

CHAPTER 1—ENVIRONMENTAL PROBLEMS, THEIR CAUSES, AND SUSTAINABILITY

MULTIPLE CHOICE

1. Sustainability refers to _____.
a. the way in which the natural world works
b. how we interact with the environment
c. human methods of coping with environmental problems
d. refusing, reducing, reusing, and recycling
e. the capacity of the earth's natural systems to survive, flourish, and adapt

ANS: E

PTS: 1

TOP: Core Case Study: A vision of a more sustainable world in 2065

KEY: Bloom's: Remember

NOT: New

2. Which discipline is most associated with environmental science?
a. botany
b. political science
c. sociology
d. ecology
e. psychology

ANS: D

PTS: 1

TOP: 1-1 What Are Some Principles of Sustainability?

KEY: Bloom's: Remember

NOT: Modified

3. A forest with plants, animals, and various other organisms is an example of a(n) _____.
a. ecosystem
b. species
c. ecology
d. life-support system
e. nutrient

ANS: A

PTS: 1

TOP: 1-1 What Are Some Principles of Sustainability?

KEY: Bloom's: Understand

NOT: New

4. Using normally renewable resources faster than nature can renew them is called _____.
a. nutrient cycling
b. nutrient deficit
c. sustainability
d. trade-offs
e. degrading natural capital

ANS: E

PTS: 1

TOP: 1-1 What Are Some Principles of Sustainability?

KEY: Bloom's: Remember

5. Solar energy is known as a(n) _____.
a. renewable resource
b. recyclable resource
c. inexhaustible resource
d. reusable resource
e. nonrenewable resource

ANS: C

PTS: 1

TOP: 1-1 What Are Some Principles of Sustainability?

KEY: Bloom's: Remember

6. What is one of the three social science principles of sustainability?
- A dependence on solar energy
 - A focus on chemical cycling
 - The degradation of natural capital
 - A responsibility to future generations
 - The ability to retain biodiversity

ANS: D

PTS: 1

TOP: 1-1 What Are Some Principles of Sustainability?

KEY: Bloom's: Remember

NOT: New

7. Topsoil is an important component of ____.
- biodiversity
 - ecosystems
 - natural resources
 - win-win solutions
 - nutrient cycling

ANS: E

PTS: 1

TOP: 1-1 What Are Some Principles of Sustainability?

KEY: Bloom's: Remember

NOT: New

8. According to a number of environmental scientists, we already know how to reuse or recycle at least ____ of the nonrenewable resources we use.
- 80%
 - 65%
 - 50%
 - 40%
 - 25%

ANS: A

PTS: 1

TOP: 1-1 What Are Some Principles of Sustainability?

KEY: Bloom's: Remember

NOT: New

9. What are the priorities for more sustainable use of renewable resources, in order?
- refuse, renew, reduce, and recycle
 - recycle, renew, reuse, and reduce
 - resource, recycle, renew, and reduce
 - refuse, reduce, reuse, and recycle
 - refuse, reduce, recycle, and renew

ANS: D

PTS: 1

TOP: 1-1 What Are Some Principles of Sustainability?

KEY: Bloom's: Remember

NOT: New

10. More-developed countries ____.
- have a lower average income
 - use mostly renewable resources
 - rely entirely on nonrenewable resources
 - comprise 17% of the world's population
 - provide fewer recycling services

ANS: D

PTS: 1

TOP: 1-1 What Are Some Principles of Sustainability?

KEY: Bloom's: Remember

NOT: New

11. The primary difference between renewable resources and nonrenewable resources is ____.
- how easily each can be discovered

- b. the available amount of each resource
- c. the length of time it takes for each to be replenished
- d. how fast each is being consumed
- e. how quickly each can produce electricity

ANS: C

PTS: 1

TOP: 1-1 What Are Some Principles of Sustainability?

KEY: Bloom's: Understand

NOT: Modified

12. What term describes the highest rate at which a renewable resource can be used indefinitely without reducing its available supply?
- a. conservation
 - b. sustainable yield
 - c. preservation
 - d. perpetual resource
 - e. degradation

ANS: B

PTS: 1

TOP: 1-1 What Are Some Principles of Sustainability?

KEY: Bloom's: Remember

13. Which substance would be considered a renewable resource?
- a. copper
 - b. oil
 - c. fresh air
 - d. salt
 - e. sand

ANS: C

PTS: 1

TOP: 1-1 What Are Some Principles of Sustainability?

KEY: Bloom's: Understand

NOT: Modified

14. Which substance would be considered a nonrenewable resource?
- a. groundwater
 - b. trees in a forest
 - c. fertile soil
 - d. oil
 - e. crops

ANS: D

PTS: 1

TOP: 1-1 What Are Some Principles of Sustainability?

KEY: Bloom's: Understand

NOT: Modified

15. All nonrenewable resources can theoretically be ____.
- a. converted to nonmetallic minerals
 - b. converted to renewable ones
 - c. exhausted or depleted
 - d. recycled or reused
 - e. alive

ANS: C

PTS: 1

TOP: 1-1 What Are Some Principles of Sustainability?

KEY: Bloom's: Understand

16. Which action is an example of reuse?
- a. re-melting aluminum cans
 - b. making compost out of kitchen scraps
 - c. using plastic butter tubs to store leftovers
 - d. using waste heat to warm a room
 - e. making paper goods from previously used paper

ANS: C PTS: 1
KEY: Bloom's: Apply

TOP: 1-1 What Are Some Principles of Sustainability?

17. Use of a natural resource based on sustainable yields is most applicable to the idea of ____.
- a. nonrenewable resources
 - b. renewable resources
 - c. shared resources
 - d. amenable resources
 - e. recycling

ANS: B PTS: 1
KEY: Bloom's: Understand

TOP: 1-1 What Are Some Principles of Sustainability?

18. Having tall smokestacks is a form of ____.
- a. pollution prevention
 - b. pollution cleanup
 - c. natural capital degradation
 - d. ecological restoration
 - e. tragedy of the commons

ANS: B PTS: 1

TOP: 1-2 How Are Our Ecological Footprints Affecting the Earth?

KEY: Bloom's: Understand

NOT: New

19. Which of the following illustrates natural capital degradation?
- a. use of wind power
 - b. saving endangered species
 - c. cleaning up pollution
 - d. aquifer depletion
 - e. water runoff

ANS: D PTS: 1

TOP: 1-2 How Are Our Ecological Footprints Affecting the Earth?

KEY: Bloom's: Understand

NOT: New

20. Each of the three major cultural revolutions has allowed ____.
- a. ecological restoration
 - b. expansion of the human population
 - c. greater worldwide sustainability
 - d. pollution prevention
 - e. decreased consumption

ANS: B PTS: 1

TOP: 1-2 How Are Our Ecological Footprints Affecting the Earth?

KEY: Bloom's: Remember

NOT: New

21. An average ecological footprint of an individual in a given country or area is known as ____.
- a. per capita gross GNP
 - b. ecological footprint
 - c. per capita GDP
 - d. sustainable yield
 - e. per capita ecological footprint

ANS: E PTS: 1

TOP: 1-2 How Are Our Ecological Footprints Affecting the Earth?

KEY: Bloom's: Remember

22. The U.N. *Millennium Ecosystem Assessment* reports that human activities have degraded ____ percent of the earth's natural services, and mostly since 1950.
- 20
 - 40
 - 60
 - 80
 - 95

ANS: C PTS: 1

TOP: 1-2 How Are Our Ecological Footprints Affecting the Earth?

KEY: Bloom's: Remember

23. The term ____ refers to the contamination of the environment by a chemical or other agent that is harmful to organisms.
- natural capital
 - pollution
 - pesticide
 - human activity
 - point source

ANS: B PTS: 1

TOP: 1-2 How Are Our Ecological Footprints Affecting the Earth?

KEY: Bloom's: Remember

NOT: New

24. The degradation of commonly held resources is known as ____.
- the tragedy of the commons
 - open-access degradation
 - sustainable yield
 - pollution
 - government regulation

ANS: A PTS: 1

TOP: 1-2 How Are Our Ecological Footprints Affecting the Earth?

KEY: Bloom's: Remember

NOT: New

25. What is the best description of an ecological deficit?
- The total ecological footprint is larger than the biological capacity to replenish renewable resources.
 - The total ecological footprint is smaller than the biological capacity to replenish renewable resources.
 - All nonrenewable resources have been exhausted and there are no renewable resources available.
 - The total ecological footprint is equal to the sustainable yield of renewable resources.
 - The total ecological footprint only involves the use of nonrenewable resources.

ANS: A PTS: 1

TOP: 1-2 How Are Our Ecological Footprints Affecting the Earth?

KEY: Bloom's: Remember

NOT: New

26. In the IPAT equation, the 'P' stands for ____.
- poverty
 - pollution
 - per capita ecological footprint

- d. percent
- e. population size

ANS: E PTS: 1

TOP: 1-2 How Are Our Ecological Footprints Affecting the Earth?

KEY: Bloom's: Remember NOT: New

27. An estimated _____ middle-class consumers live in China.
- a. 10 million
 - b. 150 million
 - c. 300 million
 - d. 500 million
 - e. 1 billion

ANS: C PTS: 1

TOP: 1-2 How Are Our Ecological Footprints Affecting the Earth?

KEY: Bloom's: Remember NOT: New

28. The first major cultural change that occurred in the human population was the _____.
- a. information-globalization revolution
 - b. agricultural revolution
 - c. industrial-medical revolution
 - d. technological revolution
 - e. sustainability revolution

ANS: B PTS: 1

TOP: 1-2 How Are Our Ecological Footprints Affecting the Earth?

KEY: Bloom's: Remember NOT: New

29. Volcanic gases in the atmosphere are considered a type of _____.
- a. cultural change
 - b. natural capital degradation
 - c. nonrenewable resource
 - d. renewable resource
 - e. pollution

ANS: E PTS: 1

TOP: 1-2 How Are Our Ecological Footprints Affecting the Earth?

KEY: Bloom's: Understand NOT: New

30. What is the most likely effect of a pollutant?
- a. degradation of life-support systems for humans
 - b. more cooperative behavior among wildlife
 - c. greater allocation of resources to human health
 - d. natural recycling of atmospheric air
 - e. renewable natural capital

ANS: A PTS: 1

TOP: 1-2 How Are Our Ecological Footprints Affecting the Earth?

KEY: Bloom's: Understand NOT: Modified

31. What is a nonpoint source of pollution?
- a. drainpipe
 - b. car exhaust pipe
 - c. power plant

- d. volcano
- e. pesticides in the air

ANS: E PTS: 1

TOP: 1-2 How Are Our Ecological Footprints Affecting the Earth?

KEY: Bloom's: Understand NOT: New

32. Which revolution began about 50 years ago and involved the development of technologies for gaining rapid access to all kinds of information and resources on a global scale?
- a. The technology revolution
 - b. The information-globalization revolution
 - c. The agricultural revolution
 - d. The industrial-medical revolution
 - e. The sustainability revolution

ANS: B PTS: 1

TOP: 1-2 How Are Our Ecological Footprints Affecting the Earth?

KEY: Bloom's: Remember NOT: New

33. Which of the following is a point source of pollution?
- a. wind carrying dirt and pesticides from croplands
 - b. runoff from a stockyard
 - c. a smokestack from a power plant
 - d. fertilizer runoff from lawns
 - e. runoff from cropland

ANS: C PTS: 1

TOP: 1-2 How Are Our Ecological Footprints Affecting the Earth?

KEY: Bloom's: Understand NOT: Modified

34. At our current average rate of use per person, how many planet Earths would we need to provide an endless supply of renewable resources?
- a. 0.5
 - b. 0.9
 - c. 1
 - d. 1.5
 - e. 2

ANS: D PTS: 1

TOP: Figure 1-13 | 1-2 How Are Our Ecological Footprints Affecting the Earth?

KEY: Bloom's: Remember NOT: Modified

35. The real prices of goods and services do not include the ____.
- a. cost of raw materials
 - b. cost of manufacturing
 - c. environmental costs of resource use
 - d. cost of distribution
 - e. cost of advertising

ANS: C PTS: 1

TOP: 1-3 Why Do We Have Environmental Problems?

KEY: Bloom's: Remember

36. Subsidies and tax breaks to companies are
- a. helpful to the environment
 - b. not helpful to the economy

- c. not actually helpful to these companies
- d. not helpful to the environment
- e. helpful to individuals

ANS: D PTS: 1
KEY: Bloom's: Understand

TOP: 1-3 Why Do We Have Environmental Problems?
NOT: Modified

37. What is the set of assumptions and values reflecting how you think the world works and what you think your role in the world should be?
- a. environmental worldview
 - b. environmental justice
 - c. environmental ethics
 - d. environmental economics
 - e. environmental capital

ANS: A PTS: 1
KEY: Bloom's: Remember

TOP: 1-3 Why Do We Have Environmental Problems?

38. What viewpoint embodies the idea that we should be responsible, caring managers of the earth?
- a. The planetary management worldview
 - b. The stewardship worldview
 - c. The environmental wisdom worldview
 - d. The environmental justice movement
 - e. The renewable worldview

ANS: B PTS: 1
KEY: Bloom's: Remember

TOP: 1-3 Why Do We Have Environmental Problems?
NOT: Modified

39. Which statement represents an environmental wisdom worldview?
- a. Continuous rapid economic growth improves environmental conditions.
 - b. Our success depends on learning how life sustains itself.
 - c. Maximizing research funding is the key to controlling the environment.
 - d. Human beings are the most important life forms on the earth.
 - e. There is always more.

ANS: B PTS: 1
KEY: Bloom's: Remember

TOP: 1-3 Why Do We Have Environmental Problems?

40. What is the primary cause of nature deficit disorder?
- a. too much poverty
 - b. too much affluence
 - c. increased isolation from nature
 - d. poor sanitation
 - e. increased pollution

ANS: C PTS: 1
KEY: Bloom's: Remember

TOP: 1-3 Why Do We Have Environmental Problems?
NOT: New

41. _____ growth starts off slowly, but after only a few doublings, grows at an enormous rate.
- a. Exponential
 - b. Logarithmic
 - c. Parallel
 - d. Linear
 - e. Resource

ANS: A PTS: 1

TOP: 1-3 Why Do We Have Environmental Problems?

KEY: Bloom's: Remember

NOT: New

42. How many people can the earth support indefinitely?
- a. No one knows.
 - b. 5 billion
 - c. 10 billion
 - d. 15 billion
 - e. 20 billion

ANS: A PTS: 1

TOP: 1-3 Why Do We Have Environmental Problems?

KEY: Bloom's: Remember

NOT: New

43. According to the World Bank, about how many people worldwide live in extreme poverty?
- a. 1 million
 - b. 9 million
 - c. 40 million
 - d. 90 million
 - e. 900 million

ANS: E PTS: 1

TOP: 1-3 Why Do We Have Environmental Problems?

KEY: Bloom's: Remember

NOT: New

44. What is one of the root causes of environmental problems?
- a. rapid population growth
 - b. even global distribution of wealth
 - c. increasingly sustainable use of resources
 - d. absorption of environmental costs in goods and services
 - e. decreased use of nonrenewable resources in more-developed countries

ANS: A PTS: 1

TOP: 1-3 Why Do We Have Environmental Problems?

KEY: Bloom's: Remember

45. What situation is most likely to occur as a result of poverty?
- a. increased media attention on children's health
 - b. access to clean drinking water
 - c. increased consumption in average
 - d. spread of disease from poor sanitation
 - e. heart disease and diabetes from obesity

ANS: D PTS: 1

TOP: 1-3 Why Do We Have Environmental Problems?

KEY: Bloom's: Remember

NOT: Modified

46. Exponential growth occurs when a population increases at a(n) _____ per unit time.
- a. fixed number
 - b. variable percentage
 - c. fixed percentage
 - d. slow rate
 - e. unpredictable rate

ANS: C PTS: 1

TOP: 1-3 Why Do We Have Environmental Problems?

KEY: Bloom's: Remember

NOT: New

47. Nature deficit disorder is most likely to cause _____.
- a. obesity
 - b. poverty

- c. stress
- d. poor sanitation
- e. dependence

ANS: C PTS: 1
KEY: Bloom's: Remember

TOP: 1-3 Why Do We Have Environmental Problems?
NOT: New

48. Affluence typically results in _____.
a. population growth
b. less education
c. increased poverty
d. environmental restoration
e. environmental degradation

ANS: E PTS: 1
KEY: Bloom's: Understand

TOP: 1-3 Why Do We Have Environmental Problems?
NOT: New

49. Research by social scientists suggests that it takes ____ percent of the population of a community, country, or the world to bring about major social change.
a. 1–2
b. 5–10
c. 15–20
d. 25–35
e. 50–60

ANS: B PTS: 1

TOP: 1-4 What Is an Environmentally Sustainable Society? KEY: Bloom's: Remember

50. What is the best description of natural income?
a. renewable resources provided by the earth's natural capital
b. nonrenewable resources created by humans
c. income based on government subsidies
d. excess resources remaining after our ecological footprint
e. new and alternative resources created by humans

ANS: A PTS: 1

TOP: 1-4 What Is an Environmentally Sustainable Society? KEY: Bloom's: Remember
NOT: New

TRUE/FALSE

1. While we are heavily dependent on the environment, we are not dependent on it for everything we need to stay alive and healthy.

ANS: F PTS: 1
KEY: Bloom's: Remember

TOP: 1-1 What Are Some Principles of Sustainability?

2. Environmental science is a branch of environmentalism and has the aim of protecting the earth's life-support systems.

ANS: F PTS: 1
KEY: Bloom's: Remember

TOP: 1-1 What Are Some Principles of Sustainability?

3. The three overarching themes relating to the long-term sustainability of life on this planet are solar energy, biodiversity, and chemical cycling.

ANS: T PTS: 1 TOP: 1-1 What Are Some Principles of Sustainability?
KEY: Bloom's: Remember NOT: Modified

4. In environmental science, individuals tend to matter less because the issues are global in nature.

ANS: F PTS: 1 TOP: 1-1 What Are Some Principles of Sustainability?
KEY: Bloom's: Understand

5. Take away solar energy and all natural capital would collapse.

ANS: T PTS: 1 TOP: 1-1 What Are Some Principles of Sustainability?
KEY: Bloom's: Understand

6. A drainpipe of a factory that is releasing a pollutant is an example of nonpoint source of pollution.

ANS: F PTS: 1
TOP: 1-2 How Are Our Ecological Footprints Affecting the Earth?
KEY: Bloom's: Remember

7. The *Tragedy of the Commons* refers to a lack of agricultural resources available for the common (poor) people in a country.

ANS: F PTS: 1
TOP: 1-2 How Are Our Ecological Footprints Affecting the Earth?
KEY: Bloom's: Remember

8. The amount of biologically productive land and water required to supply the people in a country with renewable resources and recycling wastes and pollution is the ecological footprint.

ANS: T PTS: 1
TOP: 1-2 How Are Our Ecological Footprints Affecting the Earth?
KEY: Bloom's: Remember

9. Pollutants are all human-made; in other words, they cannot enter the environment naturally.

ANS: F PTS: 1
TOP: 1-2 How Are Our Ecological Footprints Affecting the Earth?
KEY: Bloom's: Understand

10. Pollution cleanup is usually the best way of dealing with the release of a pollutant.

ANS: F PTS: 1
TOP: 1-2 How Are Our Ecological Footprints Affecting the Earth?
KEY: Bloom's: Understand

11. Species are currently becoming extinct at the same rate as during prehuman times.

ANS: F PTS: 1
TOP: 1-2 How Are Our Ecological Footprints Affecting the Earth?
KEY: Bloom's: Remember NOT: New

12. China has the world's largest population and second-largest economy.

ANS: T PTS: 1

TOP: 1-2 How Are Our Ecological Footprints Affecting the Earth?

KEY: Bloom's: Remember NOT: New

13. A basic cause of environmental problems results from the fact that companies using resources have to pay for the cost of the harmful environmental costs of supplying their products.

ANS: F PTS: 1

TOP: 1-3 Why Do We Have Environmental Problems?

KEY: Bloom's: Understand

14. Reducing poverty, promoting family planning, and elevating the status of women would help the world's population continue to grow.

ANS: F PTS: 1

TOP: 1-3 Why Do We Have Environmental Problems?

KEY: Bloom's: Remember

NOT: New

15. Living sustainably means living on natural income.

ANS: T PTS: 1

TOP: 1-4 What Is an Environmentally Sustainable Society?

KEY: Bloom's: Remember

NOT: New

COMPLETION

1. Our lives and economies depend on energy from the _____ and natural resources and natural services provided by the earth.

ANS: sun

PTS: 1 TOP: 1-1 What Are Some Principles of Sustainability?

KEY: Bloom's: Remember

2. Natural capital equals _____ plus _____.

ANS:

natural resources natural services

natural services natural resources

PTS: 1 TOP: 1-1 What Are Some Principles of Sustainability?

KEY: Bloom's: Remember

3. The circulation of chemicals necessary for life, from the environment through organisms and back to the environment, is called _____.

ANS: nutrient cycling

PTS: 1 TOP: 1-1 What Are Some Principles of Sustainability?

KEY: Bloom's: Remember

4. Some of the world's countries are called low-income, _____ - _____ countries, and include Congo, Haiti, Nigeria, and Nicaragua.

ANS: least developed

PTS: 1 TOP: 1-1 What Are Some Principles of Sustainability?
KEY: Bloom's: Remember

5. A resource such as solar energy, that is constantly available, is called a(n) _____.

ANS: inexhaustible resource

PTS: 1 TOP: 1-1 What Are Some Principles of Sustainability?
KEY: Bloom's: Remember NOT: Modified

6. Fish, fresh air, forests, and fertile soil are examples of _____.

ANS: renewable resources

PTS: 1 TOP: 1-1 What Are Some Principles of Sustainability?
KEY: Bloom's: Remember

7. Old drink bottles that are collected, washed, and refilled are an example of _____.

ANS: reuse

PTS: 1 TOP: 1-1 What Are Some Principles of Sustainability?
KEY: Bloom's: Remember

8. Environmental degradation, also known as _____ is the process of wasting, depleting, and degrading the earth's natural capital at an accelerating rate.

ANS: natural capital degradation

PTS: 1 TOP: 1-2 How Are Our Ecological Footprints Affecting the Earth?
KEY: Bloom's: Remember

9. The exhaust pipe of an automobile or the smokestack of a coal-burning powerplant are examples of _____ sources.

ANS: point

PTS: 1 TOP: 1-2 How Are Our Ecological Footprints Affecting the Earth?
KEY: Bloom's: Remember

10. IPAT is a simple way of looking at how three factors influence the impact humans have on the environment. The formula is $\text{Impact} = \text{Population (P)} \times \text{_____} \times \text{Technology (T)}$.

ANS: Affluence

PTS: 1 TOP: 1-2 How Are Our Ecological Footprints Affecting the Earth?
KEY: Bloom's: Remember

11. The _____ revolution involved the invention of machines for the large-scale production of goods in factories.

ANS:
industrial-medical
industrial
industrial medical

PTS: 1 TOP: 1-2 How Are Our Ecological Footprints Affecting the Earth?
KEY: Bloom's: Remember NOT: New

12. The _____ worldview holds that we are separate from and in charge of nature, that nature exists mainly to meet our needs and increasing wants, and that we can use our ingenuity and technology to manage the earth's life-support systems, mostly for our benefit, into the distant future.

ANS: planetary management

PTS: 1 TOP: 1-3 Why do we have environmental problems?
KEY: Bloom's: Remember NOT: New

13. The earth's population is growing _____.

ANS: exponentially

PTS: 1 TOP: 1-3 Why do we have environmental problems?
KEY: Bloom's: Remember NOT: New

14. Extreme poverty is living on less than the equivalent of \$_____ per day.

ANS: 1.25

PTS: 1 TOP: 1-3 Why do we have environmental problems?
KEY: Bloom's: Remember NOT: New

15. Your _____ is a set of assumptions and values reflecting how you think the world works and what you think your role in the world should be.

ANS: environmental worldview

PTS: 1 TOP: 1-4 What Is an Environmentally Sustainable Society?
KEY: Bloom's: Remember NOT: Modified

SHORT ANSWER

Consider the total and per capita ecological footprints of the selected countries below and then use the data to answer the accompanying question.

Country	Total Ecological Footprint (hectares/person)	Share of Global Biological Capacity (%)
United States	2,810	(25%)
European Union	2,160	(19%)
China	2,050	(18%)
India	780	(7%)
Japan	540	(5%)

1. The total ecological footprint of China is relatively large, why is the per capita ecological footprint of China so small?

ANS:

China has a large population.

PTS: 1 TOP: 1-2 How Are Our Ecological Footprints Affecting the Earth?

KEY: Bloom's: Evaluate NOT: New

The IPAT model of environmental impact uses the following equation:

Impact (I) = Population (P) x Affluence (A) x Technology (T)

Use this equation to answer the following three questions.

2. What is the key factor in total environmental impact in most less-developed countries?

ANS:

Population size

PTS: 1 TOP: 1-2 How Are Our Ecological Footprints Affecting the Earth?

KEY: Bloom's: Remember NOT: New

3. What is the key factor in total environmental impact in most more-developed countries?

ANS:

Affluence

PTS: 1 TOP: 1-2 How Are Our Ecological Footprints Affecting the Earth?

KEY: Bloom's: Remember NOT: New

4. For two countries with the same population size and affluence, what would differentiate their total environmental impacts?

ANS:

The harmful environmental effects of technologies used in each country would be the differentiator.

PTS: 1 OBJ: Critical Thinking

TOP: 1-2 How Are Our Ecological Footprints Affecting the Earth?

KEY: Bloom's: Remember NOT: New

5. What are two ways to deal with the degradation of a shared resource?

ANS:

One is to use a shared or open-access renewable resource at a rate well below its estimated sustainable yield by using less of the resource, regulating access to the resource, or doing both. The other way is to convert shared renewable resources to private ownership.

PTS: 1 TOP: 1-2 How Are Our Ecological Footprints Affecting the Earth?

KEY: Bloom's: Evaluate NOT: New

ESSAY

1. Many scientists contend that the earth is the only real example of a sustainable system. What are the three major natural factors have played the key roles in the long-term sustainability of life on this planet? How can you apply each to your life?

ANS:

The three scientific principles of sustainability are:

Dependence on solar energy

Biodiversity

Chemical cycling

Application answers will vary.

PTS: 1

TOP: 1-1 What Are Some Principles of Sustainability?

KEY: Bloom's: Apply

NOT: New

2. Describe what Garrett Hardin meant by the *Tragedy of the Commons*, and give an example.

ANS:

Hardin uses the term to indicate a resource that no one owns individually, that is held "in common," and which is available for exploitation. Open range land, owned by the government but used by ranchers to graze cattle, is an example.

PTS: 1

TOP: 1-2 How Are Our Ecological Footprints Affecting the Earth?

KEY: Bloom's: Understand

3. The "biological capacity" is the ability of the natural world to replenish its renewable resources and absorb the resulting waste products and pollution. Exceeding the biological capacity creates an "ecological deficit." Discuss the potential future implications for the earth resulting from the fact that we are currently exceeding the earth's biological capacity by about 25 percent.

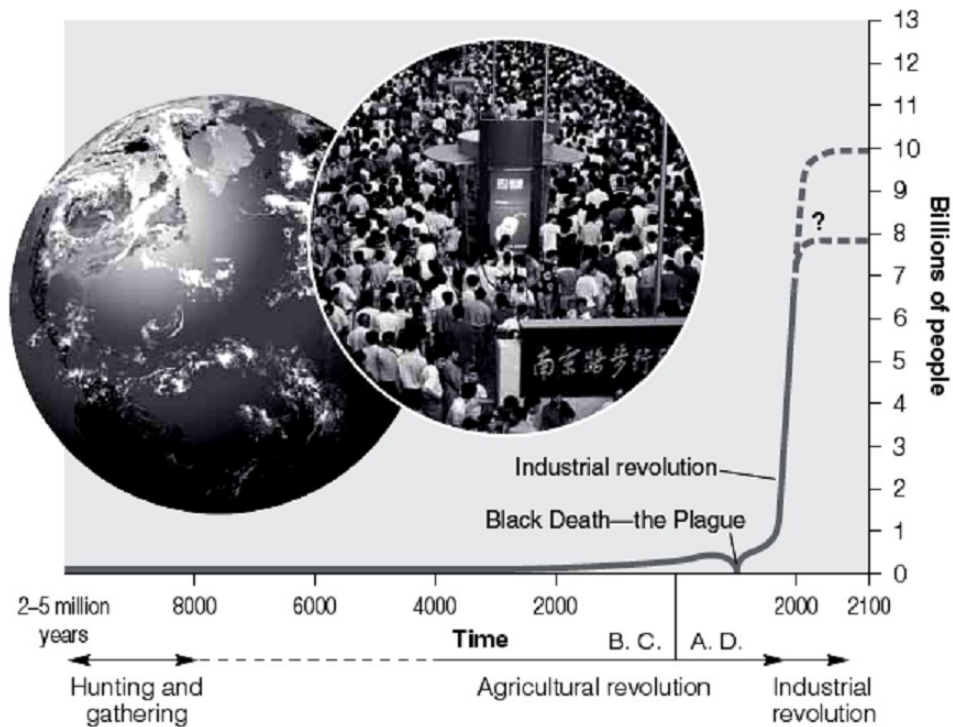
ANS:

Overuse of a resource will result in its degradation and ultimately its permanent loss. The pollution levels resulting from the use of the resource will overcome the biological capacity to cleanse the earth and societies will suffer from both results.

PTS: 1

TOP: 1-2 How Are Our Ecological Footprints Affecting the Earth?

KEY: Bloom's: Apply



4. In the accompanying figure, note that following the Black Death, the line representing the total human population rose dramatically. This rise indicates a fundamental relationship between births, deaths, and growth rates. Discuss this relationship, indicating why the steep rise occurred, and why an expected leveling off may occur soon.

ANS:

The death rate fell without a drop in birth rates. Leveling off will result when birth rate drops.

PTS: 1

TOP: 1-3 Why Do We Have Environmental Problems?

KEY: Bloom's: Analyze

5. What is an environmental worldview? Discuss your environmental worldview and explain why you hold this viewpoint.

ANS:

An environmental worldview is a set of assumptions and values reflecting how one thinks the world works and what they think their role in the world should be.

The remainder of the answer will depend on the student's worldview. The three environmental worldviews are:

Planetary management: we are separate from and in charge of nature

Stewardship: we can and should manage the earth for our benefit

Environmental wisdom: we are part of, and dependent on, nature and the earth's life support system exists for all species

PTS: 1

TOP: 1-3 Why Do We Have Environmental Problems?

KEY: Bloom's: Apply

NOT: New