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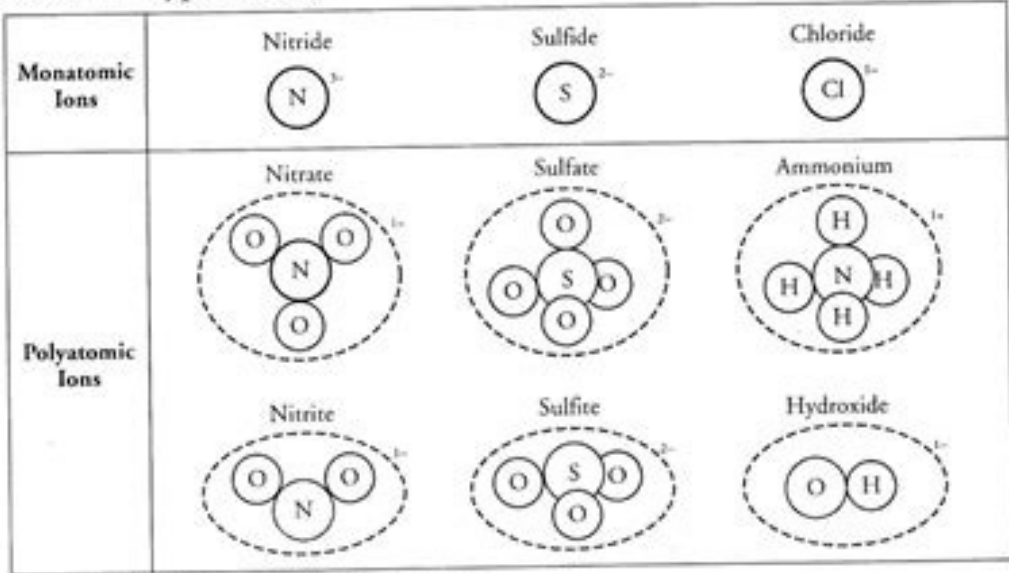
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Can a group of atoms have a charge?

Why?

Do you know you eat a lot of "-ates"? Next time you look at a food label, read the ingredients and you will likely find a number of ingredients that end with "-ate," such as sodium phosphate or calcium carbonate. Did you ever wonder what the chemical formulas of these ingredients look like? In this activity we will explore polyatomic ions, which are groups of atoms that carry a charge. These ions are found in our food ingredients, natural waterways, and many other chemical compounds you encounter every day.

Model 1 – Types of Ions



1. Use Model 1 to complete the table below.

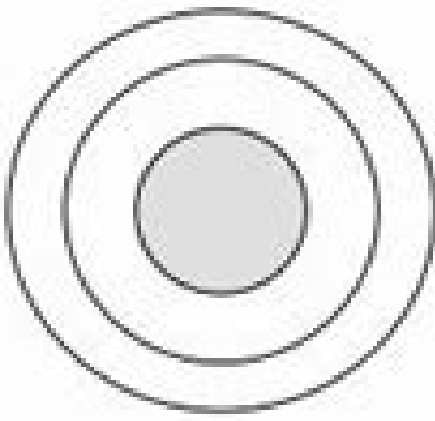
Name of Ion	Nitride	Nitrate	Sulfate	Sulfite	Ammonium
Charge on Ion	-3	-1	-2	-2	+1
Type and Number of Atoms	monatomic 1	polyatomic 4, 3 O	1 sulfur 4 oxygen	polyatomic 4, 3 O	polyatomic 5, 4 H
Chemical Formula	N^{3-}	NO_3^{-}	SO_4^{2-}	SO_3^{2-}	NH_4^{+}

Polyatomic Ions

Key

Part A: Atomic Structure

1. Draw five protons in the nucleus of the atom. Label them with their charge.
2. Draw six neutrons in the nucleus of the atom.
3. Draw two electrons in the first energy level and label them with their charge.
4. Draw three electrons in the second energy level and label them with their charge.
5. What element is represented by the diagram? _____



Part B: Atomic Calculations

6. Label the information provided in the periodic table.

8	←	_____
O	←	_____
Oxygen	←	_____
15.999	←	_____

7. What does the atomic number represent?
_____ or _____

8. What does the atomic mass represent?
_____ + _____

9. How would you figure the number of protons or electrons in an atom?

10. How would you figure the number of neutrons in an atom?

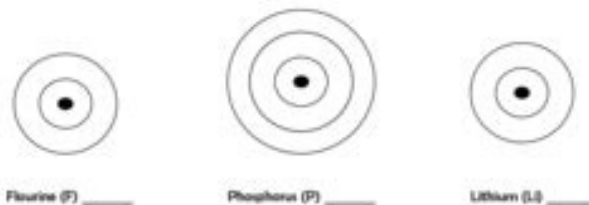
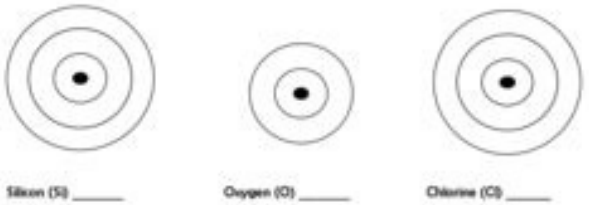
11. Use your knowledge of atomic calculations to complete the chart.

Element	Atomic Number	Atomic Mass	Protons	Neutrons	Electrons
Li	3	7			
P	15	31			
Cl		35	17		
Ni	28			31	
K		39			19
Ag	47			61	
H		1	1		
Si				14	14
W			74	110	

Name _____ Period _____
Date _____

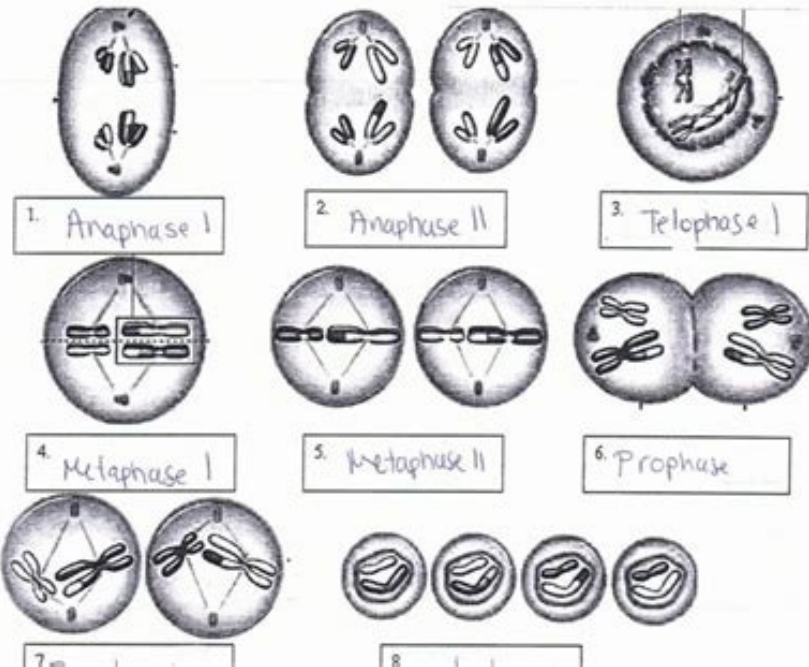
BOHR MODEL WORKSHEET

For each element draw the inner electrons blue & the valence (outer) electrons red.
The circles represent possible electron shells.



Phases of Meiosis

Name of Phase	Description
1. Prophase I	Homologous chromosomes pair up and form tetrad
2. Anaphase I	Spindle fibers move homologous chromosomes to opposite sides
3. Telophase I	Nuclear membrane reforms, cytoplasm divides, 4 daughter cells formed
4. Metaphase I	Chromosomes line up along equator, not in homologous pairs
5. Prophase II	Crossing-over occurs
6. Anaphase II	Chromatids separate
7. Metaphase II	Homologs line up along equator
8. Telophase II	Cytoplasm divides, 2 daughter cells are formed



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