Group No./Name: \_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_

**Activity 1 - Role assignment**

**Assign different roles within your group. The responsibilities of different roles are listed below.**

| Designer: The designer is responsible for developing the initial sketch/design of the solar Lamp.    The designers for my group are:  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. | Prototype developer: The prototype developer is responsible for building the solar lamp prototype.    The prototype developers for my group are:  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. |
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**Activity 2** - **Solar Lamp research**

Individually, research one of the topics. Share with your group after that

Solar panels: [Link](https://energyeducation.ca/encyclopedia/Solar_panel_orientation#:~:text=In%20the%20northern%20hemisphere%2C%20the,direct%20light%20throughout%20the%20day.) [Link 2](https://www.ecosoch.com/solar-panel-angle/) [Link3](https://www.solarsquare.in/blog/types-of-solar-panels/)

Different types of LED bulbs: [Link](https://ledhut.co.uk/blogs/news/the-definitive-guide-to-led-light-bulbs-and-spotlights#:~:text=Fundamentally%2C%20there%20are%20three%20different,%E2%80%93%20DIP%2C%20SMD%20and%20COB.)

**Activity 3 Material Selection**

The materials you can use to build your group’s solar lamp are below.

* Mini breadboard
* Battery holder
* Rechargeable battery (18650 type)
* LED bulbs
* Jumper wires
* Cellophane paper
* Milk cartons or gallon jugs

| List any extra materials (recycled) that you plan to use: |
| --- |

**Activity 4: Design**

Fill out the table below to begin your primary solar lamp design.

| Type of lamp (Table, floor, hanging, flashlight, etc.) |  |
| --- | --- |
| Type of bulb used |  |
| No. of LED bulbs used |  |
| Type of connection (Series or parallel?) |  |
| Ratings of the LED bulb (Power & voltage) |  |
| Ratings of the battery (voltage & capacity) |  |
| Type of solar panel used |  |
| Location of the solar panel |  |
| Materials used for the casing |  |
| Control mechanism |  |

**Activity 5: Diagrams**

Draw a rough circuit diagram of your solar lamp. (Show the connections between the different components, i.e., bulb, solar panel, and battery.)

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Draw a rough sketch of your design. (Show the structure of the casing and the placement of different components)

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**Activity 6: Calculation**

Calculate the time the battery can last based on different factors (LED ratings, no. of bulbs, battery capacity, series/parallel). Assume the battery is at 100% capacity initially.

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