group = # of e⁻s in outer level
Period = # of energy levels occupied

Review of Atomic Structure

Draw the energy level diagrams for each of the following elements and answer the two questions at the bottom of the page.

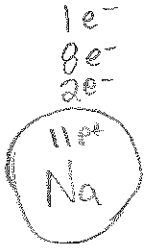
1. hydrogen atom

2. carbon atom

3. helium atom

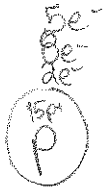
4. oxygen atom

5. sodium atom



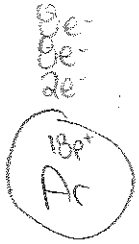
6. aluminum atom

7. phosphorus atom



8. chlorine atom

9. argon atom



10. calcium atom

11. What is the relationship between group (vertical) number and number of valence (outermost) electrons?

group # = # of valence e⁻s.

12. What is the relationship between period number and the number of energy levels occupied by electrons?

period # = # of levels occupied

...iew of Ionic Structure

...raw the energy level diagrams for each of the following ions and answer the two questions at the bottom of the page.

1. lithium ion

metal gave an e⁻ away.

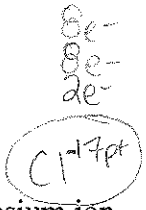
2. fluoride ion

non-metal gains 1e⁻

3. aluminum ion

metal loses 3e⁻

4. chloride ion

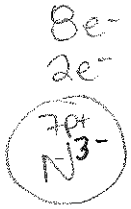


non metal gains 1e⁻

5. magnesium ion

metal loses 2e⁻

6. nitride ion



non-metal gained 3e⁻

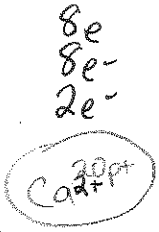
7. sodium ion

metal given an e⁻ away *

8. sulphide ion

non-metal gained 2e⁻

9. calcium ion



10. oxide ion

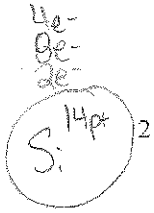
non metal gains 2e⁻

11. What is the relationship between the electron configuration of an ion of one of the representative elements and the electron configuration of the nearest noble gas?

the valence levels are the same.

12. What problem arises when trying to predict the charge on an ion in Group 14?

4 electrons in valence orbital acts stable



Review of Atoms vs. Ions

Complete the following chart:

Name	Symbol	# of Protons	# of Electrons	Net Charge
eg. calcium ion	Ca^{2+}	20	18	2+
1. oxygen atom	O	8	8	0
2.fluoride ion	F^{1-}	9	10	1−
3. carbon atom	C	6	6	0
4. chloride ion	Cl^-	17	18	1−
5. magnesium ion	Mg^{2+}	12	10	2+
6. sulfide ion	S^{2-}	16	18	2−
7. potassium ion	K^{+1}	19	18	1+
8. neon atom	Ne	10	10	0
9. barium ion	Ba^{2+}	56	54	2+
10. helium atom	He	2	2	0
11. hydride ion	H^+	1	0	1+
12. nitride ion	N^{3-}	7	10	3−
13. iron (III) ion	Fe^{3+}	26	23	3+
14. tin (IV) ion	Sn^{4+}	50	46	4+
15. sodium ion	Na^+	11	10	1+
16. aluminum ion	Al^{3+}	13	10	3+
17. copper (II) ion	Cu^{2+}	29	27	2+
18. iodide ion	I^{1-}	53	54	1−
19. gold atom	Au	79	79	0
20. cesium ion	Cs^{+1}	55	54	1+