

What do you remember about chemistry?

1. Classify each of the following as physical (P) or chemical (C) property.

- a) _____ the aluminum metal is malleable
- b) _____ when placed in acid, Mg metal produces hydrogen gas
- c) _____ the density of water is 1.0 g.ml
- d) _____ the melting point of water is 0C

2. Classify each of the following as physical (P) or chemical (C) change.

- a) _____ Water freezes into an icicle. The icicle melts producing water.
- b) _____ A teaspoon of vinegar is placed into a glass of milk. The milk curdles, and separates into solid lumps, and a clear liquid.
- c) _____ A glass is dropped on the floor, and breaks into many pieces. The change is permanent. Perhaps the glass can be recycled.
- d) _____ A teaspoon of dry, white solid salt is stirred into a glass of pure water. The salt no longer be seen, but the water tastes salty.
- e) _____ Meat left too long in the refrigerator gradually changes colour form red to grey, and foul odour forms in it.

3. Complete the following chart.

Subatomic Particle	Symbol	Charge	Relative Mass	Location in the atom
Proton				
		-1		
			0	

4. Write the chemical formula/the chemical name for the following compounds

- | | | | |
|------------------------|-------|---------------------------|-------|
| a. Lead (II) oxide | _____ | b. Li_2S | _____ |
| c. magnesium nitride | _____ | d. P_2O_5 | _____ |
| e. nitrogen trioxide | _____ | f. PtCl_4 | _____ |
| g. sulfur hexabromide | _____ | h. ammonium bromide | _____ |
| i. potassium phosphate | _____ | j. potassium nitrate | _____ |
| k. arsenic trichloride | _____ | | |

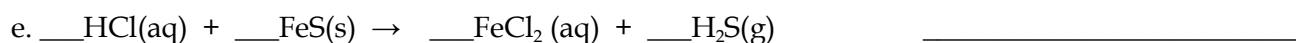
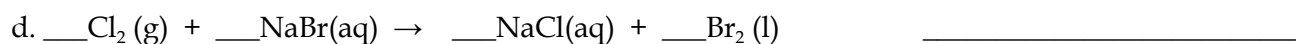
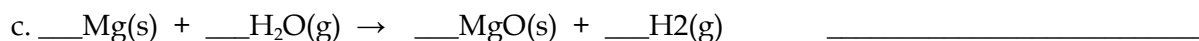
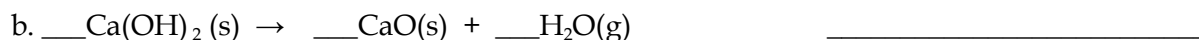
5. Complete the following chart.

Standard Atomic Notation	Element Name	Atomic Number	Mass Number	Number of Protons	Number of Electrons	Number of neutrons
$^{27}_{13}\text{Al}$						

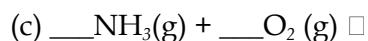
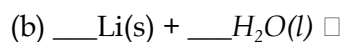
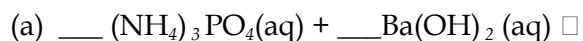
6. Draw Bohr-Rutherford diagrams for each of the elements below and indicate combining capacity for each.

Standard Atomic Notation	Lewis Dot Diagram	Standard Atomic Notation	Lewis Dot Diagram
$^{27}_{13}\text{Al}$		$^{23}_{11}\text{Na}$	
$^{40}_{18}\text{Ar}$		$^{14}_7\text{N}$	

7. Balance the following chemical reactions and classify each as **synthesis, decomposition, single displacement, double displacement, or combustion**.



8. Try to complete and balance the following equations:



ANSWERS

1. Classify each of the following as physical or chemical property.

- the aluminum metal is malleable - **P**
- when placed in acid, Mg metal produces hydrogen gas - **C**
- the density of water is 1.0 g/ml - **P**
- the melting point of water is 0C - **P**

2. Classify each of the following as physical or chemical change.

- Water freezes into an icicle. The icicle melts producing water. - **P**
- A teaspoon of vinegar is placed into a glass of milk. The milk curdles, and separates into solid lumps, and a clear liquid. - **C**
- A glass is dropped on the floor, and breaks into many pieces. The change is permanent. Perhaps the glass can be recycled. - **P**
- A teaspoon of dry, white solid salt is stirred into a glass of pure water. The salt no longer be seen, but the water tastes salty. - **P**
- Meat left too long in the refrigerator gradually changes colour from red to grey, and foul odour forms in it. - **C**

3. Complete the following chart.

Subatomic Particle	Symbol	Charge	Relative Mass	Location in the atom
Proton	P	+1	1	Nucleus
Electron	E	-1	0	Outside the nucleus
Neutron	N	0	1	Nucleus

4. Write the chemical formula/the chemical name for the following compounds

- | | | | |
|-----------------------------------|--|----------------------------------|------------------------|
| a. Lead (II) oxide | <u> PbO </u> | b. Li ₂ S | lithium sulfide |
| c. magnesium nitride | <u> Mg₃N₂ </u> | d. P ₂ O ₅ | diphosphorus pentoxide |
| e. nitrogen trioxide | <u> NO₃ </u> | f. PtCl ₄ | platinum (IV) chloride |
| g. SBr ₆ | sulfur hexabromide | h. NH ₄ Br | ammonium bromide |
| i. K ₃ PO ₄ | potassium phosphate | j. KNO ₃ | potassium nitrate |
| k. AsCl ₃ | arsenic trichloride | | |

5. Complete the following chart.

Standard Atomic Notation	Element Name	Atomic Number	Mass Number	Number of Protons	Number of Electrons	Number of neutrons
²⁷ ₁₃ Al	Aluminum	13	27	13	13	14
⁴⁰ ₁₈ Ar	Argon	18	40	18	18	22
²³ ₁₁ Na	Sodium	11	23	11	11	12

7. Balance the following chemical reactions and classify each as synthesis, decomposition, single displacement, double displacement, or combustion.

- | | |
|--|---------------------|
| a. <u> 2 </u> Mg _(s) + <u> </u> O _{2(g)} → <u> 2 </u> MgO _(s) | synthesis |
| b. <u> </u> Ca(OH) _{2(s)} → <u> </u> CaO _(s) + <u> </u> H ₂ O _(g) | decomposition |
| c. <u> </u> Mg _(s) + <u> </u> H ₂ O _(g) → <u> </u> MgO _(s) + <u> </u> H _{2(g)} | single displacement |
| d. <u> </u> Cl _{2(g)} + <u> 2 </u> NaBr _(aq) → <u> 2 </u> NaCl _(aq) + <u> </u> Br _{2(l)} | single displacement |
| e. <u> 2 </u> HCl _(aq) + <u> </u> FeS _(s) → <u> </u> FeCl _{2(aq)} + <u> </u> H ₂ S _(g) | double displacement |

8. Try to complete and balance the following equations:

- 2 (NH₄)₃PO₄(aq) + 3 Ba(OH)₂(aq) → Ba₃(PO₄)₂(s) + 6 NH₄OH(aq)
- 2 Li(s) + 2 H₂O(l) → 2 LiOH(aq) + H₂(g)
- 4 NH₃(g) + 3 O₂(g) → 2 N₂(g) + 6 H₂O(l)