

How am I doing in Chemistry??

1. Can I explain the difference between a physical and chemical change?
2. Can I explain the states of matter from a molecular-kinetic perspective?
3. Can I explain the differences between a hypothesis, a theory, and a law?
4. Can I explain the difference between a qualitative and quantitative observation?
5. Can I explain the basic structure of an atom including the names of the sub-atomic particles with their locations and charges?
6. Can I define an atom, element, molecule, and compound and give examples?
7. Can I provide examples of techniques used to separate the components of a mixture?
8. Can I distinguish between homogenous and heterogeneous mixtures?
9. Do I know the symbols for many of the elements and do I know the rules for writing element symbols?
10. Do I have some idea of the relative abundances of different elements in the universe, the earth's crust, and living things?
11. Can I define an isotope and do I know the format for writing the symbol for an isotope?

12. Can I determine the numbers of protons and neutrons that a particular isotope contains based on its symbol or a portion of the information contained in the symbol?
13. Do I understand how the variables “X”, “A”, and “Z” are used in isotope symbols?
14. Can I define “atomic number” and “mass number”, and can I distinguish both of those from “atomic mass”(the number underneath the element symbol)?
15. Can I read a basic chemical equation and identify the “reactants” and “products”?
16. Can I explain the “law of the conservation of mass” and how it applies to a chemical reaction?
17. Can I explain energy levels and orbitals in relation to understanding the electron configuration in atoms?
18. Can I explain the relationship between wavelength and frequency?
19. Can I identify the symbols used to identify wavelength and frequency?
20. Can I describe and state the values for the constants “c” and “h” which are used in frequency/wavelength problems and in change in energy problems?
21. Can I define what is meant by a “quantum” of energy?
22. Can I state whether changes in energy are best described with the metaphor of a ramp or a staircase?
23. Can I explain what an absorption spectrum appears as and how it can be used to identify elements?
24. Can I explain the difference between an “orbit” and an “orbital”?

25. Can I define the “Octet Rule” and explain its importance in chemistry?
26. Can I write the electron configurations for the first 18 elements?
27. Using sodium as an example, can I explain ion formation?
28. Using a sodium atom and a chlorine atom as an example, can I explain the formation of a cation and an anion and the formation of the ionic bond which forms between them?
29. Can I explain the format of the Periodic Table and the nature of the “periods” and “groups”?
30. Can I relate the Group Number of an element with its electron configuration and its likelihood to gain or lose electrons to form an ion?
31. Can I relate the Group Number and the electron configuration of an element with its number of “valence” electrons?
32. Can I explain why the Group Number and number of valence electrons of carbon make it ideally suited to serve as the backbone of organic molecules?
33. Can I define “covalent bond” and use a “Lewis structure”(electron dot structure) to show two hydrogen atoms and an oxygen atom covalently bonded to form a water molecule?
34. Can I depict a water molecule as a “line bond structure” and a “Lewis structure”?
35. Can I explain “electronegativity” and how it can lead to the formation of “polar covalent bonds” which can result in the formation of “polar molecules”?
36. Can I list some of the properties of water which make it so important to life?

37. Can I explain the term “hydrogen bond” and provide an example or two of where I might find one?
38. Do I have a basic understanding of the units of measure used in the metric system for length, mass, volume, and temperature?
39. Can I use PREFIXES to modify those basic units and convert values from one metric measure to another?
40. Can I define absolute zero and convert from degrees Celsius to kelvins and from kelvins to degrees Celsius?
41. Do I understand how CONVERSION FACTORS are used as EQUIVALENCE STATEMENTS in a technique called DIMENSIONAL ANALYSIS to convert from one unit of measure to another?
42. Can I use multiple conversion factors in dimensional analysis to solve a problem involving the conversion from one unit of measure to another?
43. Can I operate on EXPONENTS, including negative exponents?
44. Can I use scientific notation to express a value given in expanded form or vice versa?
45. Can I define “density” and solve density problems with answers in the correct units?

ASSESS YOURSELF IN THESE AREAS AND THEN REVIEW AND REFRESH ANY GAPS IN YOUR UNDERSTANDING. WORK IN GROUPS. THIS IS THE INITIAL REVIEW AND REPRESENTS THE FUNDAMENTALS. WE WILL REVIEW IN MORE DETAIL ON FRIDAY AND MONDAY.