** for continuing your project with other experiments
- **Bibliography (15 pts)**
 - Put on a page by itself
 - Follow MLA format
 - Entries must be correctly formatted & alphabetized
 - For help:
 - Visit www.easybib.com or www.owl.english.purdue.edu
 - Ask your English teacher
 - Do **NOT** use Wikipedia, Yahoo! Answers or similar websites that allow any user to give information as sources
 - Remember, www.google.com is a search engine, not a website with actual information – you cannot cite it as a source
 - Must have at least 5 sources!!

PLEASE spell-check your work, as well as proofreading it. You will lose points if it is obvious you have not done this.

You must email a copy of your research paper to Mr. Turhan (sturhan@harmonytx.org) by 4 PM, Monday, November 21th. DO NOT bring a paper copy! If you cannot email your paper to Mr. Turhan, you need to discuss how/when you will turn in your paper to Mr. Turhan BEFORE the deadline.

STUDENTS WHO WILL BE ABSENT ON THE DUE DATE MUST TURN THEIR PAPER IN BEFOREHAND!