

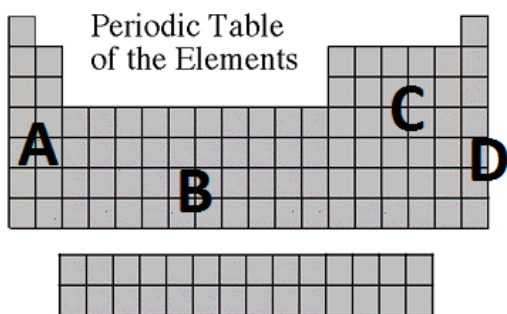
Name: \_\_\_\_\_ Block: \_\_\_\_\_ Date: \_\_\_\_\_

## Chemistry Benchmark Study Guide

### Study your notes from the following lessons:

1. How would one distinguish between the subatomic particles that make up an atom?
2. How are elements identified using the periodic table?
3. How are the states of matter determined?
4. How are chemical changes distinguished from physical changes?
5. How are density, mass, and volume related?
6. How are compounds different from elements?
7. How can a chemist distinguish between compounds and mixtures?
8. How are chemical equations balanced using the Law of Conservation of Mass?
9. How can one determine between acids and bases?
10. What is the chemical makeup of the atmosphere?

1. All things, living and nonliving, consist of \_\_\_\_\_. The smallest whole particle that matter can be divided into is a single \_\_\_\_\_.
2. List the three subatomic particles of an atom, their charge, and location:
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
3. The atomic number of an atom tells you the number of \_\_\_\_\_ and \_\_\_\_\_ in an atom. It can be found on the top of the periodic table square. All atoms in the periodic table are arranged by \_\_\_\_\_.
4. Label the following items (A – D) as More Reactive, Less Reactive, or Least Reactive.

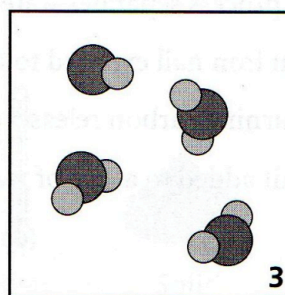
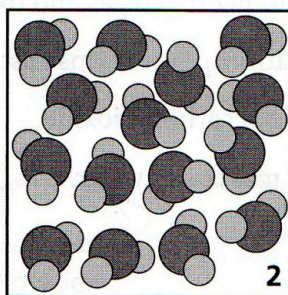
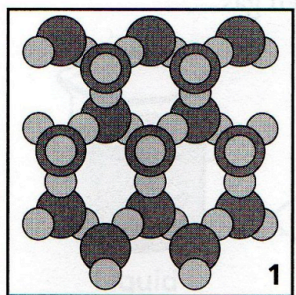


- A: \_\_\_\_\_
- B: \_\_\_\_\_
- C: \_\_\_\_\_
- D: \_\_\_\_\_

5. List three properties of metals: \_\_\_\_\_
6. List three properties of nonmetals: \_\_\_\_\_
7. What is a metalloid? \_\_\_\_\_
8. List 1 unique feature of groups 18 (noble gases), 17 (halogens), and 1 (alkaline metals): \_\_\_\_\_  
\_\_\_\_\_
9. Explain the difference in the particles of solids, liquids, and gases: \_\_\_\_\_  
\_\_\_\_\_

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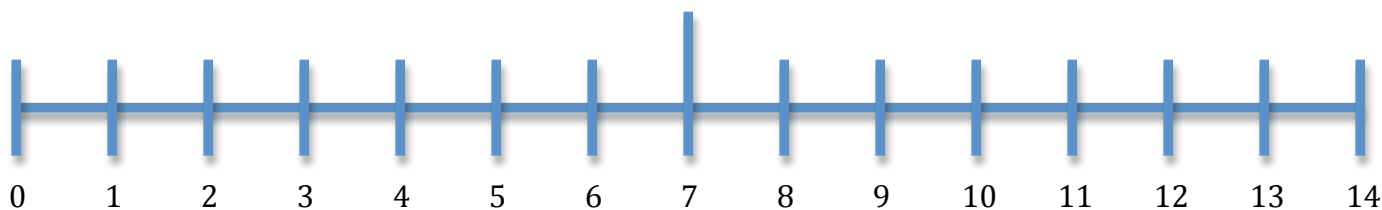
10. Identify each state of matter below:



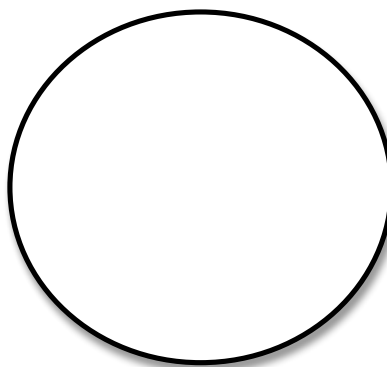
11. Describe a chemical change: \_\_\_\_\_
12. Give three examples of chemical changes: \_\_\_\_\_
13. Describe a physical change: \_\_\_\_\_
14. Give three examples of physical changes: \_\_\_\_\_
15. What is the formula for calculating density: \_\_\_\_\_. If you had an object with a volume of  $5 \text{ cm}^3$  and a mass of 25g, what would the density of the object be: \_\_\_\_\_.
16. How do you calculate the volume of a regular shaped object? \_\_\_\_\_
17. What is the density of a block if the length is 3.0 cm, the width is 5.0 cm, its height is 2.0 cm, and the volume is  $5 \text{ cm}^3$ ? \_\_\_\_\_
18. How do you calculate the volume of an irregular shaped object? \_\_\_\_\_  
\_\_\_\_\_
19. Describe elements, compounds, and mixtures: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
20. Write a chemical formula that represents an element: \_\_\_\_\_ and compound: \_\_\_\_\_
21. List three ways to separate a mixture: \_\_\_\_\_
22. List two ways to separate a compound: \_\_\_\_\_
23. List three examples of mixtures: \_\_\_\_\_
24. List three examples of compounds: \_\_\_\_\_
25. Circle the products and underline the reactants in this chemical equation:  
$$2\text{Na} + 2\text{H}_2\text{O} \rightarrow 2\text{NaOH} + \text{H}_2 + \text{energy}$$
26. Is the equation above balanced? How do you know? \_\_\_\_\_  
\_\_\_\_\_
27. Explain the Law of Conservation of Mass in your own words. \_\_\_\_\_  
\_\_\_\_\_
28. Give an example of the Law of Conservation of Mass: \_\_\_\_\_

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29. Why do objects that have been burned (such as paper or wood) have a lower mass than before the objects were burned? \_\_\_\_\_
30. Describe three properties of acids: \_\_\_\_\_
31. Describe three properties of bases: \_\_\_\_\_
32. When RED litmus paper comes in contact with a base it turns \_\_\_\_\_. When BLUE litmus paper comes in contact with an acid it turns \_\_\_\_\_.
33. Label the location of acids and bases on the following pH scale:



34. Where would the weak acids and bases be located on the pH scale? \_\_\_\_\_
35. Where would the strong acids and bases be located on the pH scale? \_\_\_\_\_
36. Which elements make up most of Earth's atmosphere? \_\_\_\_\_
37. Draw a pie chart that correctly diagrams the gases that make up Earth's atmosphere:



38. How does photosynthesis impact the makeup of gasses in Earth's atmosphere? \_\_\_\_\_
- \_\_\_\_\_