**Solar Cooker Challenge**

**Objective:** *To demonstrate an understanding of factors that affect the heating of Earth’s surface by designing & constructing an effective solar cooker.*

**Evaluate:**

*Share your prototype with peers and receive feedback regarding how well your prototype meets your client’s needs. Make the necessary changes to the prototype.*

**Test:**

*Once you have a “final” prototype, build and test your actual device. Collect data to determine how successful your device.*

*\* Extension: Identify commonly cooked foods in your country. Prepare and cook one local food item with the designed solar cooker.*

**Rubric**:

Prototype design \_\_\_\_\_\_/10

Prototype rationale \_\_\_\_\_/5

Creativity \_\_\_\_\_\_/5

Productivity & Teamwork during class time \_\_\_\_\_\_/10

Data collection \_\_\_\_\_/5

Product reflection \_\_\_\_\_/10

**Prototype**

**- I**llustration of proposed solar cooker

- Be sure to include labels & dimensions of your design

**Prototype Rationale –** *explain why this design will be successful in maximizing the absorbed radiation and effectively cooking food.*

**Solar Cooker Competition Data Collection**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Time (min.) | Voltage (volts) | Temp.  (inside cooker) | Light Intensity(lumens) | Light Density  (amount of light /area) |
| **0** |  |  |  |  |
| **10** |  |  |  |  |
| **20** |  |  |  |  |
| **30** |  |  |  |  |
| **40** |  |  |  |  |
| **50** |  |  |  |  |
| **60** |  |  |  |  |
| **70** |  |  |  |  |
| **80** |  |  |  |  |
| **90** |  |  |  |  |
| **100** |  |  |  |  |

Maximum Internal Temperature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Maximum Light Absorption \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Maximum Light Density \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Time Needed to Complete Cooking \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Design Challenge Reflection:**

*Consider the factors affecting the heating of Earth’s surface, the solar cooker you created, and the results the solar cooker yielded.*

* *Write a reflection of this process and how effectively you were able to design and construct an effective solar cooker.*
* *Refer to the data to support your response.*
* *Describe ways in which you would modify your design in the future to better design an effective solar cooker.*