SCIENCE FAIR PROJECT

4TH GRADE

IMPORTANT NOTES ABOUT THE SCIENCE FAIR

- **The manual, timeline, and scoring guide can be found on the Troy website http://www.troy.k12.mo.us/Page/6740**
  - *Please note that each school does the science fair at slightly different times! Your teacher will give you copies of your school's timeline, so the online version might be different than the one you receive at school!
- **Many experiments can be done for free or very cheaply; don't feel obligated to spend a lot of money**
- **Depending on the experiment you choose, it can take between an hour to weeks to complete (example: growing plants)**
- **Don't hesitate to ask your teacher for help or to clarify something!**
- **Most importantly – Have FUN and learn something new!!!**

INDIVIDUAL OR PARTNER?

- **The science fair experiment is mandatory and will be completed at home**
- **4th graders have the option of doing it by themselves or with a partner**
  - If you choose to complete the project with a partner, it is your responsibility to coordinate times to meet at home
  - Your partner has to be in 4th grade and from the same school

PROJECT IDEAS

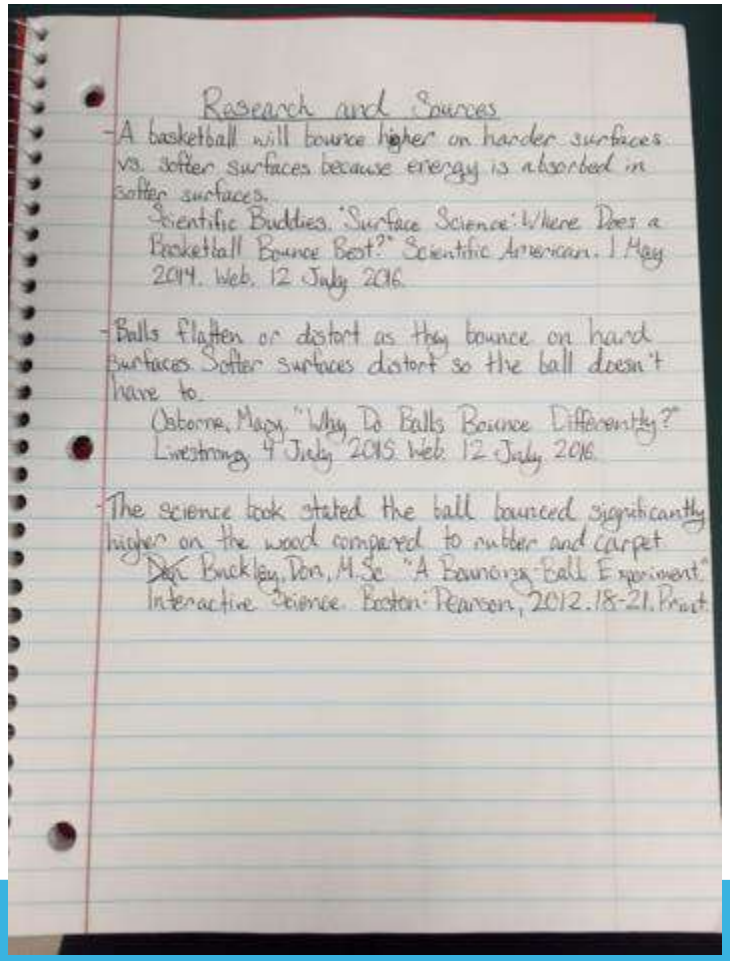
- **Parents are encouraged to help their child; however make sure the child does most of the work**
- **A science experiment IS a problem with an answer, it is testable, and has one variable (or thing that changes)**
- **A science experiment IS NOT a volcano, a collection, or observations with no test**
- **Here are some helpful websites when looking for experiments**
  - http://www.all-science-fair-projects.com
  - http://www.sciencebuddies.org
  - https://sciencebob.com
- **Be careful with searching online; just because it says it's an experiment, doesn't mean it actually is!**

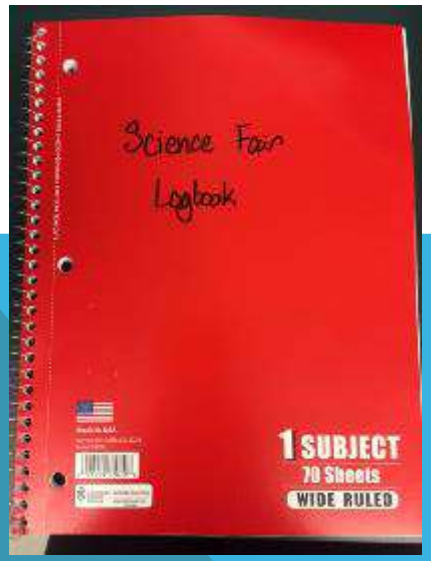
1. EXPERIMENT QUESTION

- **The experiment can't include:**
  - People (no opinions either)
  - Animals/insects
- **Pick an experiment that interests you, and one that you don't know the answer to**
- **Create a testable question**
  - **Example from page 18 of student science book:**

2. RESEARCH

- **Find background information on your topic (this will help you form your hypothesis)**
  - Use any resources that are available to you
- **Write your notes and sources in a notebook or lined paper stapled together**
  - You will keep notes in your logbook throughout the experiment and the logbook will be on your display board
  - *Do not put your name on it (so judges won't have a bias)





3. HYPOTHESIS

- **An educated guess on what you think will happen at the end of your experiment**
  - Include the independent variable (the one thing that changes)
  - Include the dependent variable (the result or effect from the independent variable)
  - State in If…, then… format

Identify and control variables.

Variables are things that can change. For a fair test, choose just one variable to change. Keep the other variables the same.

In this experiment there are 3 types of variables. The *independent variable* is the thing that you change. In this experiment, the surface is the independent variable. The thing that you must measure or observe is the *dependent variable*. Here, the dependent variable is how high the ball bounces. *Controlled variables* are things you keep the same so they do not affect the dependent variable.

Test other surfaces. Bounce the ball off of wood, carpet, and a rubber mat.

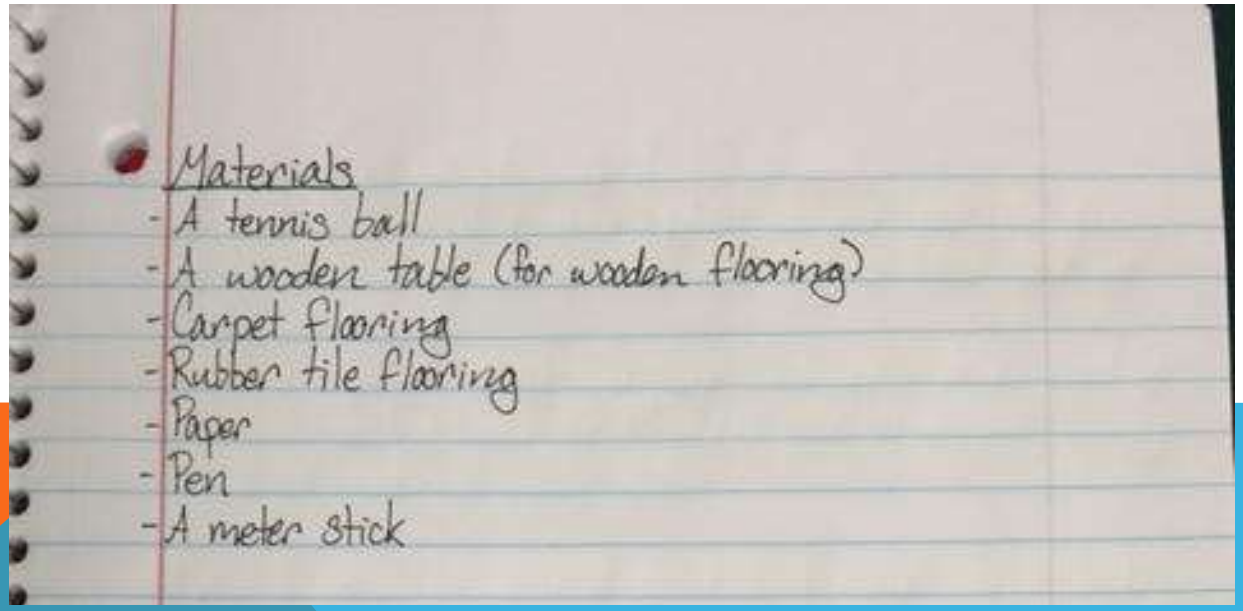
State your hypothesis.

A **hypothesis** is a possible answer to your question. It often predicts an outcome of an experiment. Write it as an *If . . . then . . .*

If I drop the ball, then it will bounce highest on the rubber mat, because the rubber mat is the most flexible.

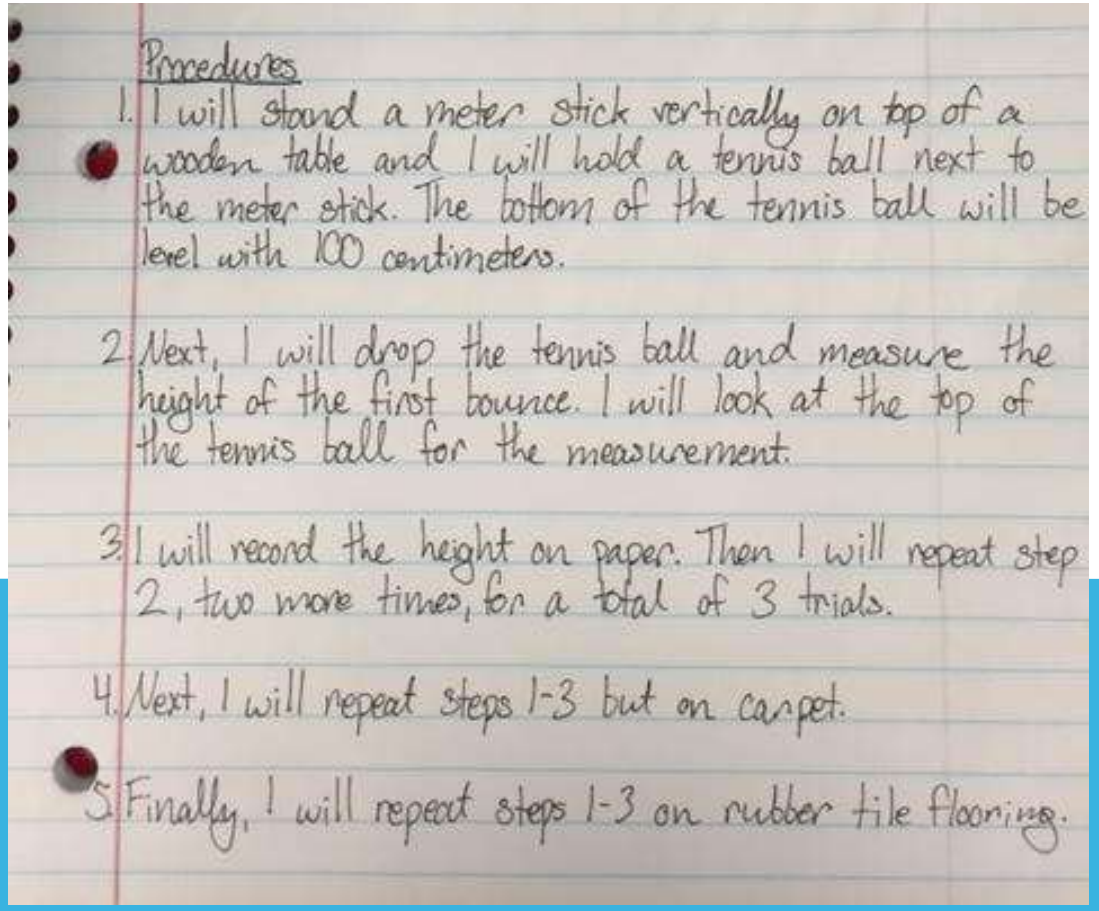
4. MATERIALS

- **List specific materials and quantities to conduct the experiment**
- **Use only *metric* units and measurements!**
- ***Write in logbook**



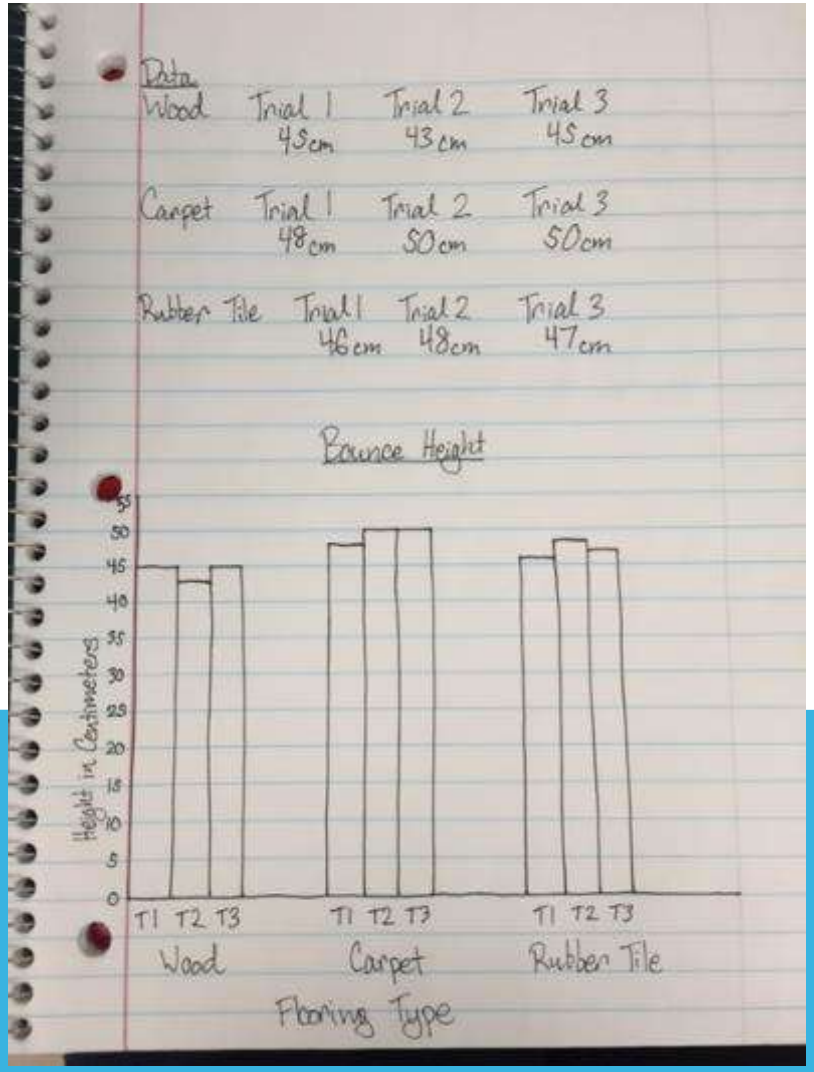
5. PROCEDURES

- **Create a numbered list of the exact steps you performed to conduct the experiment**
  - If your experiment requires trials, do at least 3
- ***Write in logbook**



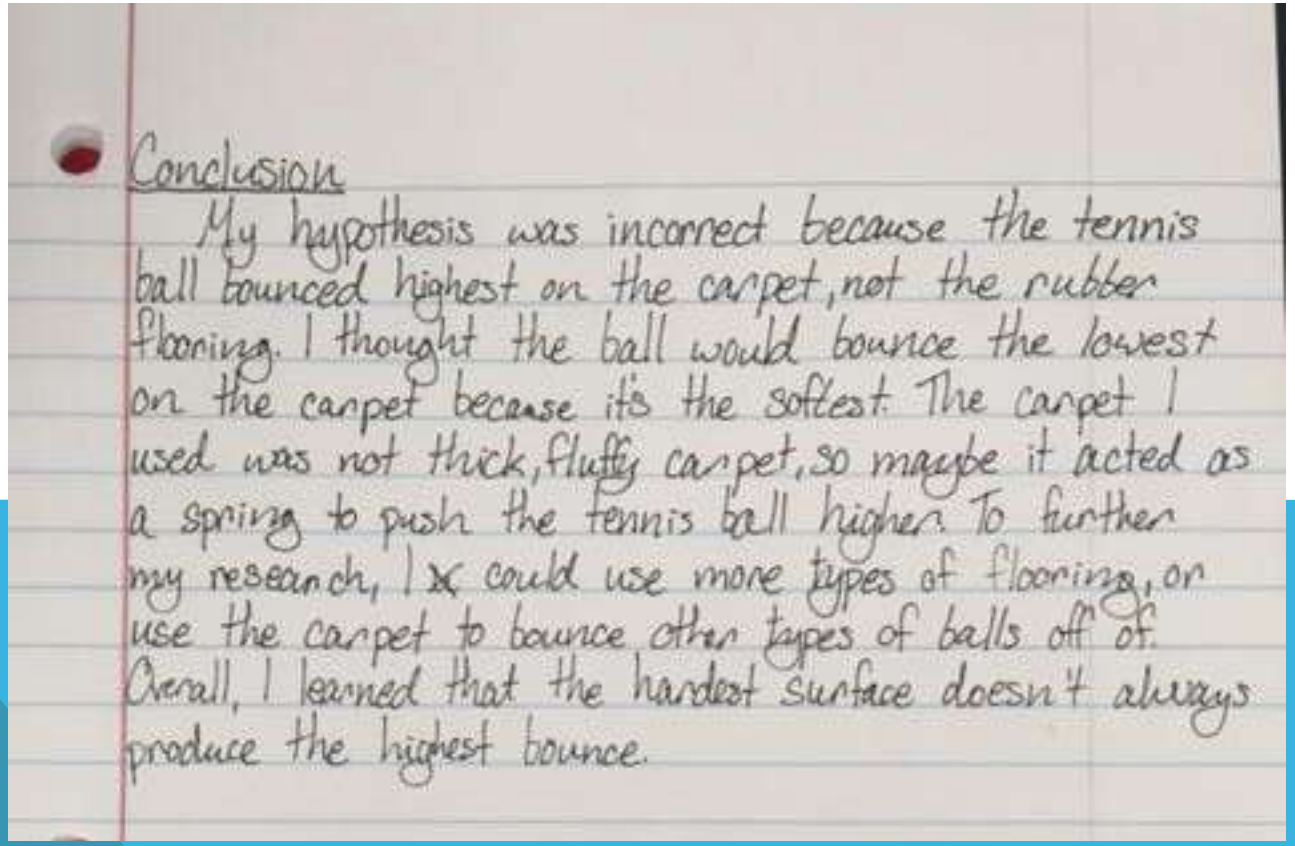
6. RESULTS

- **Write down what happened in your logbook**
- **Draw a graph of your data**



7. CONCLUSION

- **Compare your results to your hypothesis**
  - Explain why you were/weren't correct
- **What did you learn?**
- **Explain how you would do things differently if you had to do it again**
- ***Write in logbook**



Conclusion

My hypothesis was incorrect because the tennis ball bounced highest on the carpet, not the rubber flooring. I thought the ball would bounce the lowest on the carpet because it's the softest. The carpet I used was not thick, fluffy carpet, so maybe it acted as a spring to push the tennis ball higher. To further my research, I could use more types of flooring, or use the carpet to bounce other types of balls off of. Overall, I learned that the hardest surface doesn't always produce the highest bounce.

DISPLAY BOARD

Things to include on your display board

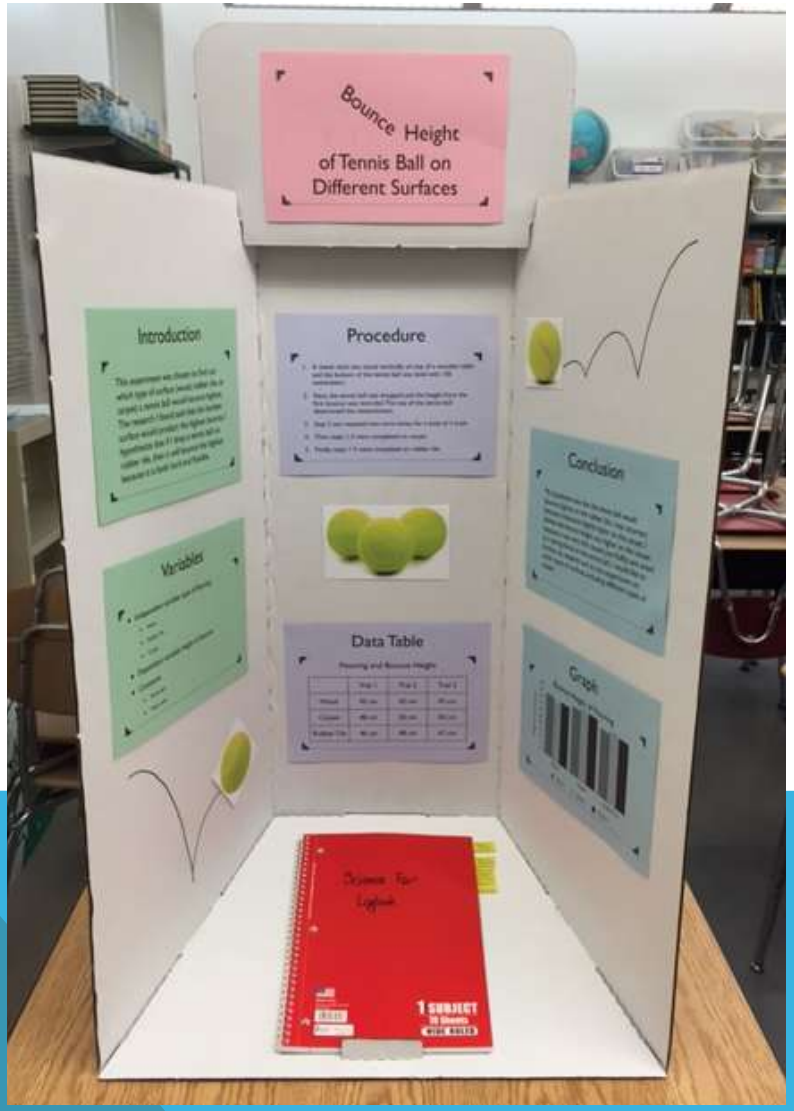
- **Title with the independent and dependent variable**
- **Introduction – why you chose this experiment, research, hypothesis**
- **Variables and constant(s)**
- **Procedures**
- **Data table**
- **Graph**
- **Conclusion**
- **Logbook with each section tabbed**
- **Neat handwriting or typed**
- **Creative design**
- **Optional - drawings or pictures (no faces)**

Project display boards need to be 56 cm wide, 96 cm tall, and 50 cm deep. Boards can be bought from school.

Don't include:

- **Your name or school name on the front**
- **Parts of the actual experiment**

BOUNCING BALL BOARD



DISPLAY BOARD

- **You can decorate and arrange your board however you want, as long as you have all of the information on there**
- **Student's name goes on the back or under the bottom of the board**