

Advanced Placement Environmental Science (APES) Summer Assignment (all answers must be hand-written, due on the first day of class)

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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

Solve:

- 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

Memorize the following:

- 1 mi² = 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 10⁴ British Thermal Units (BTU) = 8.6 x 10⁵ calories (cal)

Define the following terms:

Fracking:

Environment:

Environmental science:

Ecosystem:

Biotic:

Abiotic:

Environmentalist:

Environmental studies:

Ecosystem services:

Environmental indicators:

Biodiversity:

Genetic diversity:

Species:

Species diversity:

Speciation:

Background extinction rate:

Greenhouse gases:

Anthropogenic:

Development:

Sustainability:

Sustainable development:

Biophilia:

Ecological footprint:

Scientific Method:

Hypothesis:

Null hypothesis:

Replication:

Sample size:
Accuracy:
Precision:
Uncertainty:
Theory:
Control Group:
Natural Experiment:

Matter:
Mass:
Atom:
Element:
Periodic table:
Molecule:
Compound:
Atomic number:
Isotopes:
Radioactive decay:
Half-life:
Covalent bond:
Ionic bond:
Hydrogen bond:
Polar molecule:
Surface tension:
Capillary action:
Acid:
Base:
pH:
Chemical reaction:
Law of conservation of matter:
Inorganic compound:
Carbohydrate:
Protein:
Nuclei Acid:
DNA:
RNA:
Lipid:
Cell:
Energy:
Electromagnetic radiation:
Photon:
Potential energy:
Kinetic energy:
Chemical energy:
Joule:
Power:

Temperature:
First law of thermodynamics:
Second law of thermodynamics:
Energy efficiency:
Energy quality:
Entropy:
Open system:
Close system:
Input:
Output:
Systems analysis:
Steady state:
Negative feedback loop:
Positive feedback loop:

Biosphere:
Producer:
Autotroph:
Photosynthesis:
Cellular respiration:
Aerobic respiration:
Consumer:
Heterotroph:
Herbivore:
Primary consumer:
Carnivore:
Secondary consumer:
Tertiary consumer:
Trophic levels:
Food chain:
Food web:
Scavenger:
Detritivore:
Decomposers:
GPP:
NPP:
Biomass:
Standing crop:
Ecological efficiency:
Trophic pyramid:
Biogeochemical cycle:
Hydrologic cycle:
Transpiration:
Evapotranspiration:
Runoff:
Carbon cycle:

Limiting nutrient:
Macronutrient:
Nitrogen cycle:
Nitrogen fixation:
Nitrification:
Assimilation:
Mineralization:
Ammonification:
Denitrification:
Leaching:
Phosphorous cycle:
Algal bloom:
Hypoxic:
Sulfur cycle:
Disturbance:
Resistance:
Resilience:
Watershed:
Restoration ecology:
Intermediate disturbance hypothesis:

Climate:
Weather:
Troposphere:
Stratosphere:
Albedo:
Saturation point:
Adiabatic cooling:
Adiabatic heating:
Latent heat release:
Atmospheric convection current:
Hadley cell:
ITCZ:
Polar cell:
Ferrell cell:
Coriolis Effect:
Rain shadow:
Gyres:
Upwelling:
Thermohaline circulation:
ENSO:
Terrestrial biome:
Aquatic biome:
Tundra:
Permafrost:
Boreal forest:

Temperate rainforest:
Temperate seasonal forest:
Woodland shrubland:
Temperate grassland cold desert:
Tropical rainforest:
Tropical seasonal forest/savanna:
Subtropical desert:
Littoral zone:
Limnetic zone:
Phytoplankton:
Profundal zone:
Benthic zone:
Oligotrophic:
Mesotrophic:
Eutrophic:
Freshwater wetland:
Salt marsh:
Mangrove swamp:
Intertidal zone:
Coral reef:
Coral bleaching:
Open ocean:
Photic zone:
Aphotic zone:
Chemosynthesis:

Species richness:
Species evenness:
Phylogeny:
Evolution:
Microevolution:
Macroevolution:
Gene:
Genotype:
Phenotype:
Mutation:
Recombination:
Evolution by artificial selection:
Evolution by natural selection:
Fitness:
Adaptation:
Gene flow:
Genetic drift:
Bottleneck effect:
Extinction:
Founder effect:

Geographic Isolation:
 Allopatric speciation:
 Reproductive isolation:
 Sympatric speciation:
 GMO:
 Range of tolerance:
 Fundamental Niche:
 Distribution:
 Niche generalist:
 Niche specialist:
 Mass extinction:

Environmental Legislation Information, US or world treaty, Law or act,

Legislation Name	US or world treaty, law or act?	Date enacted (year)	purpose, important founding organizations or people, any major points
<p>Agenda 21</p> <p>Clean Air Act</p> <p>Clean Water Acts</p> <p>Comprehensive Environmental Response, Compensation Liability Act</p> <p>Consumer Product Safety Act</p> <p>Convention on International Trade in Endangered Species</p> <p>Emergency Planning & Community Right-To-Know Act</p> <p>Endangered Species Act</p> <p>Energy Policy Act</p> <p>Federal Food, Drug, and Cosmetic Act</p> <p>Federal Insecticide, Fungicide and Rodenticide Act</p> <p>Federal Water Pollution Control Act</p>			

Fish and Wildlife Conservation Act			
Food Quality Protection Act			
Law of the Sea Convention			
Marine Mammal Protection Act			
London Dumping Convention			
Helsinki Convention			
Marine Plastic Pollution Research and Control Act			
Montreal Protocol			
National Energy Act			
National Environmental Policy Act			
National Park Act			
National Wildlife Refuge System Act			
Nuclear Waste Policy Act Occupational Safety and Health Act			
Ocean Dumping Ban Act			