

Grade 10 Review - Chemistry

Name: _____

Date: _____

1. What is the definition of chemistry?
2. What are subatomic particles?
3. Where do you find the atomic number and mass?
4. How can you determine what the number of protons, neutrons and electrons are in each element?
5. Copy and fill out the following table:

# of protons	# of electrons	# of neutrons	Atomic mass	Atomic number	Element Name	Element Symbol
7						N
				20		
			27			
		18			Chlorine	

6. What are the names of all the families we have learned about
7. Where are all the families located on the periodic table.
8. What are the rows called on a periodic table?
9. What are the columns called?
10. What is a valence shell?
11. How many electrons are found in the valence shells of the following elements:
 - a. Oxygen
 - b. Beryllium
 - c. Sodium
 - d. Krypton
12. What are metals and where are they found on the periodic table?
13. What are metalloids and where are they found on the periodic table?
14. What are non-metals and where are they found on the periodic table?
15. What does it mean for an element to be reactive?
16. What family is the most reactive and why?
17. What are stable octets?
18. What family is considered to be the most stable and why?
19. What is matter? What are the three states of matter?
20. What is the difference between elements and compounds?
21. Name 3 different compounds
22. What information does a Bohr model show?
23. Draw a bohr model for the following elements:
 - a. Aluminum
 - b. Potassium
 - c. Magnesium
 - d. Fluorine
24. What is an ion?
25. What is a cation?
26. What is an anion?
27. What does the term combining capacity mean?

28. What is the combining capacity of the following elements:
- Boron
 - Calcium
 - Helium
 - Chlorine
29. Atoms that lose electrons will have what: a positive or negative charge?
30. What is an ionic compound?
31. Why do non-metals need to bond with metals?
32. What is an ionic bond?
33. Use a bohr model to show the ionic bond between Lithium and Fluorine.
34. What is the ionic compound formula for the following elements (**cross-over** method):
- Calcium and Iodine
 - Aluminum and Chlorine
 - Magnesium and Phosphorus
 - Mg + F
 - Li + S
35. Draw the ion bohr diagram for the following ions:
- Na⁺
 - S²⁻
 - Mg²⁺
36. Name the following ionic compounds
- SrS
 - AlCl₃
 - NaF
37. Put the following ionic compounds in their chemical formulas
- Lithium Sulfide
 - Magnesium Oxide
 - Calcium Fluoride
38. What is the Stock Naming System?

39. How do you find the charge of the anion when dealing with multivalent metals?
40. Name the following ionic compounds using the stock system (this means they have multivalent metals in them and you must use roman numerals):
- PbS₂
 - TiCl₃
 - HgI
41. Given the name of the ionic compound, determine its chemical formula:
- Iron (III) chloride
 - Copper (I) bromide
 - Lead (IV) Sulfide
42. What is a multivalent metal?
43. What is a covalent/molecular bond?

44. What does the term diatomic mean and what are the 7 diatomic elements?
(remember the acronym)

45. Name the following covalent/molecular compounds (remember to use prefixes!)

1	2	3	4	5	6	7	8	9	10
Mono	Di	Tri	Tetra	Penta	Hexa	Hepta	Octa	Nona	Deca

- CO
- N₂O
- CF₄
- BCl₃

46. Write out the formulas of the following molecular compounds

- Nitrogen triiodide
- Sulfur tetrabromide
- Carbon tetrachloride
- Dinitrogen pentoxide

47. What are polyatomic ions?

48. Using the table below, write out the correct formulas for the following polyatomic compounds.

- Aluminum hydroxide
- Beryllium nitrate
- Lead (IV) carbonate
- Scandium phosphate

Polyatomic Ion Table		
Name	Formula	Charge
ammonium	NH ₄ ⁺	+1
hydroxide	OH ⁻	-1
nitrate	NO ₃ ⁻	-1
nitrite	NO ₂ ⁻	-1
hypochlorite	ClO ⁻	-1
chlorite	ClO ₂ ⁻	-1
phosphate	PO ₄ ³⁻	-3
sulfate	SO ₄ ²⁻	-2

49. What is the law of conservation of mass
50. When balancing chemical equations, we use certain terms. What do the following terms mean:
- Word equation
 - Skeletal equation
 - Balanced chemical equation
51. For the following equation, identify the reactant, product and coefficients.
- $2 \text{Ca} + \text{O}_2 \rightleftharpoons \text{CaO}$
52. Balance the following skeletal equations:
- $___ \text{CH}_4 + ___ \text{Cl}_2 \rightleftharpoons ___ \text{CCl}_4 + ___ \text{HCl}$
 - $___ \text{Mg} + ___ \text{N}_2 \blacktriangleright ___ \text{Mg}_3\text{N}_2$
 - $___ \text{C}_3\text{H}_8 + ___ \text{O}_2 \blacktriangleright ___ \text{CO}_2 + ___ \text{H}_2\text{O}$
 - $___ \text{Pb}(\text{NO}_3)_2 + ___ \text{KI} \blacktriangleright ___ \text{PbI}_2 + ___ \text{KNO}_3$
53. Write out the formulas for the following compounds (you should know these my memorization):
- Ammonia
 - Water
 - Methane
 - Carbon dioxide
 - Hydrogen peroxide
54. Translate these formulas into word equations (remember to watch for multivalent metals, diatomic elements and molecular compounds!):
- $\text{Fe}_2\text{O}_3 + \text{H}_2 \rightarrow \text{Fe} + \text{H}_2\text{O}$
 - $\text{N}_2 + \text{O}_2 \rightarrow \text{N}_2\text{O}$
 - $\text{CH}_4 + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$
 - $\text{C} + \text{H}_2\text{O} \rightarrow \text{CO} + \text{H}_2$
55. Translate the following word equations into formulas.
- Dinitrogen monosulfide breaks down to yield hydrogen gas and sulfur
 - Bromine gas and calcium iodide react to form iodine gas and calcium bromide.
 - Iron (III) sulfate and potassium hydroxide combine to form potassium sulfate.
 - Sulfur and oxygen gas combine to form sulfur dioxide.
56. What are the 5 major reaction types.
57. Identify the following formulas with their correct reaction type.
- $\text{H}_2 + \text{O}_2 \rightarrow \text{H}_2\text{O}$
 - $\text{HgO} \rightarrow \text{Hg} + \text{O}_2$
 - $\text{C}_3\text{H}_8 + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$
 - $\text{Fe}_2(\text{SO}_4)_3 + \text{KOH} \rightarrow \text{K}_2\text{SO}_4 + \text{Fe}(\text{OH})_3$
 - $\text{H}_2\text{S} + \text{Cl}_2 \rightarrow \text{S}_8 + \text{HCl}$
58. What is the definition of an acid

59. What is the definition of a base?
60. What are indicators?
61. Is our stomach acidic or basic?
62. How does an alka selzer work in our stomachs?
63. What does pH stand for?
64. What numbers on the pH scale would indicate a neutral object? An acidic material? A basic material?
65. Describe the reactivity of acids and bases with metals.
66. Describe the conductivity of acids and bases.
67. What are the two products formed in a neutralizing reaction between an acid and a base?
68. Write a balanced formula for the following neutralizing reactions.
 - a. Hydrochloric acid and sodium hydroxide
 - b. Sulfuric acid and potassium hydroxide