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CHAPTER 6 REVIEW ACTIVITY Text Reference: **Section 6-10**

Development of Atomic Theory

Choose words from the list to fill in the blanks in the paragraphs.

Word List

atom	mass number
atomic number	multiple proportions
Bohr	neutron
Chadwick	nucleus
conservation of matter	Planck
Dalton	proton
definite proportions	Proust
electron	quantum
energy level	Rutherford
isotope	subatomic particle
Lavoisier	Thomson

More than 2000 years ago, Greek philosophers proposed the existence of very small, indivisible particles, each of which was called a(n) __(1)__. The theory that such particles existed was supported, much later, by __(2)__, who proposed, in his law of __(3)__, that matter cannot be created or destroyed. Then __(4)__ proposed, in his law of __(5)__, that the ratio of the masses of elements in any given compound is always the same. The law of __(6)__, proposed soon after, states that the masses of one element that combine with a fixed mass of another element in different compounds are in simple, whole-number ratios. An atomic theory based on these laws was developed by __(7)__.

It was later proposed that the atom is not indivisible, but is made up of smaller particles, each of which is called a(n) __(8)__. These particles include the negatively charged __(9)__, discovered by __(10)__; the positively charged __(11)__; and the uncharged __(12)__; discovered by __(13)__. The latter two particles are present in the __(14)__, or center, of the atom, which was discovered by __(15)__ in his gold-foil experiment.

The number of positively charged particles in an atom is called its __(16)__. The total number of the positively charged and the uncharged particles is called the __(17)__ of the atom. An atom that has the same number of positively charged particles as another atom, but a different number of uncharged particles, is called a(n) __(18)__.

The Danish physicist __(19)__ proposed a model of the atom in which the electrons orbit the nucleus without losing energy. He called each possible orbit a(n) __(20)__. He based his theory to some extent on the work of __(21)__, who proposed that light is made up of units of energy of a definite amount, each of which is called a(n) __(22)__ of energy.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____

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CHAPTER 6 REVIEW ACTIVITY

Text Reference: **Section 6-19**

Subatomic Particles

The three particles found inside the atom are the proton (charge = +1), the neutron (charge = 0), and the electron (charge = −1). In an uncharged atom, the number of electrons equals the number of protons. However, an atom may become charged by the gain or loss of electrons. The net charge is then the algebraic sum of the charges of its protons and electrons.

The number of protons in an atom is called its *atomic number*. The total number of protons and neutrons is called its *mass number*.

Each of the exercises below represents the neutral or charged atom with the name and net charge given. Given the information, determine the values of (a), (b), and (c) for each.

1. Lithium^{1+}

Number of protons = 3
Number of electrons = **(a)**
Number of neutrons = 4
Atomic number = **(b)**
Mass number = **(c)**

2. Phosphorus^{3-}

Number of protons = **(a)**
Number of electrons = 18
Number of neutrons = **(b)**
Atomic number = **(c)**
Mass number = 31

3. Vanadium^{0}

Number of protons = **(a)**
Number of electrons = **(b)**
Number of neutrons = **(c)**
Atomic number = 23
Mass number = 51

4. Krypton^{0}

Number of protons = **(a)**
Number of electrons = **(b)**
Number of neutrons = 48
Atomic number = 36
Mass number = **(c)**

5. Barium^{4+}

Number of protons = 56
Number of electrons = **(a)**
Number of neutrons = **(b)**
Atomic number = **(c)**
Mass number = 137

6. Uranium^{5-}

Number of protons = **(a)**
Number of electrons = 97
Number of neutrons = 146
Atomic number = **(b)**
Mass number = **(c)**

7. Magnesium^{2+}

Number of protons = 12
Number of electrons = **(a)**
Number of neutrons = **(b)**
Atomic number = **(c)**
Mass number = 24

8. Polonium^{2-}

Number of protons = **(a)**
Number of electrons = **(b)**
Number of neutrons = **(c)**
Atomic number = 84
Mass number = 209

1. a. _____
b. _____
c. _____
2. a. _____
b. _____
c. _____
3. a. _____
b. _____
c. _____
4. a. _____
b. _____
c. _____
5. a. _____
b. _____
c. _____
6. a. _____
b. _____
c. _____
7. a. _____
b. _____
c. _____
8. a. _____
b. _____
c. _____