

March 2012

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. 7.0 billion
 - c. 9.3 billion
 - d. 11.5 billion

As of early March, 2012 the world population was right at 7 billion (b).

2. The population of the world is currently increasing at a rate of about 8,900 people per _____.
 - a. month
 - b. week
 - c. day
 - d. hour

The world population is currently increasing at an estimated 8,908 per hour (d).

3. The estimated world population in the year 2050 is about:
 - a. 3.4 billion
 - b. 6.8 billion
 - c. 9.4 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 9.4 billion (d). The Population Reference Bureau estimate for the year 2050 is 9.6 billion.

4. The population of the United States in 1960 (50 years ago) was 181 million. On March 7, 2012 the U.S. population was estimated to be _____.
 - a. 187 million
 - b. 220 million
 - c. 313 million
 - d. 459 million

The population of the United States in early March 2012 was about 313 million.

- ___ 5. True (T) or False (F). United States population growth is near zero, with the population expected to stabilize by about 2050.

False. Based on current and projected rates of natural population growth and immigration, the U.S. population is expected to reach approximately 439 million by 2050 (the Population Reference Bureau projects 470 million in 2050) and 571 million by 2100. The U.S. population is currently 313 million (March 2012).

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 2050.

This is true. At a 5% annual growth rate the U.S. population would surpass China's current population level (1.34 billion) by 2042. By 2050 U.S. numbers would rise to just under 2 billion, a number 50 percent greater than the current population of China. 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 321 billion residents, equivalent to 46 times the current world population.

- ___ 7. 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.

- ___ 8. 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 2010 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—2010, and by Major Foreign Sources^{a/b/c/}

Material	% Imported	Principal Foreign Sources (2006-2009)
Niobium (Columbium)	100	Brazil, Canada, Germany, Estonia
Manganese	100	South Africa, Gabon, China, Australia
Graphite	100	China, Mexico, Canada, Brazil
Strontium (Celestite)	100	Mexico, Germany
Arsenic (trioxide)	100	Morocco, China, Belgium
Bauxite/Alumina	100	Jamaica, Brazil, Guinea, Australia
Fluorspar	100	Mexico, China, S. Africa, Mongolia
Yttrium	100	China, Japan, France
Indium	100	China, Canada, Belgium, Japan
Thallium	100	Russia, Germany, Netherlands
Thorium	100	UK, France, India, Canada
Asbestos	100	Canada
Quartz crystal (industrial)	100	China, Japan, Russia
Rare earth metals	100	China, France, Japan, Austria
Rubidium	100	Canada
Cesium	100	Canada
Tantalum	100	Australia, China, Kazakhstan, Germany
Mica (natural)	100	China, Brazil, Belgium, India
Gallium	99	Germany, Canada, China, Ukraine
Gemstones	99	Israel, India, Belgium, S. Africa
Bismuth	94	Belgium, China, UK, Mexico
Platinum	94	South Africa, Germany, UK, Canada
Antimony	93	China, Mexico, Belgium
Germanium	90	Belgium, China, Russia, Germany
Iodine	88	Chile, Japan
Rhenium	86	Chile, Netherlands
Stone (dimension)	85	Brazil, China, India, Turkey
Diamond (dust, grit, powder)	85	China, Ireland, Russia, S. Korea
Potash	83	Canada, Belarus, Russia
Cobalt	81	Norway, Russia, China, Canada
Titanium mineral concentrates	81	South Africa, Australia, Canada, Mozambique
Zinc	77	Canada, Peru, Mexico, Ireland
Silicon carbide	77	China, Venezuela, Netherlands, Romania
Barium (Barite)	76	China, India
Tin	69	Peru, Bolivia, China, Indonesia
Vanadium	69	S. Korea, Czech Republic, Canada, Austria
Tungsten	68	China, Canada, Germany, Bolivia
Silver	65	Mexico, Canada, Peru, Chile

Material	% Imported	Principal Foreign Sources (2006-2009)
Titanium (sponge)	64	Kazakhstan, Japan, Ukraine, Russia
Peat	59	Canada
Palladium	58	Russia, S. Africa, UK, Belgium
Chromium	56	South Africa, Kazakhstan, Russia, China
Magnesium compounds	53	China, Canada, Austria, Australia
Petroleum (crude & refined)	49	Canada, Saudi Arabia, Venezuela, Nigeria, Mexico
Beryllium	47	Kazakhstan, Kenya, Germany, Ireland
Ferrosilicon	44	China, Russia, Venezuela, Canada
Lithium	43	Chile, Argentina, China
Nickel	43	Canada, Russia, Australia, Norway
Nitrogen (fixed), Ammonia	43	Trinidad/Tobago, Russia, Canada, Ukraine
Aluminum	38	Canada, Russia, China, Mexico
Magnesium metal	34	Canada, Israel, China, Russia
Gold	33	Canada, Mexico, Peru, Chile
Copper	30	Chile, Canada, Peru, Mexico
Softwood lumber	28	Canada, Chile, Sweden, Germany
Mica, scrap/flake (natural)	27	Canada, China, India, Finland
Garnet (industrial)	25	India, Australia, China, Canada
Perlite	25	Greece
Salt	24	Canada, Chile, Mexico, The Bahamas
Vermiculite	22	China, S. Africa
Sulfur	17	Canada, Mexico, Venezuela
Gypsum	15	Canada, Mexico, Spain
Phosphate rock	15	Morocco
Portland and masonry cement	8	China, Canada, S. Korea, Taiwan
Iron and Steel	7	Canada, EU, China, Mexico
Pumice	7	Greece, Turkey, Iceland, Mexico
Diamond (industrial)	3	Botswana, S. Africa, Namibia, India
Lime	2	Canada, Mexico
Stone (crushed)	1	Canada, Mexico, The Bahamas

^{a/} U.S. Geological Survey. 2012. Mineral Commodity Summaries.

^{b/} Petroleum data from U.S. Department of Energy, Energy Information Administration, 2012 (March).

^{c/} Data for wood, wood products, and wood pulp products are from Random Lengths, 2011, 2012.

9. 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 all metals and all types of plastics combined.

- ___ 10. True (T) or False (F). Energy consumption per capita (per person) in the United States is twice that of the European Union.

This statement is 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
Cyprus	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 Cyprus, 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

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.

This statement is 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.

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 U.S. citizens.

___ 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 2012. 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. may be converted to non-forest uses 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 mankind.

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 increased by over 1,000% (10x) 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 28% 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 45 years.

22. As a percentage of all the paper consumed in the United States in 2010, _____ was recovered for reuse.
- 14 percent
 - 37 percent
 - 63 percent
 - 92 percent

In 2010 (the most recent year for which statistics are available), 63.5 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 2010.
- 14 percent
 - 37 percent
 - 63 percent
 - 92 percent

Recovered paper provided about 37 percent of the U.S. paper industry's fiber in 2010 (b). The difference between the wastepaper collection rate (63 percent) and the recovered paper use rate (37 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. 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 about 12 percent.

___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)