

Chapter 4 Review: Extra Practice Problems

16. Radioactive isotopes give off energy that can be used to generate electricity. Also, the radiation the isotopes give off allows them to be used as tracers and in diagnosing and treating disease.
17. Proton: mass – about 1 amu, location – nucleus; neutron: mass – about 1 amu, location – nucleus; electron: mass – about $1/1836$ amu, location – outside the nucleus.
(A) 28 – atomic number; (B) Ni-chemical symbol; (C) Nickel-name; (D) 58.71 – atomic mass.
18. The atomic mass is determined from the combined percentages of the masses of all its combined percentages of the masses of all its isotopes.
19. Potassium is most reactive. The metals in Group 1 are more reactive than other metals.
20. The materials used in computer chips are semiconductors, which have the property of conducting electric current under some conditions and not under other conditions.
21. Atomic number (x-axis) tells the number of protons in the nuclei of each isotope. Mass number is the sum of the number of protons and neutrons in the nuclei. The number of neutrons can be found by subtracting the atomic number from the mass number.
22. Four elements; two isotopes of uranium (U-238, U-234), two isotopes of thorium (Th-234, Th-230), and one isotope each of protactinium and radium (Pa-234, Ra-226).
23. Alpha decay; the atomic number decreased by 2 and the mass number decreased by 4, which is what happens when an atom emits an alpha particle.
24. Thorium-234 undergoes beta decay to form protactinium-234, which undergoes beta decay to form uranium-234.
25. Thorium-230 must be radioactive because it decays into radium-226.
26. It would be necessary to know what type of radioactive decay radon-226 undergoes.