Project: The Effects of Gravity & Acceleration on Fragile Projectiles of Avian Origin (AKA “The Egg Drop”)

**Purpose:** To develop a container to either slow down the acceleration, change the direction of impact, lessen the effects of the impact, or otherwise alter the natural course of events. The event is the dropping of an egg from a high place.

**Requirements:**

Your container’s construction is limited to items from the following list in the quantities listed:

4 small paper cups (Dixie bathroom cups) OR 3 toilet paper rolls (not both—may not mix cups or paper rolls— cardboard roll NOT the toilet paper)

6 rubber bands (see display to show largest size possible)

1 sheet of 8-1/2 x 11 inch paper ( may NOT be tag board….)

10 straws (regular size)

25 wooden toothpicks

1 sandwich bag

string (one meter)

masking tape (.5 meters; normal width tape, not extra wide)

glue—only enough to secure joints or materials (not as a coating or for reinforcement)

small washers (for weights), no more than 20.

1 egg (chicken; NOT hardboiled)

Your container may not be larger than 12 inches by 12 inches by 12 inches. Your container may have extensions from the container, but they may not exceed the 12 inch size requirement. These extensions may NOT be parachutes nor streamers. Your container must contain an egg in the “natural” condition…that is…you may not alter the egg in any manner, by painting, wrapping, gluing, or anything that would make the shell more resistant to impact. The egg must be as large as a standard small chicken egg. It may be larger, but not smaller than this. The egg must be fresh, not hardboiled. All containers will be opened and inspected as to the contents and condition of the egg immediately after impact. All eggs will be immediately handed over to the instructor for inspection. Eggs cannot be returned You must submit a complete force diagram drawing of your contraption—done to scale on a separate sheet of paper. You must show all structures and label them. You must also include a one-page typed paper explaining:

the forces acting on your contraption

which force your contraption is trying to lessen or how your contraption changes the net effect of the force

how your contraption lessens this force, or what feature of your contraption lessens this force

how each of Newton’s three laws applies to this assignment in general and your contraption in particular

**Thus, you have 3 required parts of this assignment:**

1. Your container

2. A scaled diagram of your container, labeled with features and forces

3. A one-page paper as detailed above

Disclaimer: It is expected that you provide your own materials as listed above (including the egg). If in doubt if any material is acceptable, it is your responsibility to ask. If you foresee difficulty obtaining materials for any reason, it is your responsibility to inform Mrs. Tomb about these problems, WELL before the due date for the assignment.

Due Date for Your Container, Drawing, and Paper: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_