




## ACTIVITY 6 OF 8

# Examining Everyday Objects

 Synthesis  30:00m

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All items begin at some point, somewhere and end at another point, somewhere else. A life-cycle analysis is a method used to look at the potential environmental impacts of a commercial item. This is done by considering each step of a product's life including the raw material extraction, manufacturing, transportation, utilization and disposal of the object.

### QUESTION 1

Create a basic flowchart. Begin with the name of your item then use a dash and the greater than sign (->) to include the energy used at each step of the way. You may need to look up additional information about how the item is made to complete the flowchart.

### Suggested Response

Answer will vary but could include the following:

Energy to go to store to purchase item → energy to run the store and the payment system in store for the item → energy to get the item to the store → energy to run the factory that manufactures the item → energy to get the raw materials to the factory -> energy to obtain the raw materials, likely from various sources → energy to make, grow, etc the raw materials for the item

### QUESTION 2

Energy needs vary between emerging countries, developing countries and developed countries. Compare and contrast the amount of energy used in various aspects of daily life for those living in countries with different stages of development.

### Suggested Response

Those in more developed countries will use more energy in all aspects of life, including transportation, technology, heating and cooling. Most of the energy used in developed countries would be processed in some way and often transmitted to the end-user.

Those in developing countries have many modern conveniences but they are not reliable. Services like healthcare are less accessible.

Those in emerging countries may use more direct forms of energy such as using biomass or other fuels for cooking and heating.

No matter the status of the country, all humans need energy to live but how much energy and how we obtain that energy will vary depending on the stage of development. Citizens in developed countries use thousands of times more energy per person than in emerging economies.

$330 \text{ million people} \times (2 \text{ pairs of jeans/person}) \times (3 \text{ gallons of gasoline/pair of jeans}) = 1.98 \times 10^9 \text{ gallons of gasoline}$

### QUESTION 3

**In the video, Dr. Tinker mentions that the production of a pair of blue jeans would use energy equivalent to three gallons of gasoline. Assuming the U.S. population to be 330 million people and assuming each individual owns just two pairs of jeans, how much fuel would be required to produce this number of blue jeans? Show your work in the space below, including units on all number values.**

### Suggested Response

$1/\text{pair jeans} = 3 \text{ gallons gas}$

$2/\text{pairs jeans} = 6 \text{ gallons gas}$

$330 \text{ million people} \times 6 \text{ gallons gas} = 1.98 \text{ billion gallons of gas}$

### QUESTION 4

**It is also mentioned that a weekly shopping trip would use the equivalent of twenty-two gallons of gasoline. How many gallons of gasoline would be needed to grow, produce, transport, sell and bring home the groceries for a family of three for an entire year?**

**Suggested Response**

1 family x 22 gallons gasoline/weekly shopping trip x 52 weeks/year = 1144 gallons

**QUESTION 5**

**How many gallons of gasoline would be needed each year for the entire population of the U.S., assuming three people per household?**

**Suggested Response**

330 million people x household/3 people x 22 gallons/household weekly x 52 weeks/year = 125,840,000,000 gallons.

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