January 2010

Environmental Quiz - Answers

1. The population of the world in 1950 was about 2.6 billion. The world population is currently about:

   a. 3.4 billion
   b. 6.8 billion
   c. 9.3 billion
   d. 11.5 billion

   As of mid-January, 2010 the world population was slightly under 6.8 billion (b).

2. The population of the world is currently increasing at a rate of about 8,600 people per _____.

   a. month
   b. week
   c. day
   d. hour

   The world population is currently increasing at an estimated 8,607 per hour (d).

3. The estimated world population in the year 2050 is about:

   a. 3.4 billion
   b. 6.8 billion
   c. 9.3 billion
   d. 11.5 billion

   The medium projection of world population for the year 2050 by the International Programs Center of the U.S. Census Bureau is very close to that of the Population Reference Bureau; both are about 9.3 billion (c).

4. The population of the United States in 1960 (50 years ago) was 181 million. On January 12, 2010 the U.S. population was _____.

   a. 187 million
   b. 220 million
   c. 308 million
   d. 459 million

   The population of the United States in mid-January 2010 was about 308 million (c).

___ 5. True (T) or False (F). United States population growth is near zero, with the population expected to stabilize by about 2030.

   False. The population of the United States is growing faster than all developed nations except Australia and Luxembourg - about 0.9% to 1% per year. At that rate of growth the U.S. population will reach roughly 439 million by 2050 and 571 million by 2100. The U.S. population is currently (Jan. 2010) 308 million.

6. _____. True (T) or False (F). Assuming a growth rate of 5% annually, the population of the United States would surpass the current population of China by 2040.

True. At a 5% annual growth rate the population would quadruple in only 28 years, bringing the number of U.S. residents to over 1.2 billion. It is interesting to note that any population will increase by 1,024 times for each 10 times that it doubles. So at an annual growth rate of 5%, only 120 years are needed for 10 doublings to occur. At a 3% annual growth rate, 233 years would result in 10 doublings. Even at a growth rate as low as 1% annually, 10 doublings will occur in 700 years - still a relatively short time in the big scheme of things.

Were the U.S. population to increase by 1,024 times, the nation would boast 315 billion residents, equivalent to 46 times the current world population.

___ 7. True (T) or False (F). The United States is a net exporter of most raw materials used by industry today.

False. The U.S. is today a net importer of most categories of industrial raw materials, including metals, Portland and masonry cement, petroleum (the basis for plastics), and wood and wood products.

The 2008 U.S. import situation (the most recent year for which data is available) is outlined on the following pages:

Net U.S. Imports of Selected Materials as a Percent
of Apparent Consumption—2008, and by Major Foreign Sources[a/b/c/d/]

Material	% Imported	Principal Foreign Sources (2004-2007)
Niobium (Columbium)	100	Brazil, Canada, Estonia
Manganese	100	South Africa, Gabon, China, Australia
Graphite	100	China, Mexico, Canada, Brazil
Strontium (Celestite)	100	Mexico, Germany
Arsenic (trioxide)	100	China, Morocco, Hong Kong, Mexico
Bauxite/Alumina	100	Jamaica, Guinea, Brazil, Australia
Fluorspar	100	China, Mexico, S. Africa, Mongolia
Yttrium	100	China, Japan, France
Indium	100	China, Japan, Canada, Belgium
Thallium	100	Russia, Netherlands, Belgium
Thorium	100	UK, France
Asbestos	100	Canada
Quartz crystal (industrial)	100	China, Japan, Russia
Rare earth metals	100	China, France, Japan, Russia
Rubidium	100	Canada
Vanadium	100	Czech Republic, Swaziland, Canada, S. Korea
Cesium	100	Canada
Tantalum	100	Australia, China, Brazil, Japan
Gallium	99	China, Ukraine, Germany, Canada
Gemstones	99	Israel, India, Belgium, S. Africa
Bismuth	97	Belgium, Mexico, UK, China
Diamond (industrial)	92	Botswana, S. Africa, Nambia, Ireland
Platinum	91	South Africa, Germany, UK, Canada
Stone (dimension)	89	Italy, Brazil, Turkey, China
Rhenium	87	Chile, Germany, Netherlands
Antimony	86	China, Mexico, Belgium
Mica (natural)	86	China, India, Belgium, Brazil
Germanium	85	Belgium, Canada, Germany, China
Cobalt	81	Norway, Russia, China, Canada
Potash	81	Canada, Belarus, Russia, Germany
Tin	80	Peru, Bolivia, China, Indonesia
Barium (Barite)	79	China, India
Titanium mineral concentrates	77	South Africa, Australia, Canada, Ukraine
Iodine	74[e/]	Chile, Japan, Russia
Zinc	73	Canada, Peru, Mexico, Ireland
Palladium	72	Russia, S. Africa, UK, Belgium
Tungsten	61	China, Germany, Canada, Bolivia
Silver	60	Mexico, Canada, Peru, Chile

Material	% Imported	Principal Foreign Sources (2004-2007)
Peat	58	Canada
Petroleum (crude & refined)	57	Canada, Saudi Arabia, Venezuela, Nigeria, Mexico
Diamond (dust, grit, powder)	56	China, Ireland, Russia, S. Korea
Silicon (ferrosilicon)	56	China, Russia, Venezuela, Canada
Chromium	54	South Africa, Kazakhstan, Russia, Zimbabwe
Titanium (sponge)	54	Kazakhstan, Japan, Russia
Magnesium compounds	52	China, Canada, Austria, Australia
Lithium	>50	Chile, Argentina
Magnesium metal	50	Canada, Russia, Israel, China
Nitrogen (fixed), Ammonia	48	Trinidad, Tobago, Canada, Russia, Ukraine
Garnet (industrial)	40	Australia, India, China, Canada
Vermiculite	35	S. Africa, China
Nickel	33	Canada, Russia, Norway, Australia
Copper	32	Chile, Canada, Peru, Mexico
Softwood lumber	29	Canada, Germany, Chile, Brazil, N. Zealand
Sulfur	28	Canada, Mexico, Venezuela
Gypsum	27	Canada, Mexico, Spain, Dominican Rep.
Perlite	19	Greece
Salt	17	Canada, Chile, The Bahamas, Mexico
Mica, scrap/flake (natural)	16	Canada, China, India, Finland
Portland and masonry cement	12	Canada, China, Thailand, S. Korea
Phosphate rock	9	Morocco
Iron and Steel	8	Canada, EU, Mexico, China
Pumice	6	Greece, Italy, Turkey, Mexico
Lime	1	Canada, Mexico
Stone (crushed)	1	Canada, Mexico, The Bahamas

[a/] Also significant import dependency for Leather, Natural Rubber, Wool.
[b/] U.S. Geological Survey. 2010. Mineral Commodity Summaries.
[c/] Data for wood, wood products, and wood pulp products are from Random Lengths, 2009.
[d/] Petroleum data from U.S. Department of Energy, Energy Information Administration, 2010 (Jan.).
[e/] Figure for 2006; iodine statistics withheld in 2008 due to concerns regarding proprietary information.

___ 8. True (T) or False (F). The raw material that is used in the greatest quantity in the United States today, and which accounts for almost one-third (by weight) of the total raw materials used annually, is steel.

False. More wood is consumed annually in the United States, on both a volume and weight basis, than <u>all</u> metals and <u>all</u> types of plastics combined.

___ 9. True (T) or False (F). Consumption of mineral resources globally has increased sharply over the past 30 years.

True. Rapidly rising consumption in China and other developing countries has sharply increased demand for mineral, timber, and fuel resources.

___10. True (T) or False (F). Energy consumption per capita (per person) in the United States is twice that of the European Union.

True. Per capita consumption of energy is also significantly higher than in several nations often listed as offering a higher or comparable quality of life as in the United States.

Per Capita Energy Consumption in the U.S. and the E.U. Countries - 2008

Country	Per Capita Energy Consumption (kilograms of oil equivalent per person)
United States	7885.9
Finland	6555.0
Belgium	5891.7
Sweden	5780.3
Netherlands	5048.8
Czech Republic	4418.6
France	4396.8
Germany	4187.0
Austria	4134.7
UK	3894.6
Estonia	3786.0
Ireland	3656.0
Slovenia	3655.0
Denmark	3634.3
Slovakia	3502.8
Cypress	3367.0
Spain	3339.6
Italy	3169.1
Greece	2794.0
Hungary	2757.4
Bulgaria	2592.0
Portugal	2574.1
Lithuania	2515.0
Poland	2429.0
Malta	2349.0
Latvia	2050.0
Romania	1772.0
Weighted E.U. Average	3773.4

* Values are not provided for Cypress, Malta, or Luxembourg as data for these countries was not included in source documents.

Source: Ewing et al. 2008. The Ecological Footprint Atlas 2008. (http://www.footprintnetwork.org/images/uploads/Ecological_Footprint_Atlas_2009.pdf)

11. The number one cause of tropical deforestation worldwide is:

    a. commercial logging.
    b. wildfire.
    c. clearing of lands for agricultural use.
    d. gathering of firewood.
    e. building of roads and cities.

    Clearing of lands for agricultural use (c) is by far the leading cause of tropical deforestation worldwide.

12. The area covered by forests in the United States today is approximately _____ of the forested area that existed in 1600.

    a. 72 percent
    b. 50 percent
    c. 33 percent
    d. 17 percent

    (a) There are 751 million acres of forests in the U.S. today, about 72% of the 1.044 billion acres of forests estimated to have covered what is now the United States in the year 1600.

13. True (T) or False (F). The geographic area that encompasses the United States today has greater forest coverage than the same geographic area did in 1920.

    True. In 1920 there were an estimated 732 million acres of forest covering the area that now comprises the United States. Today there are 751 million acres of forest. The current forested area is within one percent of the forest area of approximately 755 to 760 million acres that existed in 1907 and as recently as 1970.

14. Which of the following statements most accurately describes United States forests:

    a. forest harvest exceeds net growth by 20 percent.
    b. forest harvest exceeds net growth by 5 percent.
    c. forest harvest roughly equals net growth.
    d. net forest growth exceeds harvest by 29 percent.
    e. net forest growth exceeds harvest by 72 percent.

    Net growth of forests in the United States substantially exceeds harvest. In the most recent assessment of U.S. forest land (USDA-Forest Service, RPA Assessment 2010) net growth was estimated to exceed removals by 72% (e). When all lands are counted (including those forest lands designated as reserves or preserves) the net growth to harvest ratios are higher than those indicated above.

___15. True (T) or False (F). Growing trees capture carbon dioxide from the air and release oxygen.

True. In the process of photosynthesis, water from the ground is combined in the leaves with carbon dioxide from the air to form glucose and other sugars, and oxygen that is released to the atmosphere. The sugars are used to form wood.

___16. True (T) or False (F). As originally established, it was never intended that the National Forests of the United States would be periodically harvested to obtain timber that would be used in meeting the nation's need for wood.

False. One of the specifically stated reasons for establishment of the National Forests was to ensure a continuous supply of wood for the citizens of the United States.

___17. True (T) or False (F). At current rates of deforestation, 40 percent of current forests in the United States will be lost by the middle of this century.
False. Forests actually increased in area coverage in the United States between 1985 and 2009. However, due to continuing growth of urban areas and building of highways, it is predicted that 3 to 5% of the current area of forest land in the U.S. could by lost by 2050.

___18. True (T) or False (F). In the U.S. and globally, more species of plants and animals have been driven to extinction by logging activity than any other activity of humankind.

False. There is no documented evidence of even one plant or animal species having been driven to extinction by logging activity in the United States. The answer to this question is less clear globally, but it is evident that logging is but one of a myriad of human activities, including land clearing for agriculture, urban and infrastructure development, mining, and industrial production, placing pressure on native species.

___19. True (T) or False (F). Under current United States law, forest harvesting is allowed within federally designated wilderness areas.

False. Forest harvesting is not allowed in federally designated wilderness areas.

___20. True (T) or False (F). Populations of elk, pronghorn antelope, and wild turkey have declined significantly in the United States over the past 60 years.

False. The populations of all these species have <u>increased</u> by over 1,000% (10 x) over the past 60 years. The populations of many other species, including the American bald eagle, have increased dramatically as well.

___21. True (T) or False (F). Considering the total annual harvest of forests in the United States and the total consumption of wood and wood fiber products within our country, the U.S. is a net importer of wood and wood products.

True. The United States is a net importer of about 29% of the softwood lumber consumed annually within the country. When all products are considered, including exports of logs, and chips, the U.S. is a net importer of about 15-20% of the total wood and wood fiber consumed within its borders. The United States has been a net importer of wood for over 40 years.

22. As a percentage of all the paper used in the United States in 2008, _____ was recovered for reuse.

a. 14 percent
b. 36 percent
c. 57 percent
d. 92 percent

In 2008 (the most recent year for which statistics are available), 57.4 percent (c) of all paper used in the United States was collected for reuse.

23. Recovered paper provided _____ of the U.S. paper industry's fiber in 2008.

a. 12 percent
b. 34 percent
c. 51 percent
d. 86 percent

(b) Recovered paper provided about 34 percent of the U.S. paper industry's fiber in 2008. The difference between the wastepaper collection rate (57 percent) and the recovered paper use rate (34 percent) is largely traceable to the fact that the United States is the world's largest exporter of waste paper. Virtually all exported wastepaper is also used in making paper and paperboard.

___24. True (T) or False (F). More extensive recycling of paper could reduce harvesting of forests in the United States by 60 percent or more.

False. Several recent studies have shown that while paper recycling is extremely important, and a major contributor to reducing demand for virgin pulpwood, increasing recycling to the maximum level allowed by current technology would have the effect of reducing demand for virgin fiber by only 12-13 percent. Moreover, when taking into consideration the time that will be required to move to the technological limit of recycling, and the population growth that will occur in the meantime, it is likely that demand for virgin fiber will continue to increase, even with aggressive recycling programs.

___25. True (T) or False (F). The manufacture of wood construction materials generally results in far lower environmental impacts than when similar construction materials are manufactured from steel, aluminum, plastic, or concrete.

True. Well-documented environmental life cycle inventories of various raw materials production processes conducted by research organizations around the world show that wood products can be manufactured with relatively little environmental impact compared to potential alternatives. Even when wood products are compared to cement-based and recycled metal products, energy consumption and associated environmental impacts associated with wood-based materials manufacture are generally substantially lower.

Question for thought:

When someone says "In the United States, we have less than 4% of our original forests left," what are they really saying?

For more information on these and other topics go to:

Dovetail Partners (www.dovetailinc.org)

U.S. Census Bureau, Population Division (http://www.census.gov/main/www/popclock.html)

Population Reference Bureau (http://www.prb.org/Publications/Datasheets/2009/2009wpds.aspx)

U.S. Geological Survey, Minerals Division (http://minerals.usgs.gov/minerals/)

U.S.G.S. Minerals Commodity Summary, 2009 (http://minerals.usgs.gov/minerals/pubs/mcs/2009/mcs2009.pdf)

Matos, G. 2009. Use of Minerals and Materials in the United States from 1900 through 2006. U.S. Geological Survey. (http://pubs.usgs.gov/fs/2009/3008/pdf/FS2009_3008_v1_1.pdf)

Rogich, D. and Matos. G. 2008. Global Flows of Minerals and Materials. U.S. Geological Survey. (http://pubs.usgs.gov/of/2008/1355/pdf/ofr2008-1355.pdf)

Forest Resources Environmental Education Network (http://www.freenetwork.org/)

Forest Resources of the United States, 2007 (U.S. Forest Service) (http://www.nrs.fs.fed.us/pubs/gtr/gtr_wo78.pdf)

Global Forest Resources Assessment (http://www.fao.org/forestry/fra/en/)

American Forest and Paper Association, paper recycling statistics (http://paperrecycles.org/stat_pages/stat_intro.html)

Metafore -The Fiber Cycle (http://www.metafore.org/downloads/metafore_fyber_cycle_faq.pdf)