

Chemistry A - Midterm Review

Terms (you need to know these)

Measurement, observation, hypothesis, experiment, scientific law, theory, compound, element, physical change, chemical change, homogeneous mixture, heterogeneous mixture, ionic compound, isotopes, anion, cation, binary compound

Questions

1. Give 2 examples of a physical change and 2 examples of a chemical change.
2. On the periodic table where are the metals located?
3. On the periodic table where are the nonmetals located?
4. On the periodic table where are the alkali metals, alkaline earth metals, transition metals, halogens, and noble gases located?
5. How are the elements arranged on the periodic table?
6. Who developed the periodic table like we have it arranged today?
7. What is a *family* on the periodic table?
8. Write the name and atomic number for each of the following elements:
 - a. He
 - b. B
 - c. Se
 - d. Ba
 - e. P
 - f. Sr
9. For each of the following pairs of ions, write the formula for the ionic compound that forms when they get together.
 - a. Rb^+ S^{2-}
 - b. Fe^{2+} Cl^-
 - c. Al^{3+} O^{2-}
10. How many oxygen atoms are there in the following compounds?
 - a. CO
 - b. NH_4NO_3
 - c. $\text{Al}(\text{NO}_3)_3$
 - d. N_2O_3
11. What are the three fundamental particles that compose all atoms? Indicate the electrical charge and where is each type of particle found in the atom?
12. The atomic number tells us how many _____ are in the nucleus of an atom.
13. The mass number of an isotope is the sum of _____.
14. Give the common ions that the following elements form.
 - a. K
 - b. O
 - c. Ca
 - d. Cl
15. In ionic compounds, is the metal or nonmetal named first?
16. What are the standard SI units?
17. Know the metric prefixes! (especially kilo, centi, milli)

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18. For each of the following, make the indicated conversion.
- 5.993×10^{-4} to ordinary decimal notation
 - 4.321×10^4 to ordinary decimal notation
 - 5240000000 to standard scientific notation
 - 0.0000009814 to standard scientific notation
19. How many significant figures are there in the following numbers?
- a. 0.0034570 b. 1234000 c. 0.0560789 d. 123056.00 e. 1.25×10^{34}
20. Evaluate each of the following mathematical expressions, *being sure to express the answer to the correct number of significant figures.*
- $10.20 + 4.1 + 26.0001 + 2.4$
 - $1.091 - 0.991 - 1.2$
 - $(67.21)(1.003)(2.4)$
 - $(1.674) / (1.1236)$
21. Make the indicated temperature conversions.
- 541 K to Celsius degrees
 - 221 °C to kelvins
 - 50.1°C to Fahrenheit degrees
 - 30.7 °F to Celsius degrees
22. Given the following mass, volume, and density information, calculate the missing quantity.
- mass = 121.4 g; volume = 42.4 cm³; **density = ? g/cm³**
 - mass = ? g**; volume = 124.1 mL; density = 0.821 g/mL
 - mass = 142.4 g; **volume = ? mL**; density = 0.915 g/mL
23. For each of the following, make the indicated conversion
- 88.5 cm to millimeters
 - 8.25 m to inches (2.54 cm = 1 in.)
 - 4.25 kg to pounds (1 kg = 2.205 lbs.)
 - 4.21 in. to centimeters (2.54 cm = 1 in.)
24. Name each of the following compounds.
- | | | | |
|---|-----------------------------------|-------------------------------|---------------------------------|
| NaCl | MgBr ₂ | SnO ₂ | B ₂ O ₃ |
| HClO ₄ | AlI ₃ | CO | NH ₄ NO ₃ |
| FeCl ₃ | Al(NO ₃) ₃ | N ₂ O ₃ | BaCl ₂ |
| Ni ₃ (PO ₄) ₂ | CuO | | |