**Life-Cycle Assessment INDIVIDUAL Worksheet**

**~Environmental Impact of Cupcakes~**

**Record all stages (calculated with class answers):**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Throw Away Paper Liner (Landfill)** | | | | |
| **Stage** | **Energy Use** | **Unit** | **GHG emissions** | **Unit** |
| Wet ingredients |  | kJ |  | g CO2e |
| Dry ingredients |  | kJ |  | g CO2e |
| Baking materials |  | kJ |  | g CO2e |
| Oven/baking |  | kJ |  | g CO2e |
| Frosting |  | kJ |  | g CO2e |
| Disposal (landfill) |  | kJ |  | g CO2e |
| **Total (12 cupcakes)** |  | kJ |  | g CO2e |
|  |  |  |  |  |
| **1 cupcake** |  | kJ |  | g CO2e |

**Impact Analysis**

1. How much **energy** is needed to produce **12** cupcakes with paper liners disposed in a landfill?  
   (Be sure to include units.)

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1. How much **energy** is needed for **1** cupcake? (*Hint*: The answer from “A” is for 12 cupcakes).

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1. How much **greenhouse gas emissions** are produced from making **1** cupcake   
   with its paper liner disposed in a **landfill**?

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**Record all stages (calculated with class answers):**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Compost Paper Liner** | | | | |
| **Stage** | **Energy Use** | **Unit** | **GHG emissions** | **Unit** |
| Wet ingredients |  | kJ |  | g CO2e |
| Dry ingredients |  | kJ |  | g CO2e |
| Baking materials |  | kJ |  | g CO2e |
| Oven/baking |  | kJ |  | g CO2e |
| Frosting |  | kJ |  | g CO2e |
| Disposal (compost) |  | kJ |  | g CO2e |
| **Total (12 cupcakes)** |  | kJ |  | g CO2e |
|  |  |  |  |  |
| **1 Cupcake** |  | kJ |  | g CO2e |

1. How much **energy** is needed to produce **1** cupcake if you **compost** the paper liner?

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1. How much **greenhouse gases** are emitted from **1** cupcake if you **compost** your cupcake liner?

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**Improvement Analysis**

What could you change in the cupcake life cycle to improve its impact on the environment?   
Describe your improvements below. Cite evidence from your calculations to explain your improvements.