

Name: _____



The Great Egg Drop Challenge



Project Overview

Aim: To apply your knowledge of motion, forces & energy to building a container that can protect one egg as it falls from the 1st Floor of ASK.

Rules:

- Choose only one or two variables to test.
- You must not change the egg in any way (no tape on the egg, no nail polish on the egg, no hollow eggs...).
- The only materials you may choose from are posterboard, cardboard, cotton, tape, glue, socks, toilet paper, and straws.
- Maximum size: 12cm x 12cm x 12cm (excluding parachute, wings etc.)

You will write a lab report with all the standard sections:

1. **State the Problem:** write a question to address the variable
2. **Find Information:** look for ideas in books and on the internet
3. **Hypothesis:** write a hypothesis to include a prediction about the affect of your variable on the container
4. **Materials List and Procedure:** a complete list of materials, step-by-step procedure including what data you will collect and how you will collect it, and a diagram of your container
5. **Data Collection:** data table including weight, height & time with the correct units
6. **Analysis:** you must discuss distance, time, velocity (initial & final), acceleration, Potential Energy, Kinetic Energy and Work
7. **Conclusion:** did your results support your hypothesis? Did you make any changes or errors? What could you improve?

In this project, you should be trying to apply some of the knowledge about motion, forces & energy that you have learnt during this unit. This will require some thinking on your part about how each concept - **distance, time, speed, velocity (initial & final), acceleration, air resistance, gravity, potential energy, kinetic energy and work** - fit into this project. Your thinking process and the ways that you find to apply these concepts to the design of your container should be easily understood by anyone who reads your final lab report.

Your goal should be the show your understanding and application of the concepts you have learnt during this unit.

DUE DATES:

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| • Proposal including procedure, question, diagrams and sources | 22 nd – 27 th May |
| • Egg crate(s) built and dropped | 28 th & 29 th May |
| • Analysis & Conclusion | 30 th & 31 st May |
| • Lab Report | 3 rd & 4 th June |

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Things to do:

1. Find at least three resources from the internet that you can use to help in your design and protection of the eggs (**HW: 20th & 21st May**).
2. Make a list of materials you would like to use in your container (**22nd & 23rd May**).
3. Make a detailed diagram of what your container will look like (**22nd & 23rd May**).
4. Ask a question for your investigation. This should be very specific. For example, What is the effect of adding extra cardboard to the design of our egg crate? or How much cotton is best? (**22nd & 23rd May**).
5. Write a hypothesis (**22nd & 23rd May**).
6. Write your procedure for how to build your container, test your variable, and collect your data. Your data should include at least some information about distance, time, velocity (average and initial and final), acceleration, Potential Energy, Kinetic Energy, and Work (**24th & 27th May**).
7. Build the container (**28th & 29th May**).
8. Drop it from the top of the building. (You should try a few smaller heights as trials – without the egg! - before you drop from the building) (**28th & 29th May**).
9. Collect your data. This should include at least some information about mass, distance, time, speed, velocity (average and initial and final), acceleration, Potential Energy, Kinetic Energy, and Work (**28th & 29th May**).
10. Write a lab report which includes all the standard sections: Name, Date, Title, Question, Hypothesis, Materials List & Procedure (including data collection procedures), Results (Data table), Diagram of the Container, Analysis (discussion of results) and Conclusion (**Write Analysis & Conclusion 30th & 31st May**).

This lab report should tell about all your work. It should include any attempts you tried, and the reasons you stayed with them, or the reasons you decided to try something else. It should explain the concepts that you used to collect and analyze your data. It should show the data and demonstrate how the data helped you reach your conclusion. **Final Lab Report Due 3rd & 4th May!**