



## Chapter 2 Exercises

### Review Questions

- If xenon has an atomic number of 54 and a mass number of 108, how many neutrons does it have?
  - 54
  - 27
  - 100
  - 108
- Atoms that vary in the number of neutrons found in their nuclei are called \_\_\_\_\_.
  - ions
  - neutrons
  - neutral atoms
  - isotopes
- Potassium has an atomic number of 19. What is its electron configuration?
  - Shells 1 and 2 are full, and shell 3 has nine electrons.
  - Shells 1, 2, and 3 are full, and shell 4 has three electrons.
  - Shells 1, 2, and 3 are full, and shell 4 has one electron.
  - Shells 1, 2, and 3 are full, and no other electrons are present.
- Which type of bond represents a weak chemical bond?
  - hydrogen bond
  - atomic bond
  - covalent bond
  - nonpolar covalent bond
- Which of the following statements is *not* true?
  - Water is polar.
  - Water stabilizes temperature.
  - Water is essential for life.
  - Water is the most abundant molecule in the Earth's atmosphere.
- When acids are added to a solution, the pH should \_\_\_\_\_.
  - decrease
  - increase
  - stay the same
  - We cannot tell without testing.
- We call a molecule that binds up excess hydrogen ions in a solution a(n) \_\_\_\_\_.
  - acid
  - isotope
  - base
  - donator
- Which of the following statements is *true*?
  - Acids and bases cannot mix together.
  - Acids and bases will neutralize each other.
  - Acids, but not bases, can change the pH of a solution.
  - Acids donate hydroxide ions ( $\text{OH}^-$ ); bases donate hydrogen ions ( $\text{H}^+$ ).
- Each carbon atom can bond with as many as \_\_\_\_\_ other atom(s) or molecule(s).
  - one
  - two
  - six
  - four
- Which of the following is *not* a functional group that can bond with carbon?
  - sodium
  - hydroxyl
  - phosphate
  - carbonyl

### Critical Thinking Questions

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11. What makes ionic bonds different from covalent bonds?
12. Why are hydrogen bonds and van der Waals interactions necessary for cells?
13. Explain how buffers help prevent drastic swings in pH.
14. Why can some insects walk on water?
15. What property of carbon makes it essential for organic life?
16. Compare and contrast saturated and unsaturated triglycerides.