**Engineering Challenge: Ping Pong Ball Tower**

**Student Instructions**

**Materials and cost:** (each team is given the items below)

|  |  |
| --- | --- |
| **Material (can be purchased from store)** | **Cost** |
| Spaghetti Stick | $1 each |
| Small Marshmallow | $.50each |
| Transparent Tape | $.10 per cm |

**No-Cost Materials:**

|  |  |  |
| --- | --- | --- |
| Ruler | Scissors | 1 Ping Pong ball |

***Objective:***

You and your group will design and construct a tower with the objective of holding a ping pong ball up off the table top. Your tower must be free-standing (it cannot be taped or attached in any way to the table top). You can use any materials listed above, but every item bought from the store will cost your group. There are bonus points awarded (see below) for keeping your costs down.

Upon completion of your tower, **you** will have to measure the distance between the bottom of the ping pong ball and the table top and record this distance on your lab sheet in front of Ms. Perry. She will then initial your paper, and legitimize it for a score.

Extra credit will be awarded according to the ranking of your points compared with your classmates. For example, top scoring group might earn 20 extra credit points (***split between the members***), next group earns 16, next group 12, etc.

Group members’ names:

|  |  |  |
| --- | --- | --- |
|  | Height Recorded | Ms. Perry’s Initials |
| 1st height measurement |  |  |
| 2nd height measurement |  |  |
| 3rd height measurement |  |  |
| 4th height measurement |  |  |
| 5th height measurement |  |  |

***Scoring:***

Your group earns 1 pt. for every cm recorded for the height of your tower, and earns bonus points for keeping your cost low, as determined by the chart below.

|  |  |
| --- | --- |
| Bonus Points for Keeping Your Cost Down | |
| Cost | Bonus Points |
| Under $10.5 | 10 |
| $10.51-$11 | 9 |
| $11.01-$11.5 | 8 |
| $11.51-$12 | 7 |
| $12.01-$12.5 | 6 |
| $12.51-$13 | 5 |
| $13.01-$13.5 | 4 |
| $13.51-$14 | 3 |
| $14.01-$14.5 | 2 |
| $14.51-$15 | 1 |
| Over $15 | 0 |

|  |  |  |
| --- | --- | --- |
| **Cost of Tower** | | |
| **Building Item** | **Number of that Item** | **Cost of Construction Material** |
| Spaghetti Sticks |  |  |
| Marshmallows |  |  |
| Cm of Tape |  |  |
| **Total Cost of Tower** | |  |
| **Ms. Perry’s Initials** | |  |