Atoms and Isotopes

True or False?

1. Atoms consist of three subatomic particles.
   T   F

2. Most of an atom is empty space.
   T   F

3. Protons, neutrons, and electrons have approximately the same mass.
   T   F

4. Protons, neutrons, and electrons have approximately the same charge.
   T   F

5. Unlike charges attract, like charges repel.
   T   F

6. A proton and an electron repel each other, but a neutron and a proton attract.
   T   F

7. Atoms act solid because they pack a lot of charge into a small volume.
   T   F

8. Almost all of an atom’s mass is in the nucleus.
   T   F

9. The most important particle in determining what element an atom is is the neutron.
   T   F

10. When writing an element symbol, you must always include that element’s atomic number.
    T   F

11. An isotope’s mass number is the number of protons plus the number of neutrons.
    T   F

Multiple Choice

1. Atoms consist of which three subatomic particles?
   a. neutrinos, proteins, and electrons
   b. protons, photons and electrons
   c. electrons, protons, and neutrons
   d. electors, protors, and neutors

2. Which is the smallest particle in an atom?
   a. the electron
   b. the proton
   c. the neutron
   d. the quark
   e. the lepton

3. Which of the following subatomic particles has a positive charge?
   a. the neutron
   b. the electron
   c. the proton
   d. the quark
   e. the neutrino

4. What is important in determining what element an atom is?
   a. the number of protons
   b. the number of electrons
   c. the negative charge of the atom
   d. the neutral charge of the atom
   e. the mass of the nucleus

5. The mass number of an atom is
   a. the weight of the nucleus.
   b. the mass of the atom.
   c. the number of protons plus the number of neutrons.
   d. the number of neutrons minus the number of electrons.
   e. the amount of carbon in each atom.

6. In terms of mass, the isotopes of a particular element are
   a. exactly the same.
   b. always different.
   c. unimportant.
   d. essentially the same.
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Matching

1. Label the following subatomic particles with their correct name.

   A. 
   B. 
   C. 

2. Match each particle below with its proper name.

   - Electron
   - Neutron
   - Proton

Ranking and Fill in the Box

Part 1:
Rank the adjacent carbon atoms in ascending order by mass number.

Part 2:
Write each atom’s mass number in the box to the left of each atom.