

## Unit 1 Review Sheet

**Classify the following as chemical change (cc), chemical property (cp), physical change (pc), or physical property (pp).**

- |                                |                          |
|--------------------------------|--------------------------|
| 1. ____ heat conductivity      | 8. ____ combustible      |
| 2. ____ silver tarnishing      | 9. ____ water freezing   |
| 3. ____ sublimation            | 10. ____ wood burning    |
| 4. ____ magnetizing steel      | 11. ____ acid resistance |
| 5. ____ length of metal object | 12. ____ brittleness     |
| 6. ____ shortening melting     | 13. ____ decomposition   |
| 7. ____ exploding dynamite     | 14. ____ baking bread    |

**Identify the following as being true or false to the left of the sentence.**

- \_\_\_\_ 15. A change in size or shape is a physical change.
- \_\_\_\_ 16. A chemical change means a new substance with new properties was formed.
- \_\_\_\_ 17. An example of a chemical change is when water freezes.
- \_\_\_\_ 18. When platinum is heated, then cooled to its original state, we say this is a physical change.
- \_\_\_\_ 19. When milk turns sour, this is a physical change because a change in odor does not indicate a chemical change.
- \_\_\_\_ 20. When citric acid and baking soda mix, carbon dioxide is produced and the temperature decreases. This must be a chemical change.

**Identify each of the following as a physical or chemical change.**

21. \_\_\_\_ You leave your bicycle out in the rain and it rusts.
22. \_\_\_\_ A sugar cube dissolves.
23. \_\_\_\_ Scientist break-up water into oxygen and hydrogen gas.
24. \_\_\_\_ Burning charcoal for a barbecue.
25. \_\_\_\_ Trimming a bush because it has grown too tall.

Classify each of the following as an element (E), compound (C), heterogeneous mixture (HM) or a homogeneous mixture (HoM).

- |                                       |       |  |       |
|---------------------------------------|-------|--|-------|
| 26) carbon dioxide (CO <sub>2</sub> ) | _____ | 44) aluminum   | _____ |
| 27) chlorine                          | _____ | 45) tossed salad   | _____ |
| 28) air                               | _____ | 46) chalk (CaCO <sub>3</sub> )                               | _____ |
| 29) water (H <sub>2</sub> O)          | _____ | 47) raisin bran  | _____ |
| 30) hydrogen                          | _____ | 48) milk   | _____ |
| 31) nitrogen                          | _____ | 49) neon   | _____ |
| 32) salt water                        | _____ | 50) potassium  | _____ |
| 33) copper                            | _____ | 51) salt (NaCl)  | _____ |
| 34) baking soda (NaHCO <sub>3</sub> ) | _____ | 52) sugar (C <sub>12</sub> H <sub>22</sub> O <sub>11</sub> ) | _____ |
| 35) vegetable soup                    | _____ | 53) apple juice  | _____ |
| 36) lead                              | _____ | 54) bronze   | _____ |

Identify each of the following as an example of a physical property or a chemical property.

- \_\_\_\_\_ 55. Silver tarnishes when it comes in contact with hydrogen sulfide in the air.
- \_\_\_\_\_ 56. A sheet of copper can be pounded into a bowl.
- \_\_\_\_\_ 57. Barium melts at 725 C.
- \_\_\_\_\_ 58. Gasoline is flammable.
- \_\_\_\_\_ 59. A diamond is the hardest natural substance.
- \_\_\_\_\_ 60. Helium does not react with any other element.
- \_\_\_\_\_ 61. A bar of lead is more easily bent than is a bar of aluminum of the same size.
- \_\_\_\_\_ 62. Potassium metal is kept submerged in oil to prevent contact with oxygen or water.
- \_\_\_\_\_ 63. An apple will turn brown when left in oxygen.
- \_\_\_\_\_ 64. Acid in tomato sauce can corrode aluminum foil.

1. What is the atomic number of Gold? \_\_\_\_\_
2. How many protons does Krypton have? \_\_\_\_\_
3. What element has the atomic number 80? \_\_\_\_\_
4. What element has 55 protons? \_\_\_\_\_
5. What **atom** has 32 electrons? \_\_\_\_\_
6. What must be the same **and** what must be different about the nuclei of two atoms that are related to each other as isotopes?

Same: \_\_\_\_\_ Different: \_\_\_\_\_

7. The nucleus of an isotope of titanium contains 27 neutrons.
  - a. What is the atomic number of this isotope? \_\_\_\_\_
  - b. What is the mass number? \_\_\_\_\_
8. If an atom gains electrons, what will the charge be? \_\_\_\_\_
9. If an atom loses electrons, what will the charge be? \_\_\_\_\_
10. What is true about the protons and the electrons of an **atom**? Why?

11. What is the atomic number of an atom?

12.  $^{206}\text{Pb}^{4+}$  Protons = \_\_\_\_\_  $^{37}\text{Cl}^{1-}$  Protons = \_\_\_\_\_  
Neutrons = \_\_\_\_\_ Neutrons = \_\_\_\_\_  
Electrons = \_\_\_\_\_ Electrons = \_\_\_\_\_

13. If an atom has 38 protons, 50 neutrons, and 37 electrons:
  - a. What is the charge? \_\_\_\_\_
  - b. What is the element? \_\_\_\_\_
  - c. What is the mass number? \_\_\_\_\_

14. Fill in the following table:

Element	Atomic Number	Mass Number	Number of protons	Number of electrons	Charge	Number of neutrons
			4		2+	5
		30		18	4-	
	30			28		40
Nitrogen		15			3-	
	92			86		142

15. a.  $^1\text{H}^{1+}$       p = \_\_\_\_\_      e = \_\_\_\_\_      n = \_\_\_\_\_
- b.  $^{19}\text{F}^{1-}$       p = \_\_\_\_\_      e = \_\_\_\_\_      n = \_\_\_\_\_
- c.  $^{122}\text{Te}^{2-}$       p = \_\_\_\_\_      e = \_\_\_\_\_      n = \_\_\_\_\_
- d.  $^{55}\text{Mn}^{7+}$       p = \_\_\_\_\_      e = \_\_\_\_\_      n = \_\_\_\_\_
- e. Fe-53      p = \_\_\_\_\_      e = \_\_\_\_\_      n = \_\_\_\_\_

16. What do the subscript and superscript in the notation  $^{41}\text{K}$  represent?

17. What is the electron configuration for:

Ni

Ba

I

18. What is the noble gas configuration for:

Se

Cd

Y

19.

particle	symbol	location	charge	relative mass
proton				
neutron				
electron				

20. What elements have the following electron configurations

$1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^8$  \_\_\_\_\_

$1s^2 2s^2 2p^4$  \_\_\_\_\_

$1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^3$  \_\_\_\_\_

21. Which subshells/orbitals can the 3rd energy level have? \_\_\_\_\_

22. What is the maximum number of electrons any p subshell/orbital contain? \_\_\_\_\_

23. How many valence electrons do the following elements contain?

a. He \_\_\_\_\_

b. Ar \_\_\_\_\_

c. P \_\_\_\_\_

d. Fe \_\_\_\_\_

e. Mg \_\_\_\_\_

24. Identify the following pieces of lab equipment

