

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 ₂) | _____ | 44) aluminum | _____ |
| 27) chlorine | _____ | 45) tossed salad | _____ |
| 28) air | _____ | 46) chalk (CaCO ₃) | _____ |
| 29) water (H ₂ 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 ₃) | _____ | 52) sugar (C ₁₂ H ₂₂ O ₁₁) | _____ |
| 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}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

