

Unit 1 Test - Ch. 3 & 4

①

1. What is a substance?

2. What are the 3 states of matter - describe each.

1.

2.

3.

3. What is a physical property?

4. Provide examples of phys. props.

5. What is a chemical property?

6. Provide examples of chem. props

7. What is a physical change?

8. Provide examples of phys. change

9. What is a chemical change?

10. Provide examples of chem. change

11. What is the Law of conservation of mass?

12. If $A + B \rightarrow C$, and 12 g of A react w/ 3.5 g of B, what must C be?

13. If $A + B \rightarrow C$, and 15.3 g of A react with an unknown amount of B to produce 21.5 g of C, what is B?

14. Where do you find the following on the periodic table?

- Halogen Family
- Alkaline Earth Metals
- Noble Gases
- Transition Metals
- Alkali Metals
- Inner Transition Metals
- Metalloids
- Non-metals
- Metals

15. What are the 6 Ideas (or principles) of Dalton's theory?

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

16. What is the charge, mass & location of:

Proton -

Neutron -

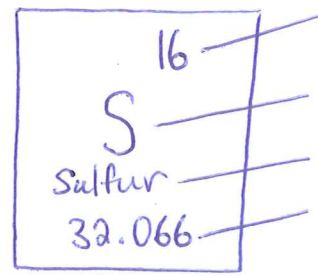
Electron -

17. What do we know about an atom when we know:

Atomic # -

Atomic Mass -

Mass # -



18. What did we learn from Rutherford about the atom?

19. Complete the table below

Element	Atomic #	Mass #	Electrons	Protons	Neutrons
Ca	20	40			
Cu		64	29		
P		31		15	
Rb			37		48

20. What is an isotope?

21. What is % Abundance?

22. How do you calculate Avg. Atomic Mass?

23. What is the Avg. Atomic Mass of an element with:

<u>Mass</u>	<u>% Abundance</u>
15.010 AMU	63%
16.020 AMU	27%
17.031 AMU	10%

24. What is a radioactive isotope?

25. What is a nuclear reaction?

26. What is radioactive decay?

27. Describe the 3 types of radiation:

- Alpha (α) -

- Beta (β) -

- Gamma (γ) -

28. What is a Nuclear equation?

29. Why do radioactive isotopes go through decay?

30. Write Nuclear Equations for the following?

- Alpha decay of $^{222}_{88}\text{Ra}$

- Beta decay of $^{214}_{84}\text{Po}$

- Alpha decay of $^{234}_{92}\text{U}$

- Beta decay of $^{234}_{90}\text{Th}$

- Beta capture of $^{37}_{18}\text{Ar}$

- Beta capture of $^{144}_{60}\text{Nd}$

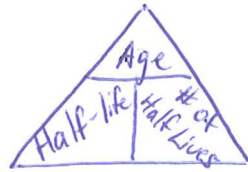
31. What is half-life?

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32. How can you determine the age of a radioactive material by knowing half-life & the number of half-lives that have passed?

33. What happens to the amount of radioactive atoms of a substance over time as decay takes place?

34. Use the triangle equation to solve the following:



- a) A 100 g sample of Radon-222 decays to 6.25 g. How old is the sample, given the half-life of Rn-222 = 3.8 days?
- b) How many half-lives have passed when a 1,000 g sample of C-14 (Half-life = 5,730 years) has been dated to 18,400 years?
- c) What is the half-life value of Cobalt-60, if a 100 g sample decays to 25 g and is dated to 10.54 years old?