Section 5.2 Review
The Structure of the Atom

Multiple Choice

For each question below, select the letter of the best answer.

1. Which of the following statements about protons, neutrons, and electrons is *true*?
(a) Protons and electrons have about the same mass.
(b) Neutrons and electrons have equal but opposite charges.
(c) The mass of a proton is nearly 2000 times greater than the mass of an electron.
(d) The mass of an proton is nearly 2000 times greater than the mass of a neutron.
(e) Neutrons and electrons are found in the nucleus of an atom.

2. What is the atomic number of mercury, Hg?
(a) 2+
(b) 80
(c) 120
(d) 200
(e) 200.6

3. What is the mass number of an atom of chlorine with 18 neutrons?
(a) 1–
(b) 17
(c) 18
(d) 35
(e) 35.5

4. What element is represented by the Bohr-Rutherford diagram below?
(a) potassium, K
(b) calcium, Ca
(c) hydrogen, H
(d) argon, Ar
(e) yttrium, Y

5. Which of the following statements about the masses of atoms is *false*?
(a) Most of the mass of an atom is located in the nucleus.
(b) Electrons contribute very little to the mass of an atom.
(c) Atoms of different elements have different masses.
(d) Most of the mass of an atom's nucleus is due to the mass of neutrons.
(e) The mass number of an atom is equal to the number of protons plus the number of neutrons.

6. A neutral atom has eight electrons and eight neutrons. Which of the following options correctly represents the atom?
(a) carbon-16
(b) oxygen-16
(c) oxygen-24
(d) oxygen-8
(e) sulfur-8

7. Which of the following symbols represents the element with an atomic number of 14?
(a) C
(b) N
(c) Ni
(d) Si
(e) S

8. Which of the following statements is *false*?
(a) The number of neutrons an atom has defines what element it is.
(b) The number of electrons an atom has defines what element it is.
(c) The number of protons an atom has defines what element it is.
(d) All of the above are true.
(e) None of the above are true.

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Short Answer

Answer the following questions in your notebook.

9. If you know the number of protons in the nucleus of a neutral atom, what else do you know about that atom? Explain your answer.

10. Explain what the notation hydrogen-1 and hydrogen-2 means. Use a diagram in your answer.

11. How many neutrons are in the isotope of carbon represented by the following symbol? $^{14}_{6}C$

12. "Every sodium atom has the same number of neutrons." Is this statement true? Explain why or why not.

13. An atom has a mass number of 55 and an atomic number of 25.
(a) What is its element? How do you know?
(b) How many protons are in the nucleus of the atom?
(c) How many neutrons are in the nucleus of the atom?
(d) How many electrons does the atom have?

14. An atom has 5 protons, 6 neutrons, and 5 electrons.
(a) What is the element? How do you know?
(b) Draw a Bohr-Rutherford diagram to represent the atom.

15. An atom has 11 protons, 12 neutrons, and 11 electrons.
(a) What is the element? How do you know?
(b) Draw a Bohr-Rutherford diagram to represent the atom.

16. Examine the portions of the simplified periodic table shown on the right. What do the numbers in each cell represent?

1 **H**																	2 **He**
3 **Li**	4 **Be**											5 **B**	6 **C**	7 **N**	8 **O**	9 **F**	10 **Ne**
11 **Na**	12 **Mg**											13 **Al**	14 **Si**	15 **P**	16 **S**	17 **Cl**	18 **Ar**
19 **K**	20 **Ca**											31 **Ga**	32 **Ge**	33 **As**	34 **Se**	35 **Br**	36 **Kr**
37 **Rb**	38 **Sr**											49 **In**	50 **Sn**	51 **Sb**	52 **Te**	53 **I**	54 **Xe**
55 **Cs**	56 **Ba**											81 **Tl**	82 **Pb**	83 **Bi**	84 **Po**	85 **At**	86 **Rn**