

Name: _____

Partner: _____

Operation: Egg Drop

Task: Plan and create an apparatus to help a normal sized egg withstand a fall from the upper commons and 5 meters without cracking (any visible signs of fracture count as a crack).

- Any egg that survives the 1 m fall without a crack will warrant +3 bonus marks on the final exam.
- Any egg that survives the 5 m fall without a crack will warrant +5 bonus marks on the final exam.

Details: Your apparatus can be no longer than 30 cm × 30 cm × 30 (cm not including additional features, such as, a parachute.)

Your egg must be contained within a zipper bag within the apparatus.

- If you are unsure whether your design fits the criteria please check with the teacher.

Background Information:

1. Be familiar with the following concepts: *velocity, distance, time, acceleration, and forces.*

Procedure:

1. Research Egg Drop projects, noting design and materials.

Materials that help to protect an egg:

Design elements that worked:



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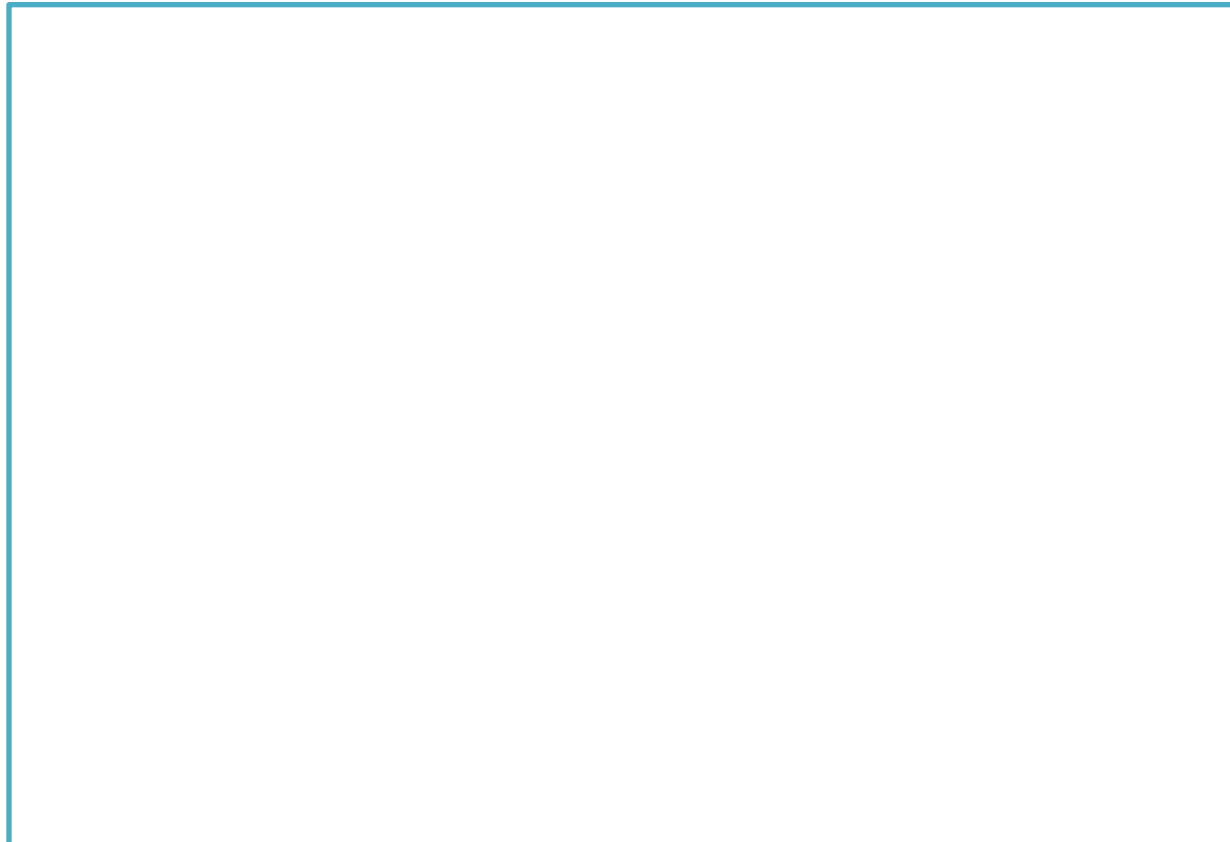
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2. Generate a hypothesis:**Hypothesis:**

To protect our egg so that it can survive a drop of 1 m and 5 m, we will use the following materials and use the following design:

Forces we need to consider for our project are:

The most important force for our project is:

3. Create a *fully labelled* design diagram:**4. Build the apparatus.****5. Test the apparatus (with a hardboiled egg).**

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Notes from the test:

6. Tweak any design flaws.

7. GAME DAY!

Analysis of Data

Answer the following questions. You will be graded on your answers, please use detailed responses. Remember, the number of marks indicate the number of important points / concepts to include in your answer. Each person is responsible to hand this in to your teacher.

1. Why did you create the design you did? Make sure to include words like *forces*, *acceleration*, *velocity*, & *impact* in your explanation. (/5)

a. What scientific principle was used when creating your design? Explain the principle. (/2)

Forces:

2. Summarize (in your own words) Newton's 3 Laws of Motion: (/3)

a. Law #1:

b. Law #2:

c. Law #3:

d. Which of these Laws had the greatest impact on this experiment? Why do you think so? (/2)

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3. Draw a Free Body Diagram (FBD) to show all the forces acting upon your egg *while it was falling*. (/4)

Conclusion:

Answer the following questions, considering the *whole experiment*.

1. Was your hypothesis correct? Explain any things that might have been different than you originally thought. (/3)

2. What errors might have taken place during the experiment to throw off your results? Think of at least 2. (/2)

3. If you did this activity again, what would you do differently next time? Why? (/5)
