**Activity: Straw Tower**



**Can you build a Tower that holds Tennis Ball, using 50 straws and some tape?**
A Tower must support its own weight (the dead load) as well as the weight of the tennis ball (live load), ***without help from the builders***, for at least 1 min. The tennis ball must be placed at the highest point of the tower. Tape cannot be used to secure the tower to the table or any other surface. Tape is only to be used for reinforcement at joints, not as a primary building material. Your tower must be at least 30 cm, ***but the higher it is the better your grade will be***. Straws may be bent, cut, slit, or slid directly into each other.

**What You Will Need**
• Straws (50)

• Masking tape
• engineers notebook
• ruler/ meter stick
• scissors and exacto knives

**Procedure**

1. You will be working in a group of 2, but with a different partner as last time.
2. Send someone to get your supplies
3. You will follow the engineering design process that we have learned to design your tower and record your ideas. Listed are all of the sections that must be included in your engineers notebook. ***ALL STUDENTS WILL TURN IN THEIR OWN FOR GRADING!!***

|  |  |  |
| --- | --- | --- |
| Sections to be included in your notebook | What is required | Check here when completed |
| Title Page | * Title
* Table of contents
 |  |
| Design Brief | * Description of project
* Criteria/constraints
	+ EX: must be 30 cm
	+ Made of straws and tape
	+ etc
 |  |
| Generate concepts | * Research online
* Record sources
* Brainstorm and Sketch
	+ Annotated sketches
	+ Label sketches
	+ Can be parts or whole
	+ **Must have multiple ideas**
* Decision matrix/pros cons
 |  |
| Develop solution | * Test multiple ideas
* Create a table to show how each performed
* Select a design
 |  |
| Construct Prototype | * Full annotated sketch with scale
* Close ups of specific/unique design features
 |  |
| Test Prototype | * Call over Mr. Green for a final test
* Analyze what worked and what didn’t and create an entry to communicate this
 |  |

Straw Tower Rubric

|  |  |  |
| --- | --- | --- |
| **Section** | **Criteria** | **Points** |
| Legal Documentation | * Every page includes consistent page number that is referenced in the table of contents
* Every page is signed by author and a witness
* Every page is dated
 | /10 |
| Neatness | * Notebook is neat and legible
* Sketches show signs of effort and use of ruler
* Writing does not cross lines
 | /10 |
| Title page/Table of contents/Design brief | * All items are included and complete
 | /10 |
| Research and generate concepts | * Evidence of multiple ideas
* Evidence of research and analysis of ideas
 | /20 |
| Develop Solution | * Includes comparison table for each design and mass held
* Technical sketch of final design
 | /10 |
| Post Test Analysis | * One entry analyzing what worked with the design and what failed on the tower, including ideas for fixing the problems
 | /10 |
| Height of tower | TBD | /10 |
| Total Score | /80 |