

1. Name two household products that have an HPS on them and state the symbol.

2. What does WHMIS stand for? What does HPS stand for?

Workplace Hazardous Materials Information System
 Hazardous Household Product Symbols

3. Differentiate between an element and a compound. Give an example of each.

An element contains one type of atom, Cu, Ag, Au etc., a compound contains two or more types of atoms combined in a fixed ratio CO₂, Al₂O₃

4. Differentiate between physical and chemical properties.

Physical properties describe the substance chemical properties describe how a substance will react with substances

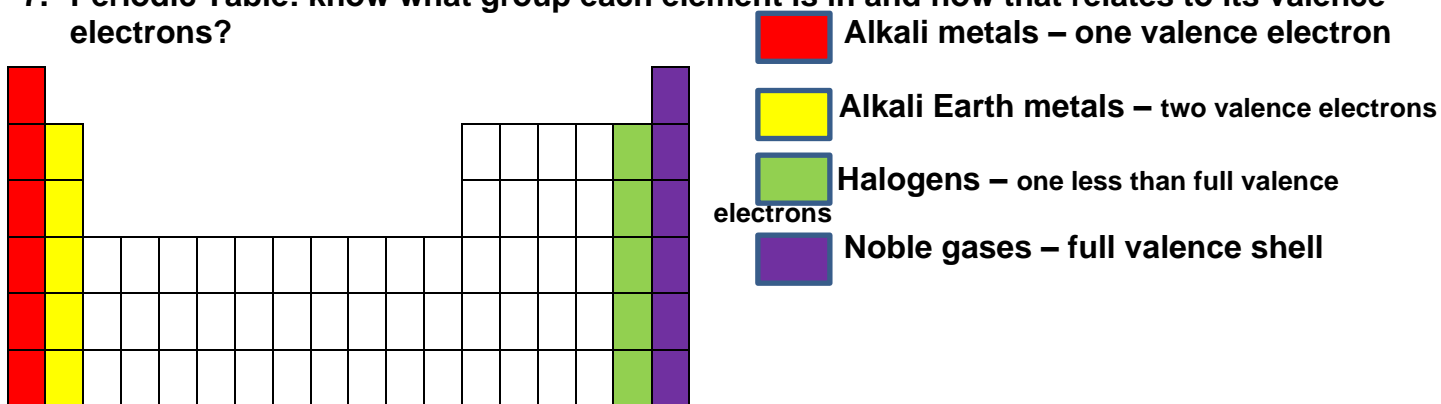
5. State two **physical** and two **chemical properties** of matter.

- colour
- luster
- ductility
- malleability
- odour
- brittleness
- reaction with an acid
- reaction with water
- reaction with oxygen

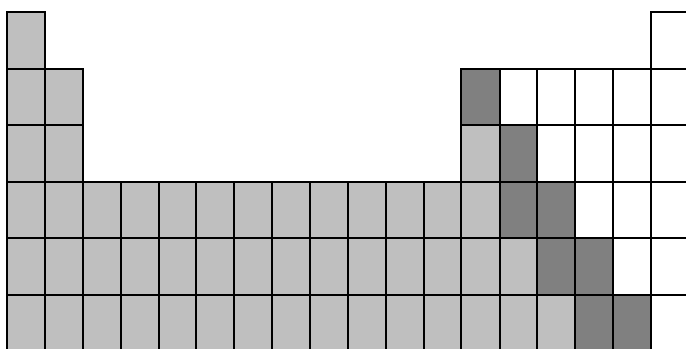
6. State four clues that a chemical change has taken place.

- change in colour
- a new odour
- bubbles of gas are formed
- a precipitate is formed

7. Periodic Table: know what group each element is in and how that relates to its valence electrons?



8. What are metal groups non-metal groups and transition metals



9. Differentiation between an ionic compound and a molecular compound. Give an example of each

An ionic compound is made by a metal and a non-metal- calcium chloride, sodium sulfate
aluminum phosphide, a molecular compound is made by two or more non-metals - carbon dioxide, sugar, nitrogen dioxide

10. How does an atom become an ion? Gaining or losing electrons.

11. Why do elements form ions? To get a full valence shell and become stable

12. Metals tend to lose electrons. Non-metals tend to gain electrons.

13. What is the charge of the ions of the following atoms?

- a) Beryllium +2 b) Phosphorus -3

14. Which noble gases are the following ions isoelectronic with?

- a) sodium – neon b) phosphorous – argon c) bromine – krypton
d) calcium – argon

15. Write the chemical formula for the following compounds

- a) potassium oxide – K_2O b) barium phosphide – Ba_3P_2 c) iron (III) chloride – $FeCl_3$
d) calcium nitrate – $Ca(NO_3)_2$ e) aluminum nitride - AlN f) copper (I) chlorate – $CuClO_3$
g) calcium sulfate – $CaSO_4$ h) disulfur heptaoxide – S_2O_7 i) ammonium fluoride – NH_4F

16. Write the names of the following compounds

- a) KBr – potassium bromide b) Na_3N – sodium nitride c) NiO – nickel (II) oxide
d) FeP – Iron (III) phosphide e) Br_3O_8 – tribromine octoxide
f) $Ca(NO_3)_2$ – calcium nitrate g) $Pb_3(PO_4)_2$ – lead(II) phosphate
h) CCl_4 – carbon tetrachloride i) $FeSO_4$ – iron (II) sulfate

17. Fill in the following chart, to show how an ionic compound is formed

	Lewis Dot or Bohr Diagram of ATOM	Lewis Dot or Bohr Diagram of ION	Lewis Dot or Bohr Diagram of the formation of the COMPOUND, showing electron transfer
Magnesium		$[Mg]^{2+}$	$\cdot Mg \cdot + 2 \cdot \ddot{Cl} \cdot \rightarrow [Mg]^{2+} + 2 [\ddot{Cl}]^{-}$
Chlorine		$[\ddot{Cl}]^{-}$	
Carbon		NA	$\rightarrow O=C=O$
Oxygen		NA	

18. State the Law of Conservation of Mass.

Matter cannot be created or destroyed. The total mass of the reactants is equal to the total mass of the products

19. When 8.0 grams of methane is reacted with 16.0 grams of oxygen gas, 18.0 of water is produced how much carbon dioxide is produced?

methane + oxygen → carbon dioxide + water
mass of reactants = mass of products
mass of methane + mass of oxygen = mass of carbon dioxide + mass of water
8.0g + 16.0g = mass of carbon dioxide + 18.0g
mass of carbon dioxide = 6.0g

20. Count the number of atoms in each of the following (make a chart for yourself to keep track):

a) (SO₄)₂

sulfur 2
oxygen 8
total 10

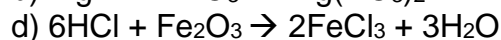
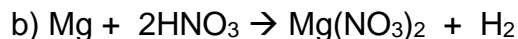
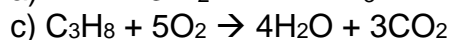
b) Ba₃(PO₄)₂

barium 3
phosphorus 2
oxygen 8
total 13

c) 3Cr₃(SO₄)₂

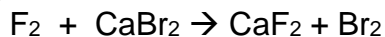
Chromium 9
sulfur 6
oxygen 24
total 39

21. Balance the following equations.

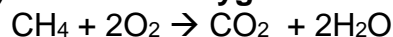


22. Convert the following word equations to a skeleton equation and then balance them

a) fluorine + calcium bromide → calcium fluoride + bromine



b) methane + oxygen → carbon dioxide + water



23. For each of the following reactions, predict the product(s), identify the TYPE of chemical reaction, write the chemical skeleton for the equation, and then balance it!

a. aluminum combines with chlorine



b. magnesium combines with aluminum chloride.



c. calcium chloride combines with sodium sulfide.



d. barium oxide is heated.



e. methane fuel burns.



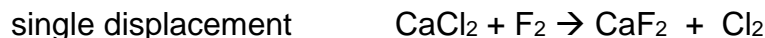
f. $\text{Sn} + \text{AgNO}_3 \rightarrow$



g. $\text{NiCO}_3 \rightarrow$



h. $\text{CaCl}_2 + \text{F}_2 \rightarrow$



i. $(\text{NH}_4)_2\text{SO}_4 + \text{Ba}(\text{NO}_3)_2 \rightarrow$



