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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 4.5×10^{-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 4.5×10^{-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.