

1. What is the total number of protons and neutrons in a “normal” atom of potassium?
2. List the numbers of protons, neutrons and electrons will you expect to find in an atom of Boron.
3. Compare the mass of a proton to that of a neutron. Compare the mass of an electron to the mass of a proton.
4. What sublevels are in the outer shell of phosphorus? How many electrons are in the outer shell of phosphorus?
5. Where are the protons, neutrons and electrons located within the atom?
6. If sulfur and oxygen bond, which atom will the electrons migrate to? Why?
7. Which of the following types of compounds are formed by sharing electrons?
 - a. metal and nonmetal
 - b. two or more nonmetals.
8. When elements having the following electron configurations react, the formula is:
 $1s^22s^2$ (element X) and $1s^22s^22p^5$ (element Y)
9. In each case, which of the following has the highest ionization energy?
H, Li, Na, K
Mg, P, Cl, Ar
10. In each case, which of the following is more metallic?
Al or SS or O
11. Where are the alkali metals, noble gases, halogens, alkaline earth metals, transition metals?
12. What sublevel is partially full in the transition metals of the 4th period?
13. How many electrons are in the outer shell of each family on the periodic table? Draw a dot diagram for nitrogen.
14. Hydrogen reacts with oxygen to make water. How many molecules of water can form from 15 molecules of oxygen?
15. Where are the most active metals on the periodic table? The most active non metals?
16. If carbon changed into oxygen in a nuclear reaction, what would happen to the number of protons during the change?
17. What is a homogeneous mixture? What does (aq) mean when written in a chemical equation?
18. Do big atoms, or small atoms tend to have high ionization energies?
19. What are isotopes?
20. What is an “excited” electron?
21. When potassium becomes an ion, what noble gas has a matching electron configuration?

22. What are the periodic trends with respect to ionization energy, electronegativity, activity and atomic radius?
23. What part of the periodic table tends to contain ions that are colored?
24. Differentiate between elements, mixtures and compounds.
25. Differentiate between colloids, suspensions and colloids in terms of particle size and Tyndall effect.
26. What is the ratio of lithium to oxygen atoms in lithium oxide?
27. What is the charge of cobalt in $\text{Co}_3(\text{PO}_4)_2$?
28. Differentiate between reactants and products in a chemical reaction.
29. Differentiate between endothermic and exothermic.
30. Which reaction type has a single element reacting with a compound?
31. What does "aqueous" mean?
32. Which reaction type involves a compound reacting with a compound?
33. Which reaction type involves the formation of a single product?
34. What is the law of conservation of mass? How does it relate to chemical reactions?
35. How do liters, cubic decimeters, cubic centimeters and milliliters relate to each other?
36. Convert 20 inches per hour to cm per minute.
37. Which has more volume: a ton of lead or a ton of feathers?
38. A marble is dropped into a cylinder that has 35 milliliters of water in it. The volume raises to 38 ml. What was the volume of the marble?
39. If the mass of the marble is 30 grams, what is its density?
40. What element is the standard of mass for the periodic table?
41. Which is heavier, a mole of copper, a mole of water or a mole of lead?
42. Change 15 grams of sodium hydroxide to moles.
43. Change 2.4×10^{25} molecules of water to grams.
44. What is the percentage of iron in iron(III) oxide?
45. What is the percentage of carbon in lead (IV) acetate?