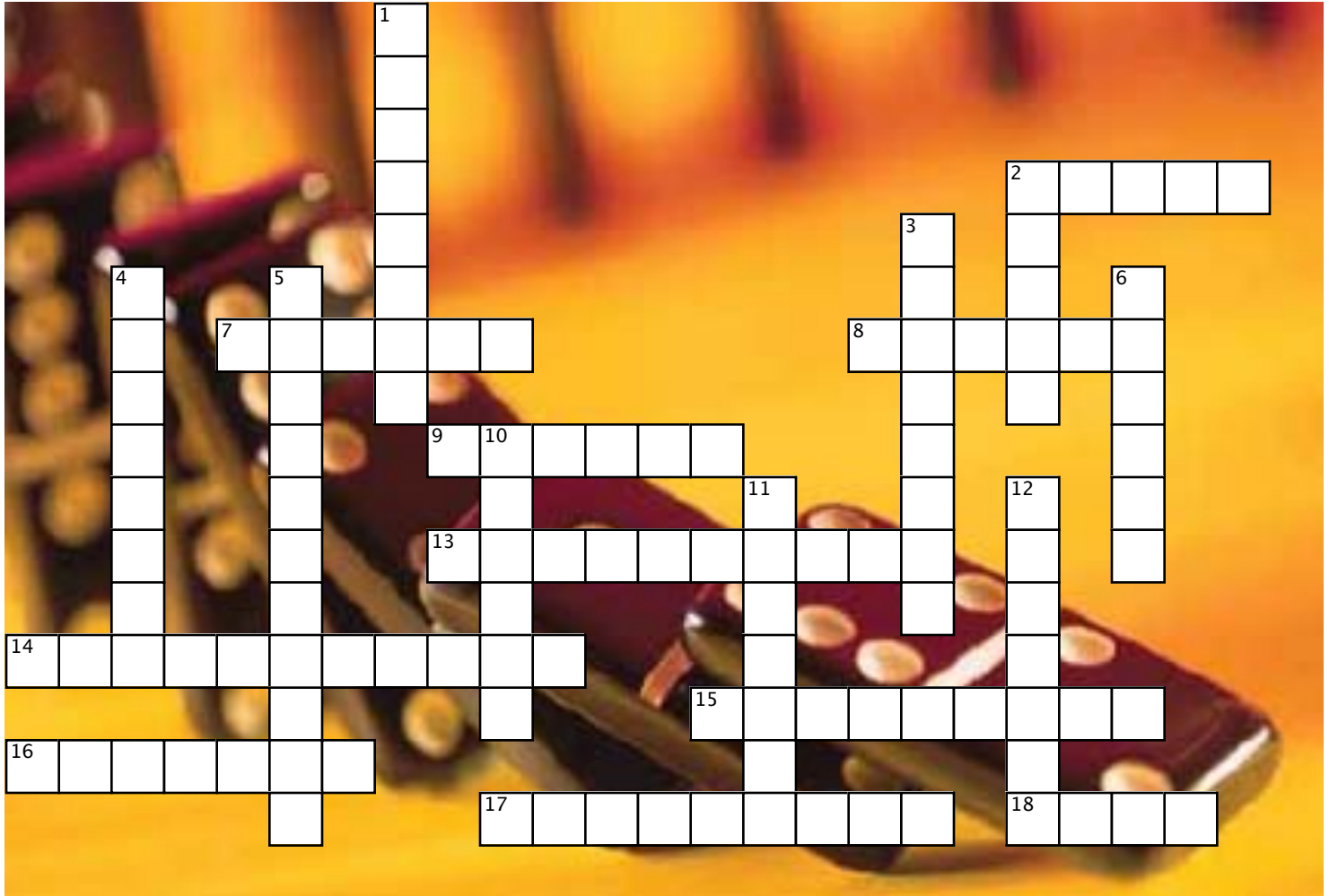


# 7.3 Nuclear Reactions



### Across

- Canadian nuclear reactors are called \_\_\_\_\_ reactors.
- The isotope that undergoes radioactive decay is called the \_\_\_\_\_ isotope.
- A nuclear reaction in which small nuclei combine to produce a larger nucleus.
- \_\_\_\_\_ isotopes exist indefinitely and have no known half-life.
- A curved line on a graph that shows the rate at which radioisotopes decay.
- Nuclear power plants produce a lot of heat. This heat is used to boil water and generate steam, which then drives turbines that produce \_\_\_\_\_.
- It takes a tremendous amount of energy for an alpha particle (with a charge of +2 ) to collide with a nitrogen-14 nucleus (with a charge of +7 ) because the \_\_\_\_\_ between the positive charges is very great.
- A nuclear reaction in which a large nucleus breaks apart, producing two or more smaller nuclei, subatomic particles, and energy.
- In a chain reaction, the number of fissions and the amount of energy released can increase rapidly and lead to a violent nuclear \_\_\_\_\_.
- Due to its constant output of energy, the Sun loses almost 4 million tonnes of \_\_\_\_\_ each second.

### Down

- In the sun and other stars, there is sufficient pressure and high enough temperature to force isotopes of \_\_\_\_\_ to collide with great force, a process called fusion.
- The ongoing process in which one reaction initiates the next reaction is called a \_\_\_\_\_ reaction.
- The stable product of radioactive decay is called the \_\_\_\_\_ isotope.
- A constant for any radioactive isotope, which is equal to the time required for half the nuclei in a sample to decay.
- After an organism dies, the ratio of carbon-14 to carbon-12 then decreases with time. This is the basis of \_\_\_\_\_ dating.
- The fission of a nucleus is accompanied by a very large release of \_\_\_\_\_, which can be used to power huge turbines.
- Strontium-90 has a half-life of 29 years. If you have forty grams of strontium-90 today, 29 years from now you would have \_\_\_\_\_ grams left.
- A nuclear reaction is induced by bombarding a \_\_\_\_\_ with alpha particles, beta particles, or gamma rays.
- The nuclear fission of \_\_\_\_\_-235 is the main nuclear reaction in Canadian nuclear power plants.