

Chemical Foundations Practice Test

1. The state of matter for an object that has neither definite shape nor definite volume is
 - A. solid
 - B. liquid
 - C. gaseous
 - D. mixed
 - E. elemental
2. Anything that has mass and volume is called _____.

Classify each of the following as a physical (P) or a chemical (C) change.

- A. P
 - B. C
3. cooking an egg
 4. dissolving sugar in water
 5. An example of a chemical change is
 - A. an ice cube melting in a drink
 - B. coffee spilled on a shirt
 - C. grinding coffee beans
 - D. boiling alcohol
 - E. digesting a pizza
 6. If iodine melts at 114°C and boils at 184°C , what is its physical state at 98°C ?
 7. An element is a collection of a single kind of _____.

8. How many of the following are compounds: table salt, carbon, copper, water, mercury?
 - A. 2
 - B. 1
 - C. 5
 - D. 4
 - E. 3

True or false:

9. A solution can be a heterogeneous or a homogeneous mixture.

Classify each of the following.

- A. element
 - B. compound
 - C. homogenous mixture
 - D. heterogeneous mixture
10. caffeine

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11. petroleum
12. Which would be an example of a homogeneous mixture?
- A. sodium chloride
 - B. milk
 - C. soil (dust)
 - D. aluminum
 - E. oily water
13. The process of boiling off the water from a salt solution to recapture the salt is a _____ process.
14. The symbol for the element cobalt is
- A. Co
 - B. C
 - C. K
 - D. Cb
 - E. CO
15. The symbol for the element potassium is
- A. K
 - B. Pm
 - C. P
 - D. Pt
 - E. Po
- Give the names that correspond to the following.
16. Hg _____
17. I _____
18. A substance composed of two or more elements combined chemically in a fixed proportion by mass is
- A. an atom
 - B. a compound
 - C. a solid
 - D. a mixture
 - E. None of the above
19. List the three main subatomic particles.

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20. The number of neutrons in one atom of ${}^{206}_{82}\text{Hg}$ is
- A. 206
 - B. 82
 - C. 288
 - D. 124
 - E. None of the above
21. The atom with 68 neutrons and 50 protons has a mass number of
- A. 18
 - B. cannot be determined from information given
 - C. 68
 - D. 118
 - E. 50
22. The mass number of an atom equals
- A. the atomic mass of the element
 - B. the number of protons plus the number of neutrons per atom
 - C. the atomic number of the element
 - D. the number of neutrons per atom
 - E. None of the above
23. Choose the pair in which the components have the same charge.
- A. a hydrogen atom and an electron
 - B. an electron and a neutron
 - C. a neutron and a hydrogen atom
 - D. a proton and a hydrogen atom
24. How many protons are in the nucleus of a Mg atom?
- A. 24
 - B. 12
 - C. variable
 - D. 25
 - E. 36
25. Which of the following is a nonmetal?
- A. cerium
 - B. carbon
 - C. calcium
 - D. cesium
 - E. copper
26. Give the name and symbol for the element that has mass number 64 and 35 neutrons.

Answer the following question(s).

27. Describe the plotted line when graphing the data of the relationship between the frequency of wearing sunblock and the number of sunburns you would get.

28. On the above graph which is the dependent variable?

Choose the letter of the best answer.

29. Calculate the atomic mass for lithium using the values given. 7.4% Li-6 and 92.6% Li-7.

- A. 692.6
- B. 69.26
- C. 6.9
- D. .69

Answer Sheet

1. **C.** gaseous
2. matter
3. **B.** C
4. **A.** P
5. **E.** digesting a pizza
6. solid
7. atom
8. **A.** 2
9. False
10. **B.** compound
11. **C.** homogenous mixture
12. **B.** milk
13. physical
14. **A.** Co
15. **A.** K
16. mercury
17. iodine
18. **B.** a compound
19. electron; proton; neutron
20. **D.** 124
21. **D.** 118
22. **B.** the number of protons plus the number of neutrons per atom
23. **C.** a neutron and a hydrogen atom
24. **B.** 12
25. **B.** carbon
26. copper, Cu
27. indirect (know what this looks like on a graph)
28. number of sunburns
29. **C.** 6.9

Standards Summary

- CA 1.b Students know how to use the periodic table to identify metals, semi metals, non-metals, and halogens.
- NSES B.1.1 Matter is made of minute particles called atoms, and atoms are composed of even smaller components. These components have measurable properties, such as mass and electrical charge. Each atom has a positively charged nucleus surrounded by negatively charged electrons. The electric force between the nucleus and electrons holds the atom together.
- NSES B.1.2 The atom's nucleus is composed of protons and neutrons, which are much more massive than electrons. When an element has atoms that differ in the number of neutrons, these atoms are called different isotopes of the element.
- NSES B.2.2 An element is composed of a single type of atom. When elements are listed in order according to the number of protons (called the atomic number), repeating patterns of physical and chemical properties identify families of elements with similar properties. This "Periodic Table" is a consequence of the repeating pattern of outermost electrons and their permitted energies.
- NSES B.2.3 Bonds between atoms are created when electrons are paired up by being transferred or shared. A substance composed of a single kind of atom is called an element. The atoms may be bonded together into molecules or crystalline solids. A compound is formed when two or more kinds of atoms bind together chemically.
- NSES B.2.5 Solids, liquids, and gases differ in the distances and angles between molecules or atoms and therefore the energy that binds them together. In solids the structure is nearly rigid; in liquids molecules or atoms move around each other but do not move apart; and in gases molecules or atoms move almost independently of each other and are mostly far apart.