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Chapter 1 - Environmental Problems, Their Causes, and Sustainability

1. Water is an example of
- a renewable resource.
 - a nonrenewable resource.
 - an ecosystem service.
 - an ecological footprint.
 - nutrient recycling.

ANSWER: a

2. As part of the path to sustainability, tradeoffs most specifically refer to
- trading environmental quality for economic growth.
 - trading quality of life issues for ecological enhancements.
 - resolving conflicts through compromise.
 - solving environmental conflicts.
 - recognizing that human activities degrade natural capital.

ANSWER: c

3. Gross Domestic Product (GDP) measures
- death rates.
 - economic growth.
 - population growth.
 - the wealth of developing countries.
 - the wealth of developed countries.

ANSWER: b

4. A renewable resource can be
- used indefinitely.
 - replenished by natural processes within hours to centuries.
 - replenished by natural processes in millions of years.
 - consumed completely if it is managed within its sustainable yield.
 - found and used easily.

ANSWER: b

5. The more-developed countries
- include the United States, India, and Canada.
 - include many African and Latin American countries.
 - have most of the world's population.
 - use disproportionately more of the world's resources compared to their populations.
 - use the appropriate amount of resources for their populations.

ANSWER: d

6. Life has been sustained on the earth
- for approximately six billion years.
 - since the time of the last impact of the meteorite.
 - through millions of years of ice ages and long warming periods.

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- d. since the human species has been around.
- e. because of renewable resources.

ANSWER: c

7. A sustainable yield is

- a. the average rate at which a renewable resource can be used without reducing its available supply.
- b. the lowest rate at which a nonrenewable resource can be used without reducing its available supply.
- c. the highest rate at which a nonrenewable resource can be used without reducing its available supply.
- d. the highest rate at which a renewable resource can be used without reducing its available supply.
- e. the lowest rate at which a renewable resource can be used without reducing its available supply.

ANSWER: d

8. The three principles of sustainability are

- a. reliance on solar energy, biological diversity and nutrient cycling.
- b. environmentalism, ecosystems, and solar energy.
- c. natural resources, natural services and water resources.
- d. nutrient cycling, water resources, and environmentalism.
- e. solar energy, ecosystems, and natural capital.

ANSWER: a

9. What are the three social science principles of sustainability?

- a. win-win solutions, a responsibility to future generations, and equality
- b. full-cost pricing, subsidies, and win-win solutions
- c. environmentalism, a responsibility to future generations, and subsidies
- d. win-win solutions, full-cost pricing, and environmentalism
- e. full-cost pricing, win-win solutions, and a responsibility to future generations

ANSWER: e

10. Resources that are called nonrenewable are

- a. also called perpetual resources.
- b. the only resources that are alive.
- c. a fixed quantity in the earth's crust.
- d. derived from solar capital.
- e. found almost everywhere on the earth.

ANSWER: c

11. Which of the following is an example of recycling?

- a. collecting and remelting aluminum beer cans
- b. cleaning and refilling soft-drink bottles
- c. using fewer paper products
- d. saving leftovers in a peanut butter jar
- e. donating furniture to a charity

ANSWER: a

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12. Examples of potentially renewable resources include

- a. groundwater, trees in a forest, and fertile soil.
- b. trees in a forest, animals, and oil.
- c. fertile soil, air, and fossil fuels.
- d. coal, groundwater, and plants.
- e. trees in a forest, fossil fuels, and air.

ANSWER: a

13. The most effective new effort to prevent the "tragedy of the commons" might include

- a. using common-property resources at or above their sustainable yields.
- b. using shared resources at rates below their estimated sustainable yields.
- c. moving from a users pay approach to a taxpayers pay approach.
- d. deregulating industries that use common-property resources.
- e. increasing public availability to resources.

ANSWER: b

14. An ecological deficit is created when

- a. a country's ecological footprint is smaller than its biological capacity to replenish its renewable resources and absorb the resulting wastes.
- b. a country overestimates its spending in the current fiscal year.
- c. a country depletes its annual budget faster than its biological capacity to replenish its renewable resources.
- d. a country depletes its natural capital slower than its biological capacity to replenish its renewable resources and absorb the resulting wastes.
- e. a country depletes its natural capital faster than its biological capacity to replenish its renewable resources and absorb the resulting wastes.

ANSWER: e

15. Reducing packaging on manufactured goods is an example of

- a. pollution cleanup
- b. pollution prevention.
- c. the tragedy of the commons.
- d. a tradeoff
- e. an end-of-the-pipe solution.

ANSWER: b

16. Currently, the country with the world's largest population is

- a. USA.
- b. India.
- c. Mexico.
- d. China.
- e. United Arab Emirates.

ANSWER: d

17. An example of point source pollution is

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- a. runoff from cropland.
- b. fertilizer runoff from lawns.
- c. litter from fishing boats.
- d. runoff from cropland.
- e. a drainpipe from a factory.

ANSWER: e

18. An example of nonpoint source pollution is
- a. pesticides blown from the land into the air.
 - b. an automobile tailpipe.
 - c. a smokestack from a power plant.
 - d. an oil leak from a home furnace.
 - e. a pipe discharging into a river.

ANSWER: a

19. What is the best way to deal with pollution?
- a. Pollution cleanup only
 - b. Pollution prevention only
 - c. A combination of pollution cleanup and prevention
 - d. The most popular way at the current time
 - e. The cheapest way

ANSWER: c

20. A sustainability revolution is best characterized by
- a. learning to live more sustainably with smaller ecological footprints.
 - b. learning how to grow and breed plants and animals for food.
 - c. inventing machines for large-scale production of goods in factories.
 - d. medical advances to allow a growing number of people to live longer and healthier lives.
 - e. controlling the human population.

ANSWER: a

21. Which statement best illustrates the "tragedy of the commons?"
- a. A factory pollutes a river as much as the law allows.
 - b. Some levels of pollution are life threatening.
 - c. Some activities harm the environment, but others do not.
 - d. Irrigated cropland can be ruined by salinization.
 - e. Cropland can decrease biodiversity.

ANSWER: a

22. Which worldview is most consistent with the current situation in the United States?
- a. planetary Management
 - b. biocentric
 - c. stewardship

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- d. humility
- e. environmental wisdom

ANSWER: a

23. Which of the following statements about less-developed countries is true?

- a. They are highly industrialized.
- b. They usually have enough food, water, and shelter.
- c. The United States, Canada, and Japan are developing countries.
- d. Their populations continue to grow at high rates.
- e. Their populations are projected to decrease.

ANSWER: d

24. Affluent countries

- a. have low levels of resource use.
- b. include China and India.
- c. are usually poor.
- d. are most responsible for environmental degradation, wastes, and pollution.
- e. use local resources.

ANSWER: d

25. The human population currently totals

- a. 87 million.
- b. 2 billion.
- c. 4 billion.
- d. 7.1 billion.
- e. 10 billion.

ANSWER: d

26. According to a number of environmental and social scientists, four basic causes of environmental degradation are

- a. poverty, population growth, unmanageable growth of resources, and government corruption.
- b. poverty, population decline, unsustainable resource use, and failure to include environmental costs in market prices.
- c. poverty, population growth, unsustainable resource use, and failure to include environmental costs in market prices.
- d. poverty, population growth, unsustainable resource use, and government corruption.
- e. poverty, population decline, unsustainable resource use, and including environmental costs in market prices.

ANSWER: c

27. We can best face the challenge of slowing population growth through

- a. promoting family planning and elevating the status of women.
- b. slowing economic development.
- c. legislation that applies only in less developed countries.
- d. overexploiting shared resources.
- e. decreasing the educational status of women.

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ANSWER: a

28. Poverty is defined as

- a. the inability to live a healthy and productive life.
- b. a life focused on gathering enough food and water for survival.
- c. the gap between the affluent and poor in underdeveloped countries
- d. the inability to live a sustainable life.
- e. a condition in which people are unable to fulfill their basic needs for food, water, shelter, health, and education.

ANSWER: e

29. Decreasing population growth in more-developed countries will

- a. decrease resource consumption.
- b. increase resource consumption.
- c. decrease poverty.
- d. increase the ecological footprint.
- e. decrease education.

ANSWER: a

30. Companies using resources to provide goods for consumers

- a. are not generally required to pay for the harmful environmental costs of supplying the goods.
- b. are usually required to pay for the harmful environmental costs of supplying the goods.
- c. almost always clean up any pollution from their business operations.
- d. pass on the cost of environmental degradation to consumers.
- e. must report their environmental degradation.

ANSWER: a

31. According to World Bank estimates, how many people live on less than US \$1.25 per day?

- a. 200 million
- b. 400 million
- c. 900 million
- d. 2.4 billion
- e. 3.9 billion

ANSWER: c

32. Your environmental worldview describes

- a. your environmental ethic.
- b. whether you are a creationist or evolutionist.
- c. your perception of the role of *Homo sapiens* in the universe.
- d. your assumptions and values that reflect how you think the world works and what you think your role in the world should be.
- e. your political ideology that defines one's perception of the health of the planet.

ANSWER: d

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33. What environmental worldview proposes that we can and should manage the earth for our benefit, but that we have an ethical responsibility to be caring and responsible managers of the earth?

- a. planetary management
- b. stewardship
- c. environmental wisdom
- d. national origin
- e. technological

ANSWER: b

34. What environmental worldview proposes that we are part of and dependent on nature and that the earth's life-support systems exists for all species, and not merely for us?

- a. planetary management
- b. stewardship
- c. environmental wisdom
- d. national origin
- e. technological

ANSWER: c

35. A reasonable goal is to reduce global population growth by year ____ to level off around ____ billion.

- a. 2040; 8 billion
- b. 2020; 8 billion
- c. 2040; 13 billion
- d. 2020; 6 billion
- e. 2060; 5 billion

ANSWER: a

36. Government subsidies to companies are most likely to cause problems because

- a. not all companies can qualify for them.
- b. they stimulate the "wrong" kind of job growth.
- c. they may encourage depletion of natural capital.
- d. they cannot control consumption habits.
- e. they take the place of tradeoffs.

ANSWER: c

37. Of the following behaviors, the one that runs counter to the three principles of sustainability is

- a. recycling of materials.
- b. reusing materials.
- c. producing and consuming anything people are willing to buy.
- d. initiating a tree planting drive in your community.
- e. relying more on renewable sources of energy.

ANSWER: c

38. The earth's natural income includes

- a. the human population.

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- b. the renewable resources provided by Earth's natural capital.
- c. plants.
- d. fossil fuels.
- e. the nonrenewable resources.

ANSWER: b

39. Meeting current and future basic resource needs without compromising the ability of future generations to meet their basic needs is considered a(n)

- a. natural income.
- b. trade-offs.
- c. scientific solutions.
- d. environmentally sustainable society.
- e. natural capital degradation.

ANSWER: d

40. An environmentally sustainable society

- a. depletes the natural capital while also using renewable resources.
- b. is based on policies that favor economic growth and development.
- c. lives on the income the natural capital provides.
- d. uses nonrenewable resources.
- e. compromises the ability of future generations to meet their basic needs.

ANSWER: c

41. Reusing involves collecting waste materials and processing them into new materials.

- a. True
- b. False

ANSWER: False

42. Environmental science is an interdisciplinary study that integrates the humanities and natural sciences.

- a. True
- b. False

ANSWER: True

43. Environmental science is the same as environmentalism.

- a. True
- b. False

ANSWER: False

44. When a nonrenewable resource is completely exhausted, humans can rarely find a substitute.

- a. True
- b. False

ANSWER: False

45. Forests, aluminum deposits and natural gas are all examples of renewable resources.

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- a. True
- b. False

ANSWER: False

46. Economic growth provides more goods and services whereas economic development uses economic growth to improve living standards.

- a. True
- b. False

ANSWER: True

47. When a country's GDP decreases, the per capita GDP must also decrease.

- a. True
- b. False

ANSWER: False

48. Scientists recommend pollution prevention over pollution cleanup because it is cheaper than cleanup.

- a. True
- b. False

ANSWER: True

49. The per capita ecological footprint is the availability of productive land and usable water to support the population with no consideration for environmental impact.

- a. True
- b. False

ANSWER: False

50. Developing countries have a significant negative effect on the environment because of the consumption per person.

- a. True
- b. False

ANSWER: False

51. Developed countries have a significant negative effect on the environment because of the consumption per person.

- a. True
- b. False

ANSWER: True

52. In the United States the air quality is poorer and drinking water more polluted today than in the 1970s.

- a. True
- b. False

ANSWER: False

53. Rapid population growth and poverty are reflective of developing countries and have little impact on pollution.

- a. True
- b. False

ANSWER: False

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54. The exponential rate of global population growth has declined since the 1960s.

- a. True
- b. False

ANSWER: True

55. Individuals can contribute to sustainability.

- a. True
- b. False

ANSWER: True

56. Dealing with conflicts between scientific solutions and political solutions usually involves making _____.

ANSWER: trade-offs
tradeoffs

57. A social movement dedicated to protecting the earth's life support system for all forms of life is called _____.

ANSWER: environmentalism

58. Non-renewable resources include _____ sources such as oil and natural gas that cannot be recycled.

ANSWER: energy

59. Old soda bottles that are collected, washed, and refilled are an example of _____.

ANSWER: reuse

60. The United States, Canada, and Japan are examples of _____ with a high average per capita GDP.

ANSWER: more-developed countries

61. A(n) _____ is a set of organisms within a defined area or volume that interact with one another and with nonliving matter in their environment.

ANSWER: ecosystem

62. A chemical dumpsite would be an example of a(n) _____ pollutant.

ANSWER: point source

63. _____ is a possible solution to the problem of people exploiting a free-access resource, but it may not be practical for global common resources.

ANSWER: Private ownership

64. The presence within the environment of a chemical or other agent at a level that is harmful to humans or other organisms is _____.

ANSWER: pollution

65. Your _____ refers to the set of assumptions and values you hold with regard to your role in the world.

ANSWER: environmental worldview

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Critical Thinking



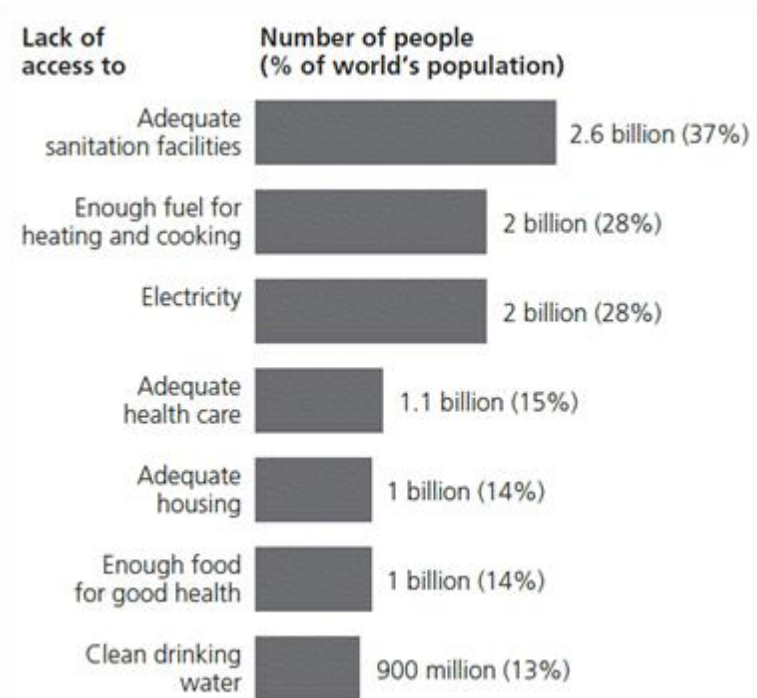
66. How many Earths are we currently using compared to the earth's ecological capacity?

ANSWER: We are currently using 1.5 Earths.

67. What will happen if humanity's ecological footprint continues to be greater than the earth's ecological capacity?

ANSWER: Humans will destroy their environment, more and more animal and plant species will be lost, poverty and disease will increase, etc.

Critical Thinking



68. Do you think that the numbers overlap in the accompanying graph, which illustrates the percentage of the world's population who lack access to basic amenities? Why or why not?

ANSWER: Often times the effects of poverty are not isolated. Also, the total percentage of the world's population without access to these amenities is greater than 100%.

69. Why does the search for scientific solutions to sustainability problems often involve conflicts?

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ANSWER: Scientific solutions most times do not involve political solutions. Trade-offs or compromises become necessary in order to implement scientific solutions through political processes.

70. List the three scientific principles of sustainability and give an example of each.

ANSWER: The three principles are the reliance on solar energy, biodiversity, and nutrient cycling. Examples will vary.

71. How does environmentalism differ from environmental science or ecology?

ANSWER: Environmentalism is a social movement dedicated to protecting the earth's life-support systems that is practiced more in the political and ethical arenas whereas environmental science practiced in the science arena.

72. Describe the environmental wisdom worldview and provide an example.

ANSWER: "we are part of and dependent on nature and that nature exists for all species, not just us. It also calls for encouraging environmentally friendly forms of economic growth and development and discouraging Earth-degrading forms. Our success depends on learning how life on Earth sustains itself and on integrating *environmental wisdom* into the ways we think and act." Examples will vary.

73. Although the poor have limited access to resources, they still have an overall high environmental impact. Explain why this statement is true.

ANSWER: The large number of poor that are preoccupied with daily survival do not focus on long term environmental issues, which leads to environmental degradation. They often use more nonrenewable resources (as opposed to renewable).

74. Poverty can increase environmental degradation; however, environmental degradation can increase poverty. Why is this so?

ANSWER: Poor people may be less concerned about environmental issues since they are preoccupied with daily survival. However, the poor are severely impacted by environmental degradation since they have less access to adequate sanitation and health care facilities.

75. Make an argument supporting the statement that *individuals matter in making the shift toward environmental sustainability*?

ANSWER: Sustainability begins with our daily choices. It only takes 5-10% of the population in a community to bring about major change in a relatively short time frame.