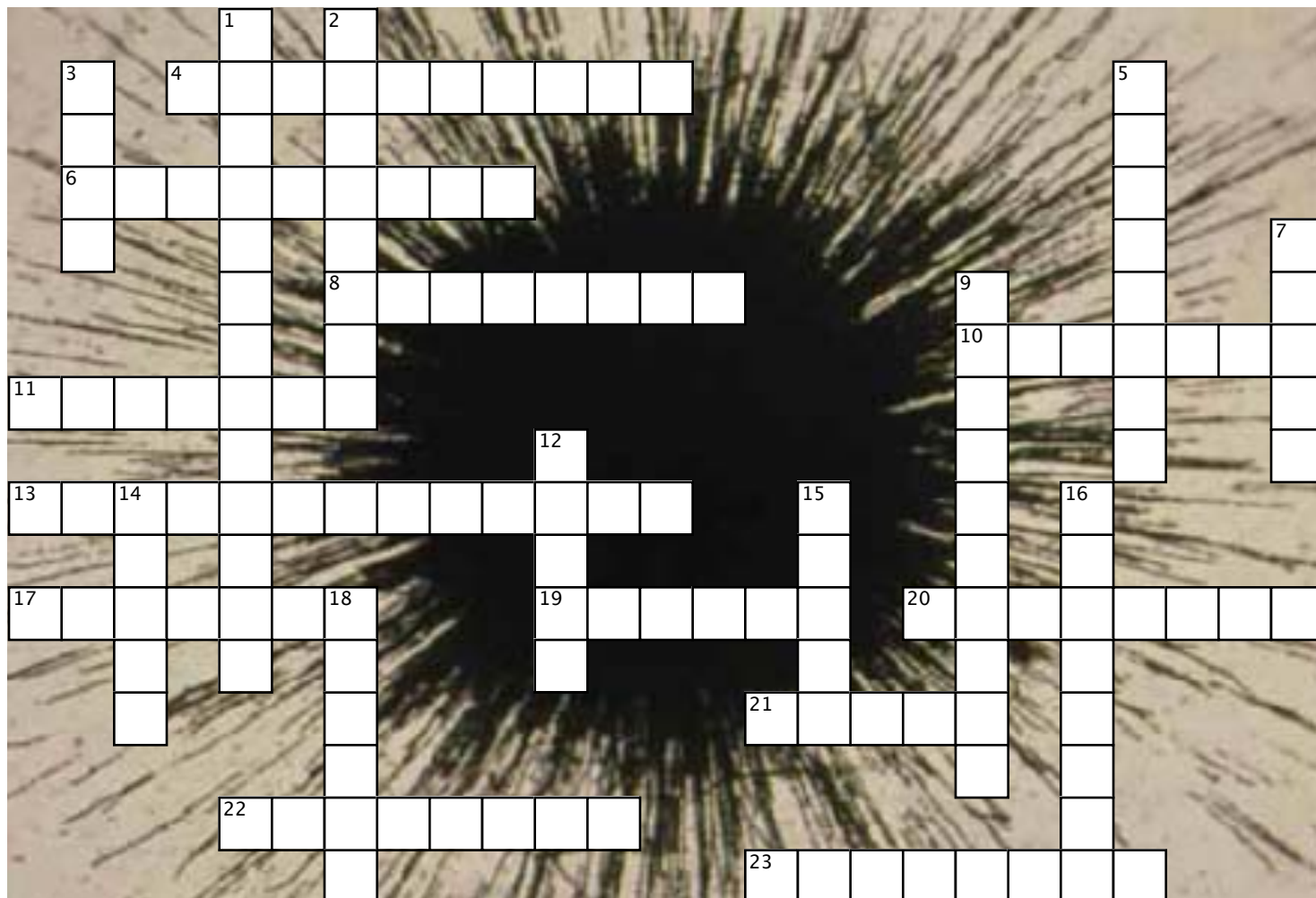


# 7.1 Atomic Theory, Isotopes, and Radioactive Decay



## Across

4. An integer (whole number) that represents the sum of an isotope's protons and neutrons.
6. High-energy rays and particles emitted by radioactive sources.
8. Marie Curie named \_\_\_\_\_ after her home country, Poland.
10. Atomic mass is the \_\_\_\_\_ of the masses of all the isotopes of that element.
11. Potassium-40 has 21 neutrons and 19 \_\_\_\_\_ in its nucleus.
13. \_\_\_\_\_ results when the nucleus of an atom decays.
17. A \_\_\_\_\_ reaction occurs when the number of neutrons or protons in a nucleus change, or when radiation is released from the nucleus.
19. An alpha particle has the same combination of particles as the nucleus of a \_\_\_\_\_ atom.
20. Usually, no matter where a sample of an element is taken from, the percentage of each isotope is \_\_\_\_\_.

## Down

1. Natural or human-made isotopes that decay into other isotopes, releasing radiation.
2. Atoms of the same element that differ in the number of neutrons in the nucleus.
3. The mass of an electron is about 0.0005 the mass of a proton or a neutron, so the beta particle is assigned a mass number of \_\_\_\_\_.
5. A beta particle is a(n) \_\_\_\_\_.
7. Alpha, beta, and gamma are the first three letters of the \_\_\_\_\_ alphabet.
9. The stream of high-energy, fast-moving particles or waves that is found in our environment is called natural \_\_\_\_\_ radiation.
12. Form of radiation that is visible to the human eye.
14. Radioactive \_\_\_\_\_ is the process in which unstable nuclei lose energy by emitting radiation.

## Across

- \_\_\_\_\_ is a radioactive gas that seeps from Earth's crust and is present in the air we breathe.
- Isotopes are different atoms of a particular element that have the same number of protons but different numbers of \_\_\_\_\_.
- A nuclear reaction is \_\_\_\_\_ if the sum of the atomic numbers (subscripts) and the sum of the mass numbers (superscripts) on each side of the arrow are equal.

## Down

- Because \_\_\_\_\_ radiation has almost no mass and no charge, the release of this radiation does not change the atomic number or the mass number of a nucleus.
- An alpha particle has a \_\_\_\_\_ electric charge.
- The background picture of this crossword is a photograph of \_\_\_\_\_ salts, at least the dark traces left by radiation emitted by them.