

Name: _____ Date: _____

Product Development and the Environment Activity – Life Cycle Assessment Worksheet

Product that you are assessing:



Inventory analysis

Step 1 Materials Acquisition: Each material in a product has its own life cycle of use and waste. List all the materials (metal, plastic) in your product. One point is assigned for each different material in the product.

Type of Raw Material	Points
	1
	1
	1
	1
	1
Total Points	

Step 2 Materials Processing: Most metals and plastics must be processed before they are in a useful form for manufacturing. Again, list the metals and plastics in your product. Assign one point for each material.

Plastics or Metals in the Product	Points
	1
	1
	1
	1
	1
Total Points	

Step 3 Manufacturing: All of the processed materials in your product must be formed and shaped into something useful for the product (like a metal screw or a plastic lever). List the

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different parts and pieces of your product that have been manufactured here. Assign one point for each part.

Different Parts and Pieces in the Product	Points
	1
	1
	1
	1
	1
	1
	1
	1
Total Points	

Step 4 Packaging: How is your product packaged for sale? Mark the boxes that correspond to the packaging of your product here. Add of the total points for the packaging of your product.

Packaging	Points
None	0
Paper or cardboard packaging only	5
Plastic packaging only	15
Plastic and cardboard packaging	10
Styrofoam or rubber packaging	15
Instructions sheets included separately in package	5
Total Points	

Step 5 Transportation: Once a product is packaged, it needs to be transported to somewhere else for storage or sale. Transportation by trucks, planes or boats require fuel for energy and contribute to air pollution. Mark the box if your product uses transportation in any way. List the total points for the transportation of your product

Transportation	Points
Yes, by plane, truck, or boat	15
None	1

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Total Points	
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Step 6 Use of the Product: all products have an amount of time that they can be used and reused. Check the box below that describes how long your product can be used.

Use of Product	Points
Product can be used once	15
Product can be used for 5 years	10
Product can be used for over 10 years	5
Total Points	

Step 7 Disposal: Once a product has been used, it can be disposed of or recycled. Check the box which describes your product below.

Parts of the Product Made from Plastics or Metals	Points
Product must be thrown away	15
Some product materials can be recycled	5
All of the product and product materials can be recycled	0
Total Points	

Impact analysis

Add up the points for your product to determine its overall impact on the environment:

Total Points	
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How did the overall environmental impact of your product compare with another product in your class?

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4. There are several types of engineering life cycle assessments. Read the three descriptions below.

Cradle-to-Grave: The full life cycle of a product from raw materials (cradle) to the disposal phase (grave).

Cradle-to-Gate: A partial product life cycle assessment that investigates a product from raw materials (cradle) to the gate of the manufacturing facility (gate) before transportation to the consumer.

Cradle-to-Cradle: A product life cycle assessment, where the end phase includes recycling of the product into a new product. The recycled product can be identical or different to the original product.

Which description best fits your product? Why?
