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Logbook

Name: Meer Gosain

Grade: 7 Class D - Mr. Roberts
Dates: October 2025 - February 2026

Project: Mini Magnetic Accelerator (Innovation)

Date	Notes:
October 15, 2025	Today I met with Ms. Bretner to talk about my project idea. My question was approved: How can you improve a mini magnetic accelerator? I chose this topic because I wanted to build something hands-on instead of just doing research. Project: Innovation
October 18, 2025	Went through the innovation rubric to understand the project's components. I also did a little bit of pre-research for the project.
October 24, 2025	Ethics Got Approved!!! I wrote down safety rules
October 25, 2025	Hypothesis: If I use more sets or add more stack balls to the Mini Magnetic Accelerator, the exit ball will launch faster and travel farther. This is because each set creates a more powerful pull on the incoming ball, and with more momentum transferred through the ball stack, the final ball is released with greater force.
October 26, 2025	Materials • Neodymium magnets • Steel ball bearings (all the same size and weight) • Flat wooden board (testing surface) • Ruler • Measuring tape • Tape (to mark the starting position)
October 27, 2025	Today I ordered the materials from Amazon and found the place where I will set up
October 29, 2025	My materials arrived today. I checked everything to make sure nothing was missing.

November 1, 2025	**Energy And Magnetism** **I researched energy and learned that energy cannot be created or destroyed. It can only change forms. I learned that magnets store energy that can turn into motion. I wrote notes about kinetic energy and how it depends on speed. I also built my first version with one magnet and one stack ball. I tested it three times. Nothing happened**
November 8, 2025	**Today I researched momentum. I learned that momentum depends on how heavy something is and how fast it is moving. The formula is mass times velocity. I also learned that when objects collide, they can transfer momentum to each other. This helped me understand how the moving ball in a magnetic accelerator can transfer energy through the stack and make the last ball shoot forward. It reminded me of Newton's cradle.**
November 9, 2025	**Independent (what I changed):** ● **Number of stack balls** ● **Number of magnet stages** **Dependent (what I measured):** ● **Distance traveled by the final steel ball**
November 11, 2025	**Controlled (what I kept the same):** ● **Same steel balls (size and weight)** ● **Same type of magnets** ● **Same starting height and release point** ● **Same testing surface** ● **Same environmental conditions**
November 13, 2025	**I tried one magnet with two stacked balls. The ball vibrated slightly, but still did not launch forward. I tested it three times again and got the same result each time.**
November 15, 2025	**I tested one magnet with three stack balls. This time, the final ball was launched forward. I measured how far it went and tested it three times. It worked each time.**
November 16, 2025	**I added a second magnet stage while keeping three stack balls. This version was much stronger. The ball launched much farther than before. I measured the distance in three trials and recorded the data. This became my best design.**

Jan 3, 2026	**I analyzed my results carefully. I noticed that one or two stack balls were not enough to transfer energy properly. Three stack balls seemed to be the minimum needed. I also saw that adding more magnet stages increased the speed and distance.**
Jan 10, 2026	**I wrote my conclusion. My hypothesis was correct. Adding more stack balls improved momentum transfer, and adding another magnet stage increased acceleration.**
Jan 17 - 18, 2026	**In the future, I could try three magnet stages, test stronger magnets, or use slow-motion video to measure speed more accurately.**
Jan 30 - 31, 2026	**I finished reviewing my entire project and logbook. I made sure everything was complete and in order.**
Feb 7 - 8, 2026	**I completed my 30-slide presentation and just needed to put them on the trifold**
Feb 14 - 15, 2026	**Completed the trifold and had a very good overall presentation**
Feb 16, 2026	**I started my presentation and made small improvements to how I explain energy, momentum, and magnetism. I feel confident about my project because I tested different designs and clearly improved the performance of my mini magnetic accelerator.**
Febuarary 18, 2026	**I started to confidently present my trifold without a script**

SCIENCE FAIR LOGBOOKS

Every science fair project **must include a logbook**, also sometimes called a research notebook, which is a complete, permanent record of how you did your experiment/research project; it shows what you did and thought every step along the way.

LOGBOOK POINTERS:

- write your logbook in a notebook
- make an entry every time you work on your project
- date each entry
- make your notes in point form
- don't worry about neatness; you do not need to re-copy your logbook to make it look "tidy"
- organize your logbook into sections such as: schedule, daily notes and ideas, background research, contacts and references, experimental procedure/method, data collection sheets, observations/results in tables and graphs, conclusions
- Write everything down, even if it seems insignificant at the time; the information may be useful later on
- Make sure that you describe things in enough detail that you and anyone else reading your logbook in the future will be able to understand your thoughts and repeat the entire experiment exactly like you did it in the first place, just using your logbook.
- You must create your logbook as you go; it is unacceptable to create your logbook on the computer after you have finished your project
- NOTE: The text that appears on your backboard/tri-fold is just a summary of what you write in your logbook; there is much more information in your logbook than what appears on your backboard/tri-fold.

LOGBOOK CONTENT:

- **Timetable :** Come up with a timetable for doing each of the steps of your project and try to stick to it
- **Choose a Topic**: make a list of topics that interest you, things that you are really curious about and that you want to find answers to; explain how you came up with your topic, why you decided to do it.
- **Background Research**: Record your background research about your topic from books, magazines, TV programs, the Internet (with supervision), people and companies. Keep a record about where you gathered your information for your bibliography/list of references and acknowledgements.
- **Testable Question/Purpose:** Based on your background research, write down your testable question/purpose

- **Hypothesis**: write down what you think the results of your experiment will be based on the research that you've done
- **Materials:** List everything that you will need to do your experiment, such as equipment, ingredients, quantities of ingredients, measuring tools etc. Be very specific – give lots of details
- **Procedure**: List the steps you will go through to do your experiment. If you make any changes to the procedure after you start your experiment, describe them in your logbook with an explanation about why you made the change(s) and if the change(s) will affect the results collected prior to the change.
- **Variables**: list the controlled variables, the manipulated variable, and the responding variable
- **Data:** record all of your measurements/raw data that you collected on data sheets in your logbook
- **Results:** record your collected data in charts, tables, graphs, pictures and use these to help you explain what happened in your testing; describe any problems you might have had while you were testing , any changes that you had to make to your original plans, and whether those changes would affect the results collected before you made the changes
- **Conclusions:** write down your conclusions, whether or not your hypothesis was correct and why. It is OK if your results do not support your hypothesis - the information you collected still supports science.
- **Recommendations/Applications**: Make recommendations for improving your project, for further study, and applications I can make from my research