

Final Review
1st semester

Vocabulary:
element

chemical reaction

matter

physical property

mass

mixture

compound

homogeneous mixture

heterogeneous mixture

physical property

chemical property

density

volume

weight

proton

atom

mass number

atomic mass unit

electron

isotopes

atomic number

atomic mass

nonmetals

neutron

nucleus

anion

cation

molecule

chemical formula

ionic formula

polyatomic ion

ions

mole

molar mass

coefficient

combustion reaction

reactant

balanced equation

product

decomposition reaction

single replacement reaction

catalyst

Questions:

1. How many significant figures are in 2103.2 g?

2. How many milligrams are in 2.5 kg?

3. Are the following physical or chemical properties?

- a. color
- b. density
- c. freezing point
- d. combustibility

4. What is the volume of 60.0 g of ether if the density of ether is 0.70 g/ml?

5. The temperature of -14 C corresponds to a Kelvin reading of?

6. Concentrated hydrochloric acid has a density of 1.19 g/ml. What is the mass, in grams, of 2.00 liters of this acid?

7. Chlorine boils at 239 K. What is the boiling point of chlorine expressed in degrees Celsius?

8. Are the following physical or chemical changes?

- a. toasting bread
- b. cooking a hamburger
- c. digesting a banana
- d. melting butter
- e. slicing cheese

9. Would the following be heterogeneous or homogeneous?

- a. element
- b. compound
- c. water
- d. sugar
- e. salt water
- f. vegetable soup
- h. oxygen

10. Name the following compound, element, or mixture.

- a. carbon
- b. hydrogen
- c. water
- d. salt water
- e. air
- f. cobalt
- g. sodium chloride

11. Fill in the following table.

atomic number	mass number	number of protons	number of neutrons	number of electrons
9			10	
	14		9	
			21	20
13	27			
	56	26		

12. How many protons, neutrons and electrons would the following have?



13. Write the formulas for the following compounds.

- a. magnesium cyanide
- b. mercury (II) bromide
- c. sulfur hexafluoride
- d. silicon dioxide
- e. carbon tetrafluoride
- f. zinc hydroxide
- g. phosphorus tribromide

- h. silver nitrate
- i. ferric sulfate
- j. iron (III) sulfate

14. Name the following compounds.

- a. CuCl
- b.
- c.
- d.
- e. ()
- f.
- g. CO
- h. Sn(OH)₄
- i.
- j.

15. How many moles of Pb is 9.3×10^{15} atoms of Pb?

16. What is the molar mass of ?

17. Find the mass of 3.65×10^{-2} mol of .

18. What is the density of NO gas at STP?

19. What is the mass of two moles of NaCl?

20. How many moles are there in 16 grams of ?

21. What is the volume of 16 grams of at STP?

22. What is the percent composition of each of the following?

a.

b. HgS

c. $\text{Ca}(\text{OH})_2$

23. Write a balanced chemical equation for each of the following and say what type of reaction it is.

a. Aluminum reacts with hydrochloric acid to form hydrogen gas and aluminum chloride.

b. Hydrogen nitrate reacts with magnesium hydroxide to form magnesium nitrate and water.

c. Iron reacts with oxygen to form iron (III) oxide.

d. Water breaks down into oxygen and hydrogen.

e. gas reacts with oxygen to form carbon dioxide and water.