Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Unit 2 Topic 1

Period: \_\_\_\_\_\_ Page: .

**Unit 2: Topic 1 Practice**

**Atomic and Molecular Structure**

**Part A: Atomic Structure**

1. Draw five protons in the nucleus of the atom. Label them with their charge.

2. Draw six neutrons in the nucleus of the atom.

3. Draw two electrons in the first energy level and label them with their charge.

4. Draw three electrons in the second energy level and label them with their charge.

5. What element is represented by the diagram?

**Part B: Atomic Calculations**

6. Label the information provided in the periodic table.

8

**O**

Oxygen

15.999

7. What does the atomic number represent?

or

8. What does the atomic mass represent?

+

9. How would you figure the number of protons or electrons in an atom?

10. How would you figure the number of neutrons in an atom?

11. Use your knowledge of atomic calculations to complete the chart.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Element** | **Atomic**  **Number** | **Atomic**  **Mass** | **Protons** | **Neutrons** | **Electrons** |
| Li |  |  |  |  |  |
| P |  |  |  |  |  |
| Cl |  |  |  |  |  |
| Ni |  |  |  |  |  |
| K |  |  |  |  |  |
| Ag |  |  |  |  |  |
| H |  |  |  |  |  |
| Si |  |  |  |  |  |
| W |  |  |  |  |  |
| Ne |  |  |  |  |  |

**Part C: Electron Configuration**

12. How many electrons can each level hold? 1st =

2nd = 3rd =

13. What term is used for the electrons in the outermost shell or energy level?

14. Scientists use two types of diagrams to show the electron configuration for atoms.

**Sulfur**

Atomic # = 16

Atomic Mass = 32

Protons = Neutrons =

Electron =

**Bohr Diagram**

Shows all electrons

**Lewis Structure**

Shows valence electrons

**S**

15. Calculate the missing information and then draw the Bohr Diagram and Lewis Structure for each element.

Atomic # = 3

Mass # = 7

# of P =

# of N =

# of E =

Li

Atomic # = 10

Mass # = 20

# of P =

# of N =

# of E =

Ne

Atomic # = 12

Mass # = 24

# of P =

# of N =

# of E =

Mg

Atomic # = 17

Mass # = 35

# of P =

# of N =

Cl # of E = He

Atomic # = 2

Mass # = 4

# of P =

# of N =

# of E =

Atomic # = 14

Mass # = 28

# of P =

# of N =

Si # of E =

16. Answer the questions below based on the elements in question #15.

(1) Which elements had a filled outermost shell?

(2) Which element would be most likely to lose electrons in a chemical bond?

(3) Which element would be most likely to gain electrons in a chemical bond?

(4) Which elements are not likely to bond with other elements? . . Why?

*T. Trimpe 2007*

[*http://sciencespot.net/*](http://sciencespot.net/)

**Structure of Matter Review**

***Part 1: Atoms or Molecules Part 2: Elements or Compounds***

Write A if it’s an atom or M for molecule.

1. \_\_\_\_\_\_\_\_\_ Oxygen (O2)
2. \_\_\_\_\_\_\_\_\_ Mercury (Hg)
3. \_\_\_\_\_\_\_\_\_ Water (H2O)
4. \_\_\_\_\_\_\_\_\_ Laughing gas (N2O)
5. \_\_\_\_\_\_\_\_\_ Diamonds (C)
6. \_\_\_\_\_\_\_\_\_ Bleach (NaClO)
7. \_\_\_\_\_\_\_\_\_ Baking Soda (NaHCO3)
8. \_\_\_\_\_\_\_\_\_ Vinegar (CH2COOH)
9. \_\_\_\_\_\_\_\_\_ Gold (Au)
10. \_\_\_\_\_\_\_\_\_ Sugar Glucose (C6H12O6)

Write E if it’s an Element or C for compound.

1. \_\_\_\_\_\_\_\_\_ Oxygen (O2)
2. \_\_\_\_\_\_\_\_\_ Mercury (Hg)
3. \_\_\_\_\_\_\_\_\_ Water (H2O)
4. \_\_\_\_\_\_\_\_\_ Laughing gas (N2O)
5. \_\_\_\_\_\_\_\_\_ Diamonds (C)
6. \_\_\_\_\_\_\_\_\_ Bleach (NaClO)
7. \_\_\_\_\_\_\_\_\_ Baking Soda (NaHCO3)
8. \_\_\_\_\_\_\_\_\_ Vinegar (CH2COOH)
9. \_\_\_\_\_\_\_\_\_ Gold (Au)
10. \_\_\_\_\_\_\_\_\_ Sugar Glucose (C6H12O6)
11. Explain the difference between atoms and molecules.
12. Explain the difference between elements and compounds.

**[[*Language Target for Topic 1: I can draw and label an atom, identifying the key subatomic particles and their charge; I can compare and contrast covalent and ionic bonds; I can list the six main elements in living things.*]]**

**Part 1: Labeling an Atom: done on the first page.**

**Part 2: Chemical Bonds**

1. Define ionic bond and explain what an ion is: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   1. How does a positive ion form? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. How does a negative ion form? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Define covalent bond: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Part 3: Elements of Life**

1. List the six main elements in living things: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_