**Introduction to Energy**

**Directions**:

1. You will complete a series of investigations about energy
2. Each station has a set of directions and questions- DO NOT WRITE on the station directions
3. Record all of your observations and answers on this document
4. Make sure you match the Station Number to the correct area of this document as you may not go in order

**A. Station One-Part Three: Toys**

**Questions**

What forms of energy are demonstrated?

What energy transformations occur in each toy?

**Hypothesis**

How does each toy transform energy? Include the forms and a reason why you think this.

| Toy Car |  |
| --- | --- |
| Balloon |  |
| Yo-Yo |  |

**Observations**

Record the energy transformation you observe in each of these toys

|  | Energy Transformation Observed |
| --- | --- |
| Toy Car |  |
| Balloon |  |
| Yo-Yo |  |

**B. Station 3: Part One: Sunlight and Shade**

**Questions**

How does direct light affect the temperature of an object?

What energy transformations occured?

**Hypothesis**

1. identify the variables in the station after reading the instructions

| Independent Variable (manipulated) |  |
| --- | --- |
| Dependent Variable (responding) |  |
| Controlled Variables (constants) |  |

2. How does direct light affect the temperature of an object?

| Hypothesis (make sure to explain why) |
| --- |
|  |

**Data and Observations**

|  | Starting Temperature | Temperature at 5 min | Temperature at 10 min | Temperature at 15 min | Overall Change in Temperature |
| --- | --- | --- | --- | --- | --- |
| Direct Light |  |  |  |  |  |
| Shade |  |  |  |  |  |

**C. Station 3: Part Three: Radiometer**

**Questions**

How does light affect a radiometer?

What energy transformation(s) occur?

**Drawing**

|  |
| --- |

**Data**

*Describe what happens when you change the light*

*(full, half, 1 m away, etc- you choose the increments)*

| **Amount of Light** | **Observations** |
| --- | --- |
|  |  |
|  |  |
|  |  |
|  |  |

**D. Station Three- Part Three: Solar Panel**

**Questions**

How does the angle of the light affect the amount of electricity produced by a solar panel?

What energy transformation(s) occur?

**Hypothesis**

1. identify the variables in the station after reading the instructions

| Independent Variable (manipulated) |  |
| --- | --- |
| Dependent Variable (responding) |  |
| Controlled Variables (constants) |  |

2. How does the angle of the light affect the amount of electricity produced by a solar panel?

| Hypothesis (make sure to explain why) |
| --- |
|  |

**Data**

| **Angle of PV Cell** | **Observations** |
| --- | --- |
| 0 |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

**E. Station Five- Part One: Glow Sticks**

**Questions**

How does the temperature affect the rate of the chemical reaction in a glow stick?

What energy transformation(s) occur?

**Hypothesis**

1. identify the variables in the station after reading the instructions

| Independent Variable |  |
| --- | --- |
| Dependent Variable |  |
| Controlled Variables |  |

| 2. How does the temperature affect the rate of the chemical reaction in a glow stick?  Hypothesis (make sure to explain why) | **Drawing** |
| --- | --- |
|  |  |

**Data**

| **Glow Stick** | **Observation** | **Brightness Rank** |
| --- | --- | --- |
| Cold Water |  |  |
| Hot Water |  |  |
| Room Temp |  |  |

**F. Station Six-Part Two: Hand Generated Flashlight and Motors**

**Questions**

How does a motor compare to a hand generated flashlight?

What energy transformation(s) occur?

| **Drawing of Flashlight** | **What did you notice?** |
| --- | --- |

| **Drawing of Motor**  **Disassembled** | **What did you notice?** |
| --- | --- |
| **Drawing of Motor**  **Assembled** | **What did you notice?** |