

District Required Unit 2 Chemistry Exam Review KEY

(Numbers in parentheses are the total number of checks for each question)

- Name the 3 subatomic particles including their charge, weight, and location in an atom. (12)
 - ✓Proton, ✓positive, ✓1 AMU, ✓nucleus
 - ✓Neutron, ✓neutral (0), ✓1 AMU, ✓nucleus
 - ✓Electron, ✓negative, very, very little weight (~0), ✓electron cloud orbiting nucleus
- Define the words *element*, *compound*, *atom* and *molecule*. (4)
 - ✓element - substances that cannot be separated (broken down) into simpler substances by chemical means
 - ✓compound - two or more different elements that have been chemically combined
 - ✓atom - a single unit of an element; smallest part of element that still acts like that element
 - ✓molecule - a single unit of a compound; smallest part of a compound that still acts like that compound
- Name 3 specific things that the atomic number can tell us about an atom. (any 3)
 - Number of protons
 - Number of electrons if electrical neutral
 - Location on Periodic Table
 - Number of valence electrons based on location
 - Reactivity based on location
 - Number of neutrons if used on conjunction with the atomic mass
- What does the mass number of an atom tell you? (1)
 - ✓the number of protons and neutrons in the nucleus of an atom
- Name 3 unique characteristics of group 18 on the Periodic Table. (any 3)
 - Non-reactive
 - Full valence shells
 - Colorless
 - Gases
 - Stable

6. List 3 elements that have similar characteristics to Lithium. (any 3)
a. hydrogen, sodium, potassium, rubidium, cesium, francium
7. How would you find the number of protons in a compound? (1)
a. Find the atomic numbers of each element.
b. Determine how many of each element there are in the compound.
c. Add the atomic numbers of each element together.
8. What are valence electrons? What do they tell us about an atom? (2)
a. The electrons on the outer shell of an atom.
b. They tell us the reactivity of the element and whether it will gain or lose electrons.
9. How many protons are in one molecule of the compound CO_2 ? (1)
a. \checkmark 22 (carbon has 6, oxygen has 8 but there are 2 oxygen; $6+8+8$)
10. What is a chemical formula? (1)
a. \checkmark A simple way to describe a compound using the element symbols (ex. H_2O)
11. What does a chemical equation describe? (1)
a. \checkmark A chemical reaction (a chemical change)
12. Why do chemical equations have to be balanced? (1)
a. \checkmark Because the mass of the products must equal the mass of the reactants.
13. Correctly label the two sides of a chemical equation: (2)
_____? _____ \rightarrow _____? _____
a. \checkmark reactants \rightarrow \checkmark products
14. Describe the difference between a chemical change and a physical change. (2)
a. \checkmark Chemical change = new substances formed; atoms rearranging
b. \checkmark Physical change = same "stuff", different form [shape, size, color, etc.] (ex. Paper tearing, water boiling)

15. Describe the difference between a chemical property and a physical property. **(2)**
- ✓ **Chemical property = something a chemical or substance can do (ex. The ability of iron to rust, ability of paper to burn)**
 - ✓ **Physical property = how something looks, tastes, feels, etc. (red leaves, round coins)**
16. Name 3 things that suggest a chemical change has taken place. **(any 3)**
- temperature change (Heat released or absorbed)**
 - Color change (not reliable)**
 - Bubbling, fizzing or other release of gas(es)**
 - Observed new substance formed (i.e., precipitate)**
17. Define *exothermic* and *endothermic*. **(2)**
- ✓ **Exothermic = a chemical reaction in which heat is released (product)**
 - ✓ **Endothermic = a chemical reaction in which heat is absorbed (reactant)**
18. Name and describe the 3 types of energy transfer. **(3)**
- ✓ **Conduction = heat transfer through direct physical contact (requires medium)**
 - ✓ **Convection = heat through the flow of materials (wind, boiling water, etc.) (requires medium)**
 - ✓ **Radiation = heat transfer by waves (does not require a medium) ie. The sun**
19. What is *specific heat* and how does it relate to energy transfer? **(2)**
- ✓ **Specific heat is the amount of energy required to raise 1 unit weight of a material by 1 unit degree.**
 - ✓ **Materials with low specific heats will heat faster than materials with high specific heats.**
20. Describe the specific heat capacity (high or low) of a material that resists heat transfer (heats up slowly). **(1)**
- ✓ **It will have a high specific heat.**