**Toothpick Bridge Project**

**Due: TBD**

**Task**: To build a toothpick bridge.

**Goal**: To build as strong a toothpick bridge as you can; you want as great a mass per toothpick as possible. We will test the strength of the bridge by seeing how much weight it can hold and continue to add weight until the bridge breaks.

**Graded on:** Following the guidelines and your effort into the construction of your bridge.

**BRIDGE GUIDELINES:**

**Construction of the Cardboard Surface:**

1. Build the bridge on a piece of cardboard 15cm by 35cm

2. Draw a river, 15cm wide, in the middle of the cardboard

3. Draw one 5cm square at each end of the cardboard, 2.5cm from

the river and 2.5cm from the edge. ***These squares are where the legs of your bridge will go. The only toothpicks that can touch the cardboard will be inside these squares. Toothpicks may be placed, punched, or glued into the cardboard for the construction of the bridge.***

4. Draw and cut out a **4cm square hole** exactly in the center of the

cardboard, in the river

**Construction of the Bridge:**

5. Use **only standard flat toothpicks**.

6. **Use a maximum of 500 toothpicks**! (In other words, no more

than 500 toothpicks allowed; that is the limit). *Keep a running*

*record of the total number of toothpicks used. Write that number on*

*the bottom of your cardboard.*

7. Use only white Elmer’s Glue. No glue gun or carpenter’s glue.

*Apply the glue sparingly and ONLY to join the toothpicks.*

8. The bridge must be at least 5cm high. This distance is measured

from the cardboard to where the deck of the bridge would be. A

boat that is 5cm high must be able to travel the length of the river

and at any part of the river **(so do not have any part of the bridge**

**hanging over the river less than 5 cm high).**

9. The bridge must be at least 4cm wide. A truck that is 3.5cm

wide must be able to travel the length of the road.

10. The bridge MUST have a hole at least 2cm by 2cm in the center

of the bridge. This hole MUST line up with the 4cm square hole in

the center of the cardboard. *We are going to have a wire holding*

*the bucket of weights placed through these holes.*

**BRIDGE CONTEST RULES:**

1.The bridge MUST be built according to the bridge building code.

All bridges not built to code will be eliminated.

2. The bridge will be tested for strength by placing a wooden bar

across the middle of the bridge to hold a bucket suspended from

this bar. Weights will be added to the bucket. The last weight that

the bridge supports without the bar touching the cardboard in any

spot is the weight recorded for the strength of the bridge.

***\*\*\*Then, we will divide this mass by the total number of***

***toothpicks used in order to find the bridge’s mass per***

***toothpick.***

3. In addition to the strength of the bridge, extra points will be

rewarded for creative/innovative designs, decorative designs, and

other extraordinary efforts and construction of fantastic bridges.

4. A homeroom advisory will be used for a bridge showing and all

7th grade bridge contest (for the 3 categories listed below), before

they are broken so you can appreciate all of the clever and great

bridges that all of the 7th graders have made. You will get to vote

for your favorite bridges in each of the following four categories:

**a) Best least number of toothpicks used**

**b) Best architectural design**

**c) Best decorated theme**

**Advice**:

‐ Do not wait until the last minute to build your bridge.

Building these toothpick bridges takes time.

‐ Possibly use wax paper to build your bridge on so the

toothpicks do not get stuck to a table or the cardboard

‐ Have a plan before you start. THINK through what you want

to do. You are allowed to do some research to come up with a

design that you believe will work well. In addition, below are

some examples of “Truss” bridge designs.

‐ Have fun!





