SF Notebook: Part 1:
Statement of the Problem – Purpose – Hypothesis

What is the Science Fair Notebook?
- It is a collection of ALL work completed for this project.
- The notebook is a 3-ring binder containing all of the edited "parts" typed neatly & orderly.
- I will grade each "part" & return it to you. Then, you carefully edit & update each section. Why? Because the final notebook will eventually be read by judges at the fairs.

Major Rules
- Each "part" goes on a separate page
- Each page should have identical formatting:
    - same simple font (Arial, Times, etc.)
    - 12 point font
    - 1" margins
    - 1.5 spacing
    - Page numbers (you'll do this later…)
- Written in 3rd person: No I's you's me's we's etc
- The title of the section is centered at the top of the page.
- Do NOT write your name on every page
- Email to me as soon as you have them completed

Notebook Parts

Part 1:
- Statement of the Problem
- Hypothesis

Part 2:
- Variables & Controls
- Procedures
- Materials

Final Parts:
- Results
- Conclusion
- Recommendations

Statement of the Problem/Purpose

- Write 3-5 sentences for each of the following:
    1. what you hope to discover
    2. what you have learned through your research (summarized)
    3. what problem you hope to solve
- Each section may be 1 complete paragraph, or merged into 1 large paragraph
- Length: 1/2 - 1 page

Rubric

Part 1: what problem you hope to *solve*	1 2 3 4 5
Part 2: Purpose	1 2 3 4 5
Thorough, clear, descriptive	1 2 3 4 5
Flow of writing, style	1 2 3 4 5
Correct Grammar & Spelling	1 2 3 4 5
Written in 3rd person: No Is or Yous	1 2 3 4 5
Correct formatting: Typed, 12 point font, 1.5 spacing, titled	1 2 3 4 5
Total Points:	/35

Example (these were done on the same page, just different sections) :

Statement of the Problem:

Contact lenses are directly inserted into the eye, which means the greatest possible sterility level is necessary for both comfort and health of the eye. Because of this, the solution the lenses are stored in and its effectiveness in discouraging and eradicating bacterial growth is critical to contact lens users' eye health. Many experiments have been done on testing which solution brand performs "better" than the rest, however, there has been no experiment that tested only the trusted and popular brands, the brands that the majority of lens users themselves use. Which of these has the greatest antimicrobial strength? With unsatisfactory bacterial levels in both the eyes and the lenses, infections and diseases such as Conjunctivitis, Keratitis, corneal ulcers and fungal infections can develop. A common bacteria species found naturally in the eye's fauna is the *Staphylococcus Aureus* bacterium, with the potential to cause infection. These infections can be painful, expensive to treat, and may result in loss of vision when severe, so choosing the right lens solution is essential.

Purpose:

The purpose of this experiment is to see if there are any significant differences in the performances of varying lens care solutions. Out of the widely available one-step solutions, which is the best performing? Which contact lens solution is truly more superior than others in prohibiting bacterial growth? If the results showed large differences in eliminating bacteria, the results derived from such an experiment could be used to benefit the health of contact lens users' eyes and receive efficient cleaning and disinfection for the cost of the solution. Learning what could be better for the eyes is a significant step towards maintaining clear, healthy and potentially prolonged vision.

<u>Hypothesis</u>

Part 1: State the Hypothesis

- A hypothesis is an educated guess or prediction about the experiment's outcome.
- What effects or results do you expect, based upon you're the background research?
- *A good hypothesis is quantitative & includes a number or percentage*.
- Why? So once you've obtained results, you can accurately state whether you hypothesized correctly or incorrectly.
- ***Hypothesis Examples:***
    - Bubbles made with Factor X will have an average diameter 5 cm greater than bubbles made with Factor Y.
    - Plants grown in green light will be 15% taller than plants grown in other colors.

Part 2: Support the Hypothesis

- You must provide support for the hypothesis.
- In other words, explain how & why you came up with this particular hypothesis.
- Use the research & past experiments
- Include the following:
    - What led you to develop this hypothesis?
    - What did you learn in your research paper?
    - Explain how you selected the particular numbers/percents.
- Overall Length: 1/2 page

Rubric

Part 1: states a measurable or quantitative hypothesis	2 4 6 8 10
Part 2: support for hypothesis	2 4 6 8 10
Clear, simple, logical	.5 1.5 2.5
Correct Grammar & Spelling	.5 1.5 2.5
Written in 3rd person: No Is or Yous	.5 1.5 2.5
Correct formatting: Typed, 12 point font, 1.5 spacing, titled	.5 1.5 2.5
Total Points:	/30

Important Point
A hypothesis does not have to be right or wrong. Your grade does not depend on how well you guess. Just collect experimental evidence to determine if your hypothesis is correct and report the results honestly!!! Sometimes the greatest knowledge comes from a "wrong" hypothesis!

Keep this in Mind….
- Know the difference between the words "affect" and "effect"
- GENERALLY, in science, **"affect"** is an **action word** and "**effect"** is a **noun**. Look at the following examples:
    - How will light AFFECT the photocell? The EFFECT was not measurable.
    - The music AFFECTED his concentration.
    - The antibiotic had a growth-limiting EFFECT.
    - Can electricity AFFECT plant growth?
    - EFFECT on the mold
    - The hormone AFFECTS the embryo.
    - What is the EFFECT of sucrose on snail respiration?

Examples: Hypothesis

The taller and heavier a skater, the harder it is for a skater to generate speed to enter a spin. Prior research has indicated that an object farther away from their axis of rotation rotates slower than when it is closer to their axis of rotation. Since the axis of rotation in a person is found across the torso and a center line from the middle of the head to her feet, a taller or heavier person will have an increased axis of rotation. Therefore, they will likely have a slower spin than someone who is shorter or is lighter. Weight has a bigger effect on an object traveling in a circular motion than radius length or height. However, there are many factors that are extremely difficult to control, such as the friction of the ice, the type of blade the ice skater uses, etc. In addition, there may be ice skaters that are over 45 kilograms, but the majority of the weight is muscle, which weighs more than fat.

These particular ice skaters could use their muscles to restrict the inward pulling found spinning in a circular motion, which may help them spin faster. As the majority of ice skaters are women, they usually have weaker muscles then men, due to their build. The taller and heavier people should have an average speed that is slower than people who are smaller and thinner. As mentioned earlier, since weight usually has a bigger effect of an object traveling in a circular motion than distance, the percentages of the hypothesis were adjusted accordingly. People with extra body fat are limited to the duration and the intensity of an activity. Therefore, their speed on the ice should be slower, and the overall speed of their spin should be slower.

Due to the information collected, it is hypothesized that
1. 70% of ice skaters taller than 1.5 m will have slower spins than skaters shorter than 1.5 m
2. 85% of ice skaters weighing more than 45 kg will have slower spins as compared to those skaters weight less than 45 kg.
In addition, any ice skater who has extra body fat, as compared to the body mass index found in the healthy weight range, will have slower spins than those skaters with a body mass index in the healthy weight range, despite their height measurements or their weight amount.