Paper Tower Tech Report

**1.) Define the problem. Use your own words to describe the problem you are attempting to solve by stating criteria. How should the parameters be considered in your design?**

The challenge is to build a paper tower using standard printer paper and is able to at least hold a Styrofoam cup and itself. The scoring is based on this point scale below.

**Point Values:**

1pt per gram sustained

10 pts per cm2 of paper not used

100 pts per cm of height from tower base

So, the obvious solution is to build the highest tower possible, completely ignoring how many grams the tower can hold and ignoring saving material.

**2.) How did you consider the constraints given to you in this design process? How did these constraints affect your design decisions?**

I focused on building a structure that will only support itself and a Styrofoam cup. I plan to use all the paper available. I needed to make something that would take advantage of the strength of cylinders and the stability of triangles.

**3.) How did your paper tower perform overall compared to the rest of the class?**

**Using normalized units like grams/height [g/cm] or height/paper used [cm/cm2] state strengths or weaknesses of your design. Would there be anything you would redesign of your paper tower?**

My tower was the tallest at about 53cm, but I used all of the paper. I didn't realize that saving paper would be worth so many points. I designed the tower so it was able to support a cup, but anything more than that will crush the tower. If I were to build another tower, the design will focus on saving as much building material as possible. There was a miscommunication between me and my builder, and my design was much too complicated, so the structure couldn't support itself. It took me over 2 hours to build my design and my builder only had about 30 minutes to construct the tower.

**4.) What part of the process did you find the most rewarding – designing the tower or building the tower? Why?**

I enjoy both aspects, but if I had to choose I would choose designing. Designing something is very cheap and effective; It only requires a pencil, paper, and creativity. On the other hand building requires purchasing materials, and fiddling around with intricate tools, and being frustrated when you don't have own the right tool for the job, so you have to start another side project to design and build a tool.

**5.) How closely did your drawing match your completed construction?**

I'm not an artist, my drawing was gibberish, so I used the paper I drew on to construct a tower. On the other hand, the image in my head was spot on.

**6.) Which, if any, elements of another tower design would you consider incorporating into your tower design? What effect would the change have?**

I saw someone with a very tiny simple triangular tower. It's design was focused on saving as much paper as possible. I want to design something similar, but even smaller. After all, this design is scalable and I just need my base to be smaller than my height, and support a Styrofoam cup.