

Atom formal assignment

Name: _____

Date: _____

Match the name of the scientist with the corresponding statements. You may only choose each answer once.

1. _____ When elements react to form compounds, they react in defined, whole-number ratios.
2. _____ Did cathode ray tube (CRT) experiments and discovered the electron
3. _____ Determined the charge on a single electron in the famous oil drop experiment.
4. _____ Discovered that the vast majority of the mass of the atom was located in a centrally located, positively charged nucleus in his famous gold foil experiment.
5. _____ discovered the neutron
6. _____ Invented a sealed glass tube with electrodes at either end. When a high voltage current was passed through it, electrons would be accelerated from the cathode to the anode.
7. _____ Philosopher who first proposed the concept of the atom
8. _____ Is credited with the discovery of radioactivity.
9. _____ Separated radium and Polonium and studied their radioactive properties. Coined the term radioactivity.

A. Rutherford B. Crooke C. Millikan D. Democritus

E. Curie F. Becquerel G. Dalton H. Chadwick I. Thomson

10. Classify each of the following mixtures as either a **mechanical mixture**, a **solution** or pure substances. For pure substances, indicate whether they are **compounds** or **elements**.

1. Apple juice
2. Distilled water
3. Copper wire
4. Salt water
5. Air
6. Dirt
7. Trail mix (snack)
8. Oxygen
9. Carbon dioxide

11. Classify the following changes as chemical (C) or physical (P).

- a. perfume evaporating on your skin
- b. butter melting
- c. wood rotting
- d. charcoal heating a grill
- e. autumn leaves changing color
- f. a hot glass cracking when placed in cold water
- g. melting copper metal
- h. burning sugar
- i. mixing sugar in water
- j. digesting food

12. Some pure substance was measured to have a mass of 63.21g. In a displacement measurement, it was determined that this same substance had a volume of 33.68mL. Determine the density of this substance.

13. What is the difference between a gas and a vapour?

14. Two substances had their vapour pressures measured. Substance “A” had a much higher vapour pressure than “B”.

A. Which of these substances will boil first in an open container? _____

B. What happens to the vapour pressure of either substance as the temperature decreases? Explain why.

15. Are the following statements true or false? Circle your answer.

- | | | |
|----|--|------------|
| a. | In filtration, the filtrate (i.e., the liquid portion that goes through the filter paper) is always a pure liquid. | True/False |
| b. | Drinking water can only be obtained from seawater by distillation. | True/False |

- c. Electrolysis is a physical process for separating water into hydrogen and oxygen gas True/False
- d. Paper chromatography is a physical method for separating mixtures. True/False

16. You are asked to separate sand and sodium chloride (i.e., table salt).

Name the methods needed to carry out the procedure. Explain how you would carry out the procedure(s) to obtain pure sand and sodium chloride back.

17. Fill in the chart below (Assume all substances are atoms).

Name of Element	Atomic Symbol	Number of Protons	Number of Neutrons	Number of electrons
				32
		66		
	Re			
Niobium atom				

18. An imaginary element has three naturally-occurring isotopes with isotopic weights of 92.9469, 93.2923 and 94.9030. The abundance of the lightest isotope is 42.38 %, next has an abundance of 50% and the heaviest isotope has an abundance of 7.62. Calculate the average atomic weight for the following isotopes.

19. Draw the Bohr diagram for a phosphorus atom. Show the protons, neutrons and electrons (you may use the “cheater method”).

20. Using the quantum model of the atom for Iron:

- a. Write out the electronic configuration
- b. Show the spin diagram
- c. Write out the core notation.