

MOLECULES

1. What is a molecule? *group of atoms held together by chemical bonds*
2. What are chemical bonds? *force between atoms*
3. What is the Octet Rule? *atoms gain, lose or share e's to fill their outermost shell with 8 e's.*
4. What rule helps you determine the # of bonds a metal makes?
bonds = # group
5. What rule helps you determine the # of bonds a non-metal makes?
bonds = 8 - group
6. Explain what the valence of an atom means.
bonds an atom will make.
7. Complete the table below.

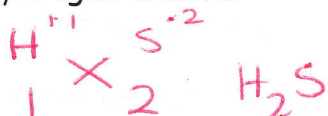
element	symbol	# valence electrons	# bonds	valence	charge
Argon	Ar	8	0	0	0
Boron	B	3	3	3	+3
Calcium	Ca	2	2	2	+2
Carbon	C	4	4	4	+4
Fluorine	F	7	1	1	-1
Francium	Fr	1	1	1	+1
Helium	He	2	0	0	0
Hydrogen	H	1	1	1	+1
Lithium	Li	1	1	1	+1
Magnesium	Mg	2	2	2	+2
Nitrogen	N	5	3	3	-3
Oxygen	O	6	2	2	-2
Phosphorus	P	5	3	3	-3

8. What types of bonds form between metals & non-metals? *ionic*
9. What types of bonds form between 2 non-metals? *covalent*
10. Name the diatomic elements.



11. Use the cross-over rule or Lewis Dot Diagrams to determine the molecular formulas of the following element combinations.

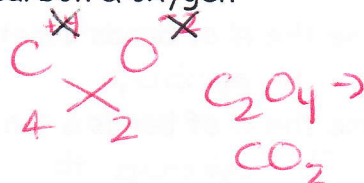
a) hydrogen & sulfur



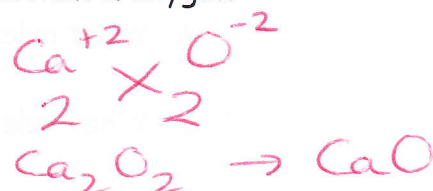
d) aluminum & chlorine



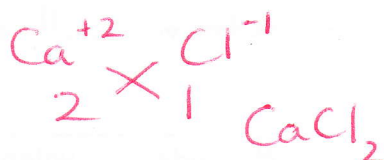
b) carbon & oxygen



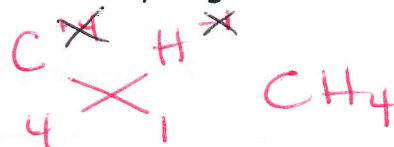
e) calcium & oxygen



c) calcium & chlorine



f) carbon & hydrogen



12. Using the cross-over rule, decide whether the following compounds are possible.

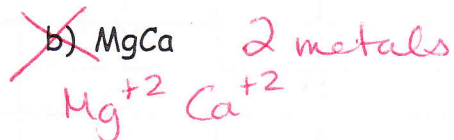
a) MgO



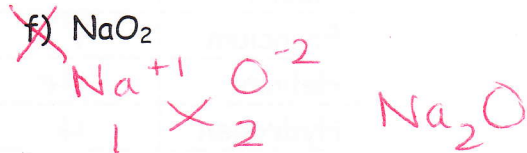
e) AlNe₃



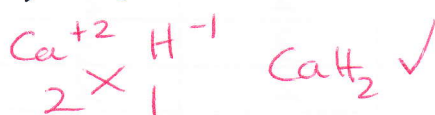
b) MgCa



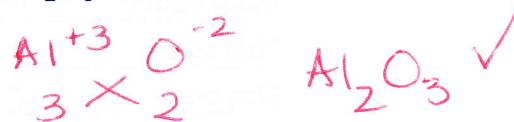
f) NaO₂



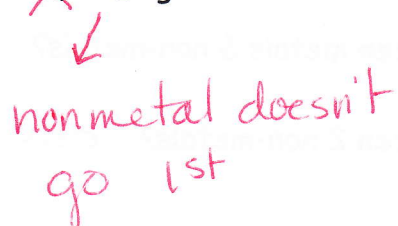
c) CaH₂



g) Al₂O₃



d) Cl₂Mg



h) BF₃

