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**Egg Drop Mission**

**Mission:** You will work in groups of two to build an apparatus that will protect an egg as it is dropped from the second floor of Carson High School. You will need to utilize Newton’s Laws as well as the correlation between mass, weight, and gravity to build the most successful container.

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| * Students must work in pairs
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| * Eggs (Grade ‘A’ Large) will be supplied by teacher on day of drop – one egg per team
 |
| * The egg must be easily placed into and removed from the container
 |
| * A team is eliminated from the competition once the egg breaks
 |
| * The team must clean up the mess if their egg is broken
 |
| * All unbroken eggs MUST BE RETURNED to the teacher
 |
| * Balloons, filled with a gas less dense than air, are not allowed
 |
| * Parachutes (non-rigid structures) are not allowed
 |
| * Fins and wings (rigid structures) are allowed
 |
| * Substitution or replacement of parts is not allowed
 |
| * The container cannot have a mass greater than 30.0 grams
 |
| * Dress appropriately
 |
| * Teacher reserves the right to penalize or disqualify any entry
 |
| * Teacher will drop the egg, not the students who built the design. Keep this in mind!
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**Rules:**

**Materials:** Fill out the material order form with the number needed (No.) and total cost for that item (Cost \* Quantity). Add the totals to ensure you do not exceed $100. **YOU HAVE $100 TO SPEND. NO BONUS POINTS FOR SAVING $$!** *Use the materials carefully, as they will not be replaced if you damage them*.

|  |  |  |  |
| --- | --- | --- | --- |
| **Material** | **Cost ($)** | **No.** | **Total Cost** |
| Toothpick (10) | 2 |   |  |  |  |  |  |
| String (1 meter) | 2 |   |  |  |  |  |  |
| Popsicle sticks (5) | 4 |  |  |  |  |  |  |
| Paperclip (5) | 2 |   |  |  |  |  |  |
| Straw |  | 3 |  |  |  |  |  |  |
| Cotton ball (2) |   | 5 |   |   |  |  |  |  |
| Pipe Cleaner | 5 |   |  |  |  |  |  |
| Rubber band | 5 |   |  |  |  |  |  |
| Copy Paper  |   | 6 |   |  |  |  |  |  |
| Newspaper  | 20 |   |  |  |  |  |  |
| Glue (1 bottle) | 10 |  |  |  |  |  |  |
| Tape (1 meter) | 5 |  |  |  |  |  |  |
| **Egg (must buy)** | 5 |  |  1 |  |  5 |  |  |
| **Wax Sheet (must buy)** | 10 |  |  1 |  |  10 |  |  |
| Extra Run | 8 |   |  |  |  |  |  |
|  |  |  **Total Cost**  = $ |

**Group Scoring (100 pts possible):** Groups containers will be weighed before the drop. After the drop, groups will be scored based on the following:

The lightest survivor 100% of the possible points and the heaviest non-survivor receives 80% of the possible points. All others are ranked accordingly. Failure to comply, complete, or drop an egg will result in a zero. There will also be a checkpoint worth 25 additional points.

**Individual Scoring (75** **pts possible):** Individuals will complete extension questions (15 pts a piece – 60 pts total) and a partner rubric (15 pts total).

**Partner Rubric:** You and your partner will complete the following rubric. Both scores will be combined for a total of 15 pts. Your own score will be weighted 40% and your partners will be 60%. Example: Cam and Ram are partners. Cam gives himself 15 points and Ram gives Cam 10 points. Ms. McBride takes Cam’s 15 and multiplies it by 0.4 and his 10 from Ram and multiplies it by 0.6. [15 x 0.4 = 6 10 x 0.6 = 6] The scores will then be added together to make the total points (12) for this section.

|  |  |  |
| --- | --- | --- |
| **Category** | **Partner’s Name:** | **Your Name:** |
| Communication |  |  |
| Preparedness |  |  |
| Helpfulness |  |  |
| Respectful |  |  |
| Overall |  |  |
| Total: |  |  |

**Extension Questions:**

1 - Describe how your device protected the egg from cracking. What material was most important in your design? What material that you used was least effective?

2 - Knowing what you know now, how would you improve upon your design to make it work better on the next try? Draw a picture if it helps!

3 - What material would you use in another design that you did not use today, and WHY?

It can be a material that was not offered.

4 – What things in nature are similar to this egg drop experiment? What things that humans use are similar to the egg drop experiment? How do these things work? For example, the helicopter seeds that some trees use to disperse their seeds with the wind. What else is there?