

## *Mail-An-Egg Challenge*

### **Objective:**

To design and construct a protective structure inside a cardboard box using the least amount of materials possible which will prevent damage to an egg (or eggs) during the journey to another classroom.

### **Materials:**

Teams may use a standard cardboard box (not reinforced) with any combination of the following materials on the *inside* of the box: 1 standard weight 8.5" x 11" sheet of copy paper (not heavyweight); 15 drinking straws of any size; 15 popsicle sticks, wooden splints, and/or tongue depressors; 100 cm of string (cotton or nylon (less than 3 mm in diameter)); 100 cm of masking tape (less than 2.5 cm wide); and 5 rubber bands (all the same size).

The inside of the box must be lined with one layer of paper towels (flat, not crumpled). All materials, except the wooden splints & rubber bands, may be cut into smaller pieces. Each team may use any or all of the following materials on the inside of their container:

**NO OTHER MATERIALS ARE ALLOWED!** The score sheet must be included on the inside of the package, but cannot be used as a "protective structure".

### **Eggs:**

Each team may include up to three raw Grade A Medium or Large eggs. Eggs must be sealed in a plastic ziploc bag. No other materials are allowed inside the bag.

### **Mailing:**

Before sealing your container, include a completed score sheet inside your package. (It cannot be used as part of the package). Containers must be covered and sealed with plastic, then covered in acceptable mailing paper.

Packages must be labeled with TO and FROM addresses on one side of the package. They must be mailed via US Postal Service (Standard Service.) Choose the cheapest option available.

Teams are not allowed to write anything on the outside of the package except the To/From addresses. Teams cannot indicate any special handling requirements ("Fragile" or "Handle With Care") or anything that would provide clues to the contents of the package on the outside of their package.

### **Scoring:**

Team scores will be determined by dividing the volume of the container (in cubic centimeters) by the number of unbroken eggs. (Eggs will be considered broken if they have noticeable cracks or leave a wet spot on a paper towel.)

Teams may earn 100 bonus points for any of the 6 units (types) of material they did not use. For example, if your team did not use any straws or rubber bands, your group will have 200 points to lower your score.

NOTE: If you only use 10 cm of masking tape, it will count as if you used the entire amount.

The team with the **LOWEST SCORE** will be declared the winner!

$\text{SCORE} = (\text{Volume of container} / \# \text{ of surviving eggs}) - \text{Bonus Points}$

### *Examples:*

*Team Egg Mania used a box (12 x 12 x 10) with a volume of 1440 cubic centimeters. They mailed three eggs that survived without breaking. They did not use 1 out of the 6 units of materials and earned 10 bonus points. The final score is 450 points. SCORE:  $(1440/3) - 100 = 380$  points.*

*Team Scrambled Eggs used a box (10 x 10 x 15) with a volume of 1500 cubic centimeters. Only two out of 3 eggs mailed survived the trip. They did not use 3 out of the 6 units of materials and earned 300 bonus points. The final score would be 450 points. SCORE:  $(1500/2) - 300 = 450$  points.*

**SENDING TEAM - Complete this section**

**Team Name:** \_\_\_\_\_ **School:** \_\_\_\_\_

**Members (Name /Grade):** \_\_\_\_\_

**Volume of box:** \_\_\_\_\_ cm x \_\_\_\_\_ cm x \_\_\_\_\_ cm = \_\_\_\_\_ cm<sup>3</sup>  
(Round measurements to the nearest centimeter!)

**Number of eggs in package:** \_\_\_\_\_

**Materials Used:**

Check here for the materials you used in your package:

- One standard (8"x11") sheet of copy paper
- Up to 15 drinking straws of any size
- Up to 15 wooden splints, popsicle sticks, and/or tongue depressors
- Up to 100 cm of string (less than 3 mm in diameter)
- Up to 100 cm of masking tape (up to 2.5 cm wide)
- Up to 5 rubber bands (all the same size /thickness)

**SCORING TEAM - Complete this section**

**School:** \_\_\_\_\_ **Date Received:** \_\_\_\_ / \_\_\_\_ / \_\_\_\_

**Condition of box:**    Excellent    Good    Fair    Poor

**Number of surviving eggs in package:** \_\_\_\_\_ out of \_\_\_\_\_

**Bonus Points:** \_\_\_\_\_ (100 points for each unit of material NOT used at all.)