Name: _____

Date: _____Class: _____

Atoms and The Periodic Table Study Guide

Define the following terms:

1. Conservation of Matter
2. Mixture
3. Pure substance
4. Matter
5. Metalloids
6. Homogenous Mixture
7. Heterogeneous Mixture
8. Valance electrons

Short Answer:

9. Approximately how many elements are on the PTOE?

10. Give two examples of a Heterogeneous mixture.

11. Name four things that are not matter.

12. All matter is made of _____.

13. Where are the metals, metalloids, and nonmetals located on the periodic table?

14. All pure substances are either atoms, elements, molecules or _____.

15. Is air matter? Explain your answer.

16. Explain why atoms in their natural state are neutral.

17. Does every atom of the same element have the same number of protons? Why or Why not?

18. Which element is the only metal that is not a solid at room temperature?

19. Compare and contrast properties of metals and non-metals (create a T chart).

20. Find the names of each of the following elements on the periodic table and classify as either metal, nonmetal, or metalloid: Ca, Cl, I, Ir, Si, and Ti. (Make a chart)

21. A _____ is created when two pure substances are combined and each of the pure substances retains its own properties.

22. Where is the majority of the mass of an atom located?

23. If an atom loses electron/s, will it have a positive or negative charge? Explain.

24. What element has 31 electrons, 31 protons, and 39 neutrons?

25. Give the chemical symbol or chemical formula for each of the following elements or compounds:
    a. Carbon
    b. Water
    c. Carbon monoxide
    d. Carbon dioxide
    d. Carbon dioxide
    e. Sodium Chloride (Salt)
    f. Oxygen

26. Use the periodic table to complete the data chart below:

Symbol	Name	Atomic Number	Average Atomic Mass
	Silicon		
Ar			
		12	
			20.179

27. What element is in Group 1, Period 3?

28. What element is in Group 2, Period 3?

29. Draw a Bohr Model and a Lewis Dot Structure for Boron.

30. Draw and label the atomic structure of Oxygen (label the protons, neutrons, and electrons).

31. List the characteristics of elements in each of the following groups and the groups location on the periodic table:

    Alkali Metals -

    Alkaline Earth Metals -

    Halogens -

    Noble Gases -

    Boron Family -

    Transition Metals –

Answer Key:

1. Matter is not created or destroyed during a chemical reaction.
2. Two or more substances that are mixed together but not chemically combined.
3. A homogeneous composition that cannot be broken down or separated using physical means.
4. Anything that has mass and takes up space.
5. An element that has some characteristics of metals and nonmetals
6. Homogeneous Mixture – Two or more substances not chemically combined. CANNOT see individual parts of the mixture.
7. Heterogeneous Mixture- Two or more substances not chemically combined. Individual parts of the mixture are visible.
8. Valence electrons - are the electrons in the outermost energy level of an atom, they determine how atoms will combine with other atoms.
9. 120
10. Vegetable soup and chocolate chip ice cream.
11. Thoughts, light, heat, and emotions.
12. All matter is made of atoms.
13. Metals are on the left, Metalloids are between the metals and nonmetals, and the nonmetals are on the right.
14. All substances are either elements or compounds.
15. Air is matter because it has mass and takes up space.
16. Atoms in their natural state are neutral because they have the same number of protons (+) and electrons (-).
17. Yes, every atom of the same element has to have the same number of protons. The number of protons determines the type of atom. Example, all hydrogen atoms have 1 proton and all helium atoms have 2 protons.
18. Mercury
19.

Metals	Nonmetals
Malleable	Brittle instead of malleable
Shiny	Dull
Solid at room temp. except Mercury	Gas at room temp. except Bromine
Good conductors of electricity	Poor conductors of electricity

20.

Metals	Nonmetals	Metalloids
Ca-calcium	Cl-chlorine	Si-silicon
Ir-iridium	I-iodine	
Ti-titanium		

21. A mixture is created when two pure substances are combined and each of the pure substances retains its own properties.
22. In the nucleus.

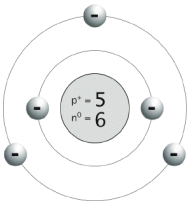
23. Positive, because electrons have a negative charge.
24. Gallium
25.
    a. Carbon - C
    b. Water – H2O
    c. Carbon monoxide – CO
    d. Carbon dioxide – CO2
    e. Sodium Chloride - NaCl
    f. Oxygen- O2

26. Use the periodic table to complete the data table.

Symbol	Name	Atomic Number	Average Atomic Mass
Si	**Silicon**	14	28.086
Ar	Argon	18	39.948
Mg	Magnesium	**12**	24.305
Ne	Neon	10	**20.179**

27. Sodium
28. Magnesium

29.



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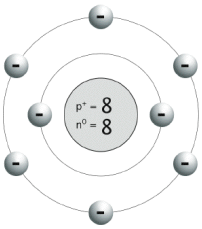

31. List the characteristics of elements in each of the following groups and the groups location on the periodic table:
    Alkali Metals – Group 1, most reactive metals, one valence electron, many are salt forming elements, soft,

Alkaline Earth Metals – Group 2, slightly reactive metals, two valence electrons, many are minerals
Halogens – Group 17, most reactive nonmetals, have 7 valence electrons many are used as disinfectants
Noble Gases – Group 18, least reactive elements, full outer electron cloud, many are used in neon signs.
Boron Family – Group 13, have 3 valence electrons
Transition Metals – Groups 3-12, high metals with high melting points,