

For help with these problems

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Chemistry\_Questions\_0030

1. True or false:
  - A. As the  $[H^+]$  in a solution increases the pH value increases.
  - B. A solution of  $CO_2$  in water is acidic
  - C. In the same size containers 5.00g of  $O_2$  gas has the same pressure as 5.00g of  $N_2$  gas.
  - D. All isotopes are radioactive.
  - E. Beta rays consist of electrons.
  - F. Increasing amounts of  $CO_2$  in earth's atmosphere is suggested as a key reason for global warming.
  - G. The pressure of a gas increases as the volume of its container decreases.
  - H. When more water is added to a solution of an acid in water the pH does not change.
  - I. Agricultural chemicals are one source of water pollution.
  - J. When an isotope emits gamma rays it becomes a different element.
2. Explaining your answer, which is more acidic, a solution with  $[H^+]$  of  $4.5 \times 10^{-6}$  molar or a solution of pH = 5.0?
3. A solution of an acid in water has 0.0400 mol of  $H^+$  ion in 1.50 L of solution.
  - A. What is the molarity of  $H^+$  ions in the solution?
  - B. What is the molarity of  $OH^-$  ions in the solution?
4. A solution contains  $4.5 \times 10^{-5}$  grams of  $Pb^{2+}$  in 3.00L of solution. What is the concentration of  $Pb^{2+}$  in parts per million (ppm)?
5. What is the pressure in atmospheres of 1.00 gram of  $O_2$  gas in a 500.0 mL container at  $20.0^\circ C$ ?
6.
  - A. An atom of an element with an atomic number of 95 and a mass number of 241 emits an alpha particle.  
what are the atomic number and the mass number of the product?
  - B. An atom of nickel with a mass number of 63 emits a beta particle. What are the atomic number and mass number of the product?
7. How do nuclear fission and nuclear fusion differ?
8. If a person breathes in  $21.0m^3$  of air per day and the air contains 263 micrograms of particulates per  $m^3$  how many grams of particulates does a person breathe in per day

9. If you originally have 156 grams of a radioactive isotope, how many grams of it remain after 4 half life periods?
10. Using appropriate equations show why acid rain can result when fuels containing sulfur are burned.

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