

APES Welcome Assignments

Welcome Assignment 1 - Environmental Current Events (15 questions = 15 points)

- Find three current articles online (from June-August of this year) that provide one example each of negative human impact on the environment.
- One of the articles must focus on Florida.
- You may use a newspaper or journal, as well as “.gov, .edu, or .org” sites.
- Include the web address (URL) for the article.
- Maintain your integrity and write your original thoughts.

For each article, answer the following questions. Please number your answers.

- 1) Summarize the article in your own words.
- 2) What is the problem? When did it begin?
- 3) Who are the responsible parties, if they are known?
- 4) How severe is the environmental impact?
- 5) What are your thoughts on the issue?

Welcome Assignment 2 - Environmental Legislation/Resolutions (16 questions = 16 points)

For the following list of laws or resolutions, state the main objective of each.

1. Clean Air Act (CAA) of 1970, 1990
 2. Clean Water Act (CWA) of 1972
 3. CITES – Convention on International Trade in Endangered Species of Wild Fauna and Flora, 1973
 4. Montreal Protocol, 1987
 5. Kyoto Protocol, 1997
 6. Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund), 1980
 7. Endangered Species Act (ESA) of 1973
 8. Delaney Clause of Food, Drug, and Cosmetic Act, 1958
 9. Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), 1947
 10. Hazardous and Solid Waste Amendments (HSWA) of 1984
 11. Occupational Safety and Health Act of 1970 (OSH Act)
 12. Resource Conservation and Recovery Act (RCRA) of 1976
 13. Safe Drinking Water Act (SDWA) of 1974
 14. Solid Waste Disposal Act (SWDA) of 1965
 15. Toxic Substances Control Act (TSCA) of 1976
 16. Wilderness Act of 1964
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Welcome Assignment 3 - Chemistry Review (34 questions = 34 points)

There is a sizeable amount of chemistry in APES. Successfully completing Chemistry IH/I (with an A or B) is a suggested prerequisite for this class, except for IB sophomores who take chemistry concurrently with APES. Juniors and seniors should know common polyatomic ions and acids on the list below from their chemistry classes.

Write the following chemical formulas. For ions, be sure to include the charges.

- 1) Nitric acid
 - 2) Sulfuric acid
 - 3) Hydrochloric acid
 - 4) Carbonic acid
 - 5) Carbon dioxide
 - 6) Ozone
 - 7) Glucose
 - 8) Oxygen (atmospheric gas)
 - 9) Nitrogen (atmospheric gas)
 - 10) Hydrogen (atmospheric gas)
 - 11) Hydrogen sulfide (dihydrogen monosulfide)
 - 12) Methane
 - 13) Carbon monoxide
 - 14) Nitrogen dioxide
 - 15) Sulfur trioxide
 - 16) Sodium hypochlorite
 - 17) Nitric oxide (nitrogen monoxide)
 - 18) Nitrous oxide (dinitrogen monoxide)
 - 19) Calcium carbonate
 - 20) Ammonia
 - 21) Ammonium ion
 - 22) Carbonate ion
 - 23) Chloride ion
 - 24) Calcium ion
 - 25) Hydrogen ion
 - 26) Bicarbonate ion
 - 27) Nitrate ion
 - 28) Nitrite ion
 - 29) Nitride ion
 - 30) Iron(II) ion (ferrous ion)
 - 31) Iron(III) ion (ferric ion)
 - 32) Phosphate ion
 - 33) Sulfate ion
 - 34) Hydroxide ion
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Welcome Assignment 4 - Math Problems (14 questions – 28 points)

Show all work and units.

METRIC CONVERSIONS

See <http://www.kwanga.net/apesnotes/apes-math-tips-for-ap-exam.pdf> for details.

- 1) 3.7 m = _____ mm
- 2) 3.7 m² = _____ mm²
- 3) 500 GW = _____ W
- 4) 19 ng = _____ μg
- 5) 0.66 MW = _____ kW
- 6) 444 mm³ = _____ m³

PERCENTAGES

See <http://www.kwanga.net/apesnotes/apes-math-tips-for-ap-exam.pdf> for details.

- 7) Calculate the percentage growth rate for a country with a population of 7 million in a year in which it had 100,000 births, 70,000 deaths, 30,000 immigrants, and 40,000 emigrants.
- 8) If the concentration of mercury in a water supply changes from 55 ppm to 8 ppm in a ten year period, what is the percent change of mercury concentration? What is the percent change per year?
- 9) If 25% of a natural area is to be developed, leaving 500 acres untouched, how many acres will be developed?
- 10) A natural gas power plant operates at 60% efficiency. If one cubic meter of natural gas provides 1000 BTU of electricity, how many BTU of waste heat is produced?

DIMENSIONAL ANALYSIS / UNIT CONVERSIONS / FACTOR LABEL

Use the following conversion factors for the problems below.

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| 1 mi ² = 640 acre (ac)
1 ac = 0.405 hectares (ha)
1 barrel oil = 42 gallons (gal)
1 L = 0.264 gal
1 kilowatt-hour (kWh) = 3.4 x 10 ⁴ British Thermal Units (BTU) =
8.6 x 10 ⁵ calories (cal) |
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- 11) A 200-square mile area of a forest occupies how many acres, in both standard and scientific notation?
- 12) A 200-square mile area of a forest occupies how many hectares, in both standard and scientific notation?
- 13) How many kWh does a city consume monthly, if it uses 70 billion BTUs of energy each month?
- 14) One barrel of crude oil produces six million BTU of energy. How many BTU will one liter of crude oil provide, in both standard and scientific notation? How many calories of energy will one gallon of crude oil provide, in both standard and scientific notation?