**Pasta Bridge Challenge**

Purpose: ***To construct the most cost effective bridge and lightest bridge, that holds the most amount of weight.***

Materials:

* Spaghetti
* Limited amount of glue

Rules:

* Your bridge must be able to span a 18 inch gap.
* Your bridge must be able to hold an empty ice cream bucket.
* Record the number of scoops of sand your bridge could hold without breaking.
* The bridge that can hold the most weight, made of the least materials, and is the lightest wins. We will subtract 1 scoop of sand per 5.0 g based on your boat mass.

You will work in ***groups of 3*** creating at least 3 variations of your boat and documenting the process. You will also discuss the cost effectiveness of creating each of your prototypes.

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Partner 1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Partner 2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Attempt #1 – Prototype 1**

Picture/Diagram of boat

1. Discuss whether this is a good/bad design, why or why not?

# of scoops of sand it held?\_\_\_\_\_\_

Total Mass of bridge? \_\_\_\_\_\_\_\_

Total Score?\_\_\_\_\_\_\_ (# of scoops – ( mass of boat / 5) )

**Attempt #2 – Prototype 2**

Picture/Diagram of bridge

1. Discuss whether this is a good/bad design, why or why not?

 # of scoops of sand it held?\_\_\_\_\_\_

Total Mass of bridge? \_\_\_\_\_\_\_\_

Total Score?\_\_\_\_\_\_\_ (# of scoops – ( mass of boat / 5) )

**Attempt #3 – Prototype 3**

Picture/Diagram of bridge

1. Discuss whether this is a good/bad design, why or why not?

# of scoops of sand it held?\_\_\_\_\_\_

Total Mass of bridge? \_\_\_\_\_\_\_\_

Total Score?\_\_\_\_\_\_\_ (# of scoops – ( mass of boat / 5) )

**Final Bridge**

Final Mass of bridge= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ g

4. The prototype that our group chose was #\_\_\_\_\_\_, because …….

5. What was the best thing about your design that you kept or created during this process?

6. What modifications did you created during the process?

7. What material(s) would you have wanted in creating your bridge, or would have improved your bridge?

**Presentations:**

You will make a final presentation (google docs, powerpoint, etc) that will show the following:

* + Pictures of your prototype and final bridge
	+ Data table showing what each bridge (prototype and final) could hold.
	+ Answers to all of the above questions (#1-7)