

Teacher's Tools[®] Chemistry
Atomic Structure: Worksheet 1

- Which of the following combinations of particles represents an ion of net charge -1 and mass number 82?
 - 46 neutrons, 35 protons, 36 electrons
 - 46 neutrons, 36 protons, 35 electrons
 - 46 neutrons, 36 protons, 36 electrons
 - 47 neutrons, 35 protons, 35 electrons
 - 47 neutrons, 35 protons, 36 electrons
- One species of element M has an atomic number of 10 and a mass number of 20; one species of element N has an atomic number of 11 and a mass number of 20. Which of the following statements about these two species is true?
 - They are isotopes.
 - They are isomers.
 - They are isoelectronic.
 - They contain the same number of neutrons in their atoms.
 - They have the same atomic mass.
- A neutral atom has an atomic number of 30 and a mass number of 62; the atom must contain
 - 92 neutrons
 - 62 electrons
 - 29 neutrons
 - 30 electrons
- Atom X has 12 protons, 12 electrons, and 13 neutrons. Atom Y has 10 protons, 10 electrons, and 15 neutrons. It can therefore be concluded that
 - atoms X and Y are isotopes.
 - atom X is more massive than atom Y.
 - atoms X and Y have the same mass number.
 - atoms X and Y have the same atomic number.
- A neutral atom which has 42 electrons and a mass number of 93 has
 - an atomic number of 51.
 - a nucleus containing 51 neutrons.
 - a nucleus containing 40 neutrons.
 - a nucleus containing 51 protons.

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6. A sodium ion, Na^+ , contains the same number of electrons as
- (A) a sodium atom, Na.
 - (B) a magnesium atom, Mg.
 - (C) a potassium ion, K^+ .
 - (D) a neon atom, Ne.
7. If two atomic species are isotopes, then
- (A) both atoms must have identical nuclei.
 - (B) the nuclei of both atoms contain the same number of neutrons.
 - (C) the nuclei of both atoms contain the same number of protons.
 - (D) both atoms must have the same mass.
8. The partial symbol for a particular ion is ${}^{26}\text{M}^{2+}$. The number of electrons contained in one of these ions is
- (A) 2 (B) 10 (C) 12 (D) 24
9. An atom of iron-56, ${}^{56}\text{Fe}$, contains
- (A) 26 electrons, 26 protons, 56 neutrons
 - (B) 56 electrons, 26 protons, 26 neutrons
 - (C) 56 electrons, 56 protons, 26 neutrons
 - (D) 26 electrons, 26 protons, 30 neutrons
10. ${}^{20}_{40}\text{Ca}$, ${}^{19}_{39}\text{K}$, and ${}^{22}_{42}\text{Ti}$ all have the same
- (A) number of electrons.
 - (B) atomic number.
 - (C) mass number.
 - (D) number of neutrons.
11. The charge on the nucleus of a Mg^{2+} ion is
- (A) +2
 - (B) +10
 - (C) +12
 - (D) -2