**Allen Kung and David Dong**

 **Block D**

**GENERAL LAYOUT FOR AN EXPERIMENTAL DESIGN DIAGRAM**

**TITLE**The Effect of cups of water on truss bridge

**HYPOTHESIS**If 10 cups of water can put under the top of the truss bridge, then the truss bridge can hold more weight because the water was not heavy, so we can put lots of cups of water on it until it fails.

**INDEPENDENT VARIABLE**cups of water

**LEVELS OF INDEPENDENT VARIABLE AND NUMBERS OF REPEATED TRIALS**

|  |  |  |  |
| --- | --- | --- | --- |
|  Control Group | Variable 2 | Variable 3 | Variable 4 |
| Cup of water | Pratt truss  | Waddell A truss | Fink truss |

**DEPENDENT VARIABLE AND HOW MEASURED**

**Weight of cup of water**

**CONSTANTS/CONTROLS (Number of constants depends on experiment)**

1. 220 Bamboo sticks

2. two white glue

3. ruler

4. utility knife

**Materials**

**1.bamboo sticks**

**2.white glue**

**PROCEDURE:**

**Data:**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **30 sec** | **60sec** | **90sec** | **120sec** | **150sec** | **180sec** | **210sec** | **240sec** |
| **Fink truss bridge (g)** | **8.5 g** | **15.6 g** | **20.5 g** | **25.4 g** | **30.8 g** | **39.1 g** | **50 g** |  |
| **Pratt truss bridge (g)** | **8 g** | **15 g** | **21.3 g** | **25.3 g** | **30.5 g** | **40.25 g** |  |  |
| **Waddell A bridge (g)** | **9 g** | **16.1 g** | **22.3 g** | **26.7 g** | **32.5 g** | **41.95 g** | **50.4 g** | **90.5 g** |
| **Howe truss bridge (g)** | **9.1 g** | **16 g** | **23.35 g** | **27 g** | **31.3 g** | **45 g** | **51.6g** | **90g** |

**CONCLUSION/DISCUSSION: my hypothesis was wrong, the long distance truss bridge cannot hold much water. The short and small truss bridge can hold more weight. The Howe truss was short and small. So it can have a lot of cups of water under it. Also the weight of a cup of water was around 8.5 g. So every bridge can only have 8-9 cups of water. Our bamboo sticks were too thin and skinny, the long, strong bamboo sticks can build a hard and strong bridge. The weak part was the middle of the bridge, because when lots of cups of water put on it, it was lack of support, it collapsed. Also I can put more cups of water on our truss bridges, but the white glue can not touch water so some bridges fail because of water. The bamboo stick was a best choice. Also we can use more bamboo sticks to make it stronger and harder. When the cup of water put on the truss bridge, the power was big. Because we need to put them in a right spot. I thought this experiment was really helpful to me and my partner.**



