Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 1/28-29/15

Physics/ \_\_\_\_\_Block UPC/ House\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**The Great Egg Drop**

**Your mission:**

*Today your goal is to design a container that will protect an egg, when dropped from extreme heights.*

*You must be able to explain how and why each component of your container contributes to your strategy of reducing impact force*

**The purpose:**

*Be able to explain and apply the 3 basic strategies for reducing the impact force of a moving object.*

**The parameters:**

*You will have 15 minutes to build a container with your group*

*You will drop your egg from a height of 3 meters, and if successful, from out the window.*

*You can use any materials you receive, but will not receive any new materials,* ***or a replacement egg***

*It should take less than 30 seconds to remove your egg, after the drop, and it must be removed completely to check it*

*You should design your container according to a strategy which you will outline below*

**The materials:**

1 bag 12 cotton balls

5 paper cups 10 cotton swabs

10 drinking straws 15 stirring straws

100cm masking tape 5 rubber bands (upon request)

**Initial Strategy:** As you consider the materials, recall that impact force, or any force, is the product of *mass\*acceleration*. Write an *initial strategy*  that considers as many methods as possible to reduce impact force:

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**Pre-drop analysis:**

Sketch your container in the space, below, and label it. An example is given, which used slightly different materials

|  |
| --- |
| Sketch of container |

 

Describe the container. For every part of your container, you need to be able to say

1. What you did to your container

2. How it figures into your strategy

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**Post-drop reflection:**Did your container actually follow the strategy you intended it to (did it fall the way you planned?). Explain:

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Restate your strategy.

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Describe if it was successful, and why/why not?

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What strategies did you see from other groups? Were any successful, and if so, why?

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Even if your egg drop container was successful, what would you do differently next time?

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**Exit Slip Questions:** (completed after discussion/lesson)

The picture below shows a man in Varanasi, India, resting on a bed of nails. Which *principle about impact force* allows him to do this without getting hurt, and why?



Hitting a homerun in baseball is difficult, because it requires a lot of force (why A-Rod took steroids). Most homeruns are hit off of fastballs. Which *principle about impact force* says that this makes sense, and why?



After Jayden Lucas tries to dunk a basketball, he bends his knees as he returns to the ground. Which *principle about impact force* says that he should bend his knees instead of just landing straight-legged, and why?