

HW#09 Solutions, Physics 107

Gladden, Fall 2006

Solutions to Chapter 11 Exercises

8. Water is not an element. It is a compound. Its molecules are made of the atoms of elements hydrogen and oxygen.
10. No way! The number of protons in an atomic nucleus defines the element. Nuclei of an element can have different numbers of neutrons, but only one number of protons. If the number of protons changes, the element changes.
16. Of the substances listed, H_2 , He, Na, and U are pure elements. H_2O and NaCl are compounds made of two elements, and three different elements contribute to H_2SO_4 .
19. The element is copper, atomic number 29. Any atom having 29 protons is by definition copper.
33. Sodium and chlorine atoms combine to form a molecule with completely different characteristics than the molecules of common table salt.

Solutions to Chapter 12 Exercises

8. The densities are the same, for they are both samples of iron.
13. Water is denser, so a liter of water weighs more than a liter of ice. (Once a liter of water freezes, its volume is greater than 1 liter.)
14. For one thing, drop both on a steel anvil. The steel ball will bounce higher.
15. The top part of the spring supports the entire weight of the spring and stretches more than, say the middle, which only supports half the weight and stretches half as far. Parts of the spring toward the bottom support very little of the spring's weight and hardly stretch at all.