

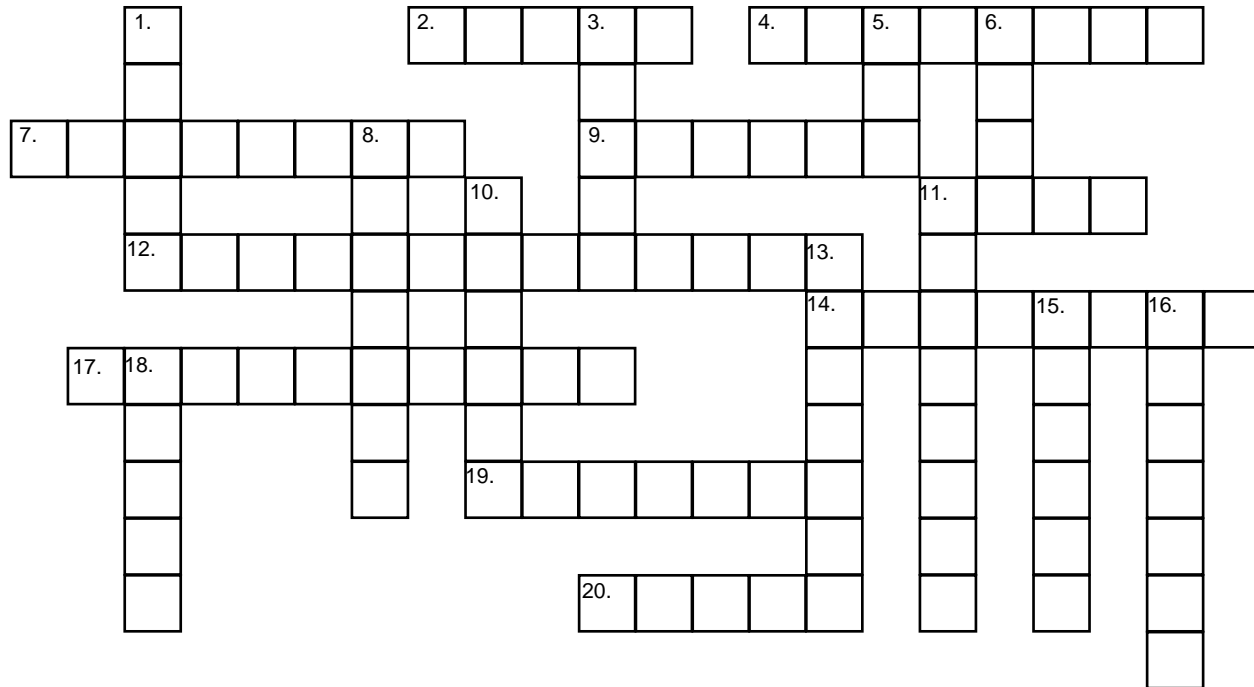
CHAPTER REVIEW

Chapter 18

Fission and Fusion

I. Vocabulary Review

Solve the following crossword puzzle by using the clues provided.



Across

- 2. If there are too many neutrons in a nucleus, a neutron will do this.
- 4. any element with more than 83 protons
- 7. the time it takes for half the nuclei of an element to transmute
- 9. subatomic particle with a positive charge
- 11. another word for *eject*
- 12. the process in which an atom changes from one element to another
- 14. substances listed in the periodic table
- 17. transmutation that is NOT spontaneous
- 19. kind of energy released in fission and fusion
- 20. kind of reaction where one reaction creates the next reaction, and that reaction creates another reaction, and so on

Down

- 1. A neutron that hits a nucleus can cause the nucleus to do this.
- 3. A helium nucleus without its electrons is this kind of particle.
- 5. location of thermonuclear fusion reaction in our solar system
- 6. consists of a nucleus and electron cloud
- 8. the process in which a nucleus splits into two or more nuclei
- 10. the process in which two nuclei join to form a single nucleus
- 11. A neutron that becomes unstable decays into a proton and this.
- 13. subatomic particle that has no charge
- 15. during fusion or fission, what some of the mass converts to
- 16. radioactive isotopes that scientists use to study people or plants
- 18. what electric forces between protons do

Chapter Review 18 (continued)

II. Concept Review

Answer the following questions in complete sentences.

21. In what ways are fission and fusion similar? _____

22. Describe a fission chain reaction. _____

23. How can a fission reaction be controlled? _____

24. How are fission and fusion opposite processes? _____

25. If a nucleus contains only neutrons and protons, how can it emit an electron? _____

III. Skills/Process Review

Answer the following questions in the spaces provided.

26. You have a 14-gram sample of cobalt-60, which has a half-life of 5.26 years. After 10.52 years, how much cobalt-60 remains? _____
27. If a neutron in an atom of $^{210}_{82}\text{Pb}$ decays, it will emit an electron and transmute to an atom of bismuth-210. How many protons will the bismuth-210 nucleus contain? _____
28. An atom of $^{214}_{84}\text{Po}$ is bombarded by a neutron. As a result, the nucleus of the polonium-214 atom emits an alpha particle, thereby transmuting to lead-210. How many protons will the lead-210 nucleus contain? _____

IV. EYV Review

29. **How It Works: Healing Radiation** Why is radiation useful in treating cancer? _____

