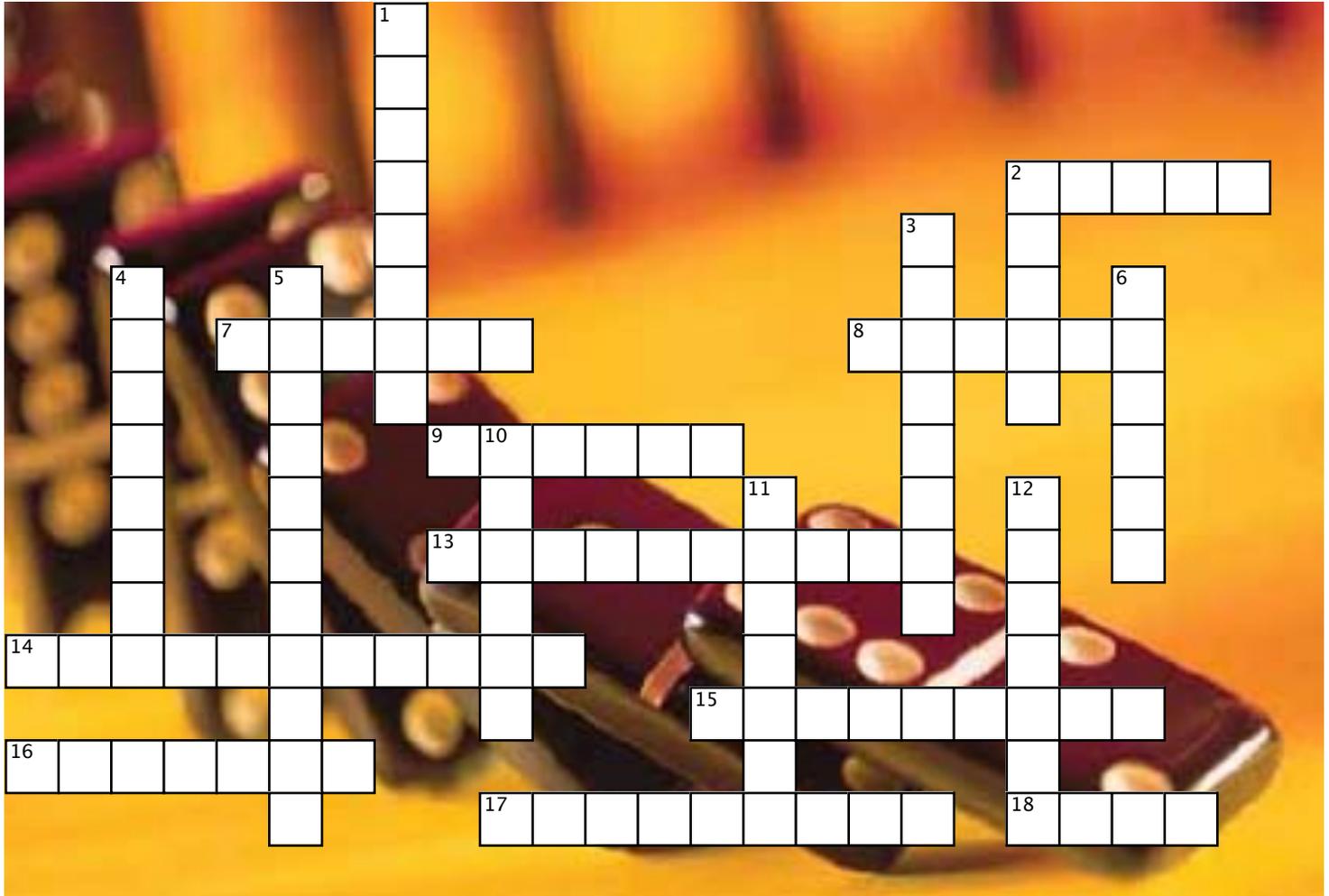


7.3 Nuclear Reactions



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.