

APES Unit 1 Review Sheet:

Part 1: Surface Layer

1. What are the six main human impacts that are affecting the environment? Which one drives all of the others?
2. What are the three most populated countries?
3. After which revolution did the globe experience the highest increase in population size?
4. Define the following terms:
 - a. Sustainability
 - b. Renewable resources
 - c. Nonrenewable resources
 - d. Ecological footprint
 - e. Tragedy of the Commons
 - f. **Ecosystem services (know the 4)**
 - g. Environmental Science
 - h. Earth Overshoot
 - i. Biodiversity
5. Provide examples of nonrenewable resources. Do the same for renewable resources.
6. Identify examples of the tragedy of the commons
7. What is IPAT? What happens when you manipulate the equation?
8. Which countries have a higher ecological footprint? Why?
9. What are the three things necessary to operate sustainably?
10. Describe what happened in the Lorax and Easter Island. ***How can these actions be indicative of the environment today?***
11. What is a keystone species? Why does the saying “some animals are more equal than others” apply in the case of keystone species?
12. What are the chemical equations for photosynthesis and cellular respiration? How are they connected?
13. What are the equations for NPP and GPP. How do they relate to primary productivity?
14. Identify the levels of the trophic pyramid.
15. Be able to explain the Ten Percent Rule.
16. Understand the difference between a food chain and a food web, and know what the arrow means.
17. Know the trophic levels and feeding relationships between them.
18. Be able to explain how competition can lead to coexistence and competitive exclusion.
19. Be able to identify biomes based on climatographs, nutrient availability, global location and amount of biodiversity.
20. Be familiar with the three Laws of Thermodynamics in regards to energy flow.
21. List the steps of the scientific method.
22. Be familiar with dimensional analysis. Can you set up an equation when given a set of values?
23. Be familiar with the terrestrial and aquatic biomes
 - a. specific defining characteristics
 - b. their pattern in temperature and precipitation (climatograph)

Part 2: Multiple Choice

1. Which of the following events has increased the impact of humans on the environment?
 - I. Advances in technology
 - II. Reduced human population growth
 - III. Use of tools for hunting
 - a. I only
 - b. I and II only
 - c. II and III only
 - d. I and III only
 - e. I, II, and III

2. All of the following would be exclusively caused by *anthropogenic (human caused)* activities EXCEPT
 - a. Combustion of fossil fuels
 - b. Overuse of resources such as uranium
 - c. Forest clearing for crops
 - d. Air pollution from burning oil
 - e. Forest fires

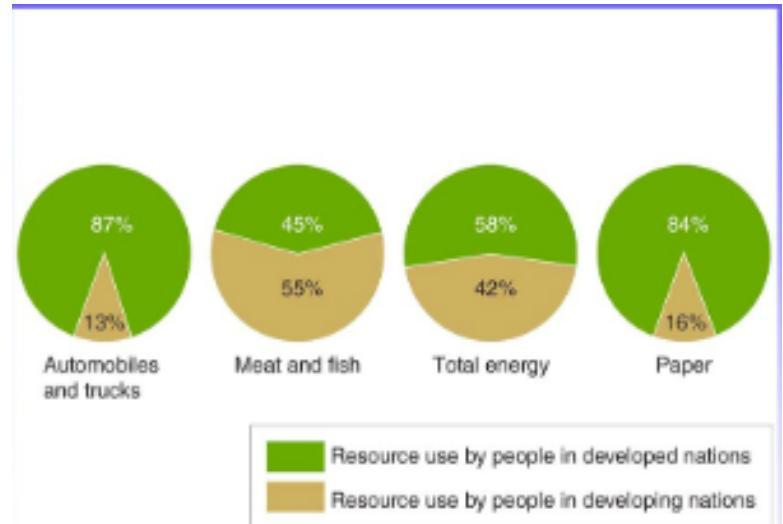
3. Challenges in the study of environmental science include all of the following EXCEPT:
 - a. Dangers of studying natural systems
 - b. Lack of baseline data
 - c. Subjectivity of environmental impacts
 - d. Complexity of natural ecosystems
 - e. Complex interactions between humans and the environment

4. A person's ecological footprint is
 - a. The land that a person lives on
 - b. The amount of carbon dioxide a person contributes to climate change
 - c. The land required to produce a person's food
 - d. The land needed to support all of a person's activities
 - e. The amount of fossil fuel a person uses

5. In 2011, 640, 000 hectares (ha) of the Amazon rainforest were cleared. Approximately how many hectares is that each hour?
a. 1.2 ha b. 29 ha c. 73 ha d. 178 ha e. 1,752 ha

6. Refer to the figure below. How does fish and meat consumption in developed and developing countries compare?

- a. Developing countries consume slightly more meat and fish per capita
- b. Developed countries consume slightly more meat and fish per capita
- c. Developing and developed countries consume about the same amount of meat and fish per capita
- d. Developing countries consume about four times more meat and fish per capita
- e. Developed countries consume about four times more meat and fish per capita



7. Which of the following is the best example of the tragedy of the commons?
- a. Water pollution from oil rigs is concentrated in the Gulf of Mexico
 - b. An increase in the concentration of a toxin as it goes through the food chain
 - c. Exponential population growth as a country goes through the demographic transition
 - d. The use of invasive species as biological control
 - e. The overharvesting of fish from a privately owned lake
8. The first step in the scientific process is
- a. Collecting data
 - b. observations and questions
 - c. forming a hypothesis
 - d. disseminating findings
 - e. forming a theory

Extra Math Problems:

Scientific Notation Practice: Express the following numbers in Scientific Notation

1. 315,000,000
2. 7,000,000,000
3. 0.001
4. 0.000001
5. 0.000000001

Now multiply #1 and #2 together

Dimensional Analysis Practice

Conversions:

1 square mile = 640 acres
1 hectare (Ha) = 2.47 acres
1 kw-hr = 3,413 BTUs
1 barrel of oil = 159 liters
1 metric ton = 1000 kg

A city that uses ten billion BTUs of energy each month is using how many kilowatt-hours of energy?

2. A 340 million square mile forest is how many hectares?
3. If one barrel of crude oil provides six million BTUs of energy, how many BTUs of energy will one liter of crude oil provide?
4. Fifty eight thousand kilograms of solid waste is equivalent to how many metric tons?