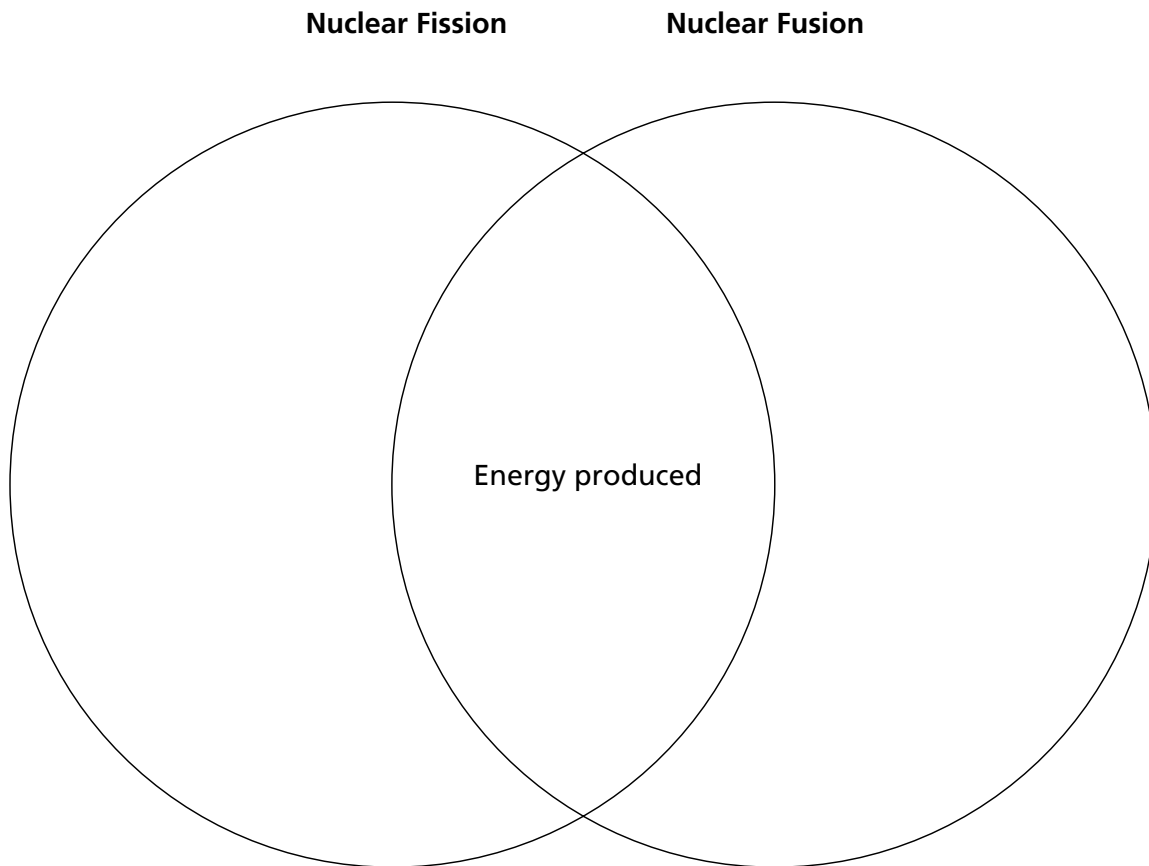


Energy Resources ▪ Guided Reading and Study**Nuclear Energy**

This section explains how nuclear reactions inside atoms can produce energy. The section also describes the advantages and disadvantages of nuclear energy.

Use Target Reading Skills

As you read, compare and contrast fission and fusion reactions in the Venn diagram below. Write the similarities in the space where the circles overlap and the differences on the left and right sides.

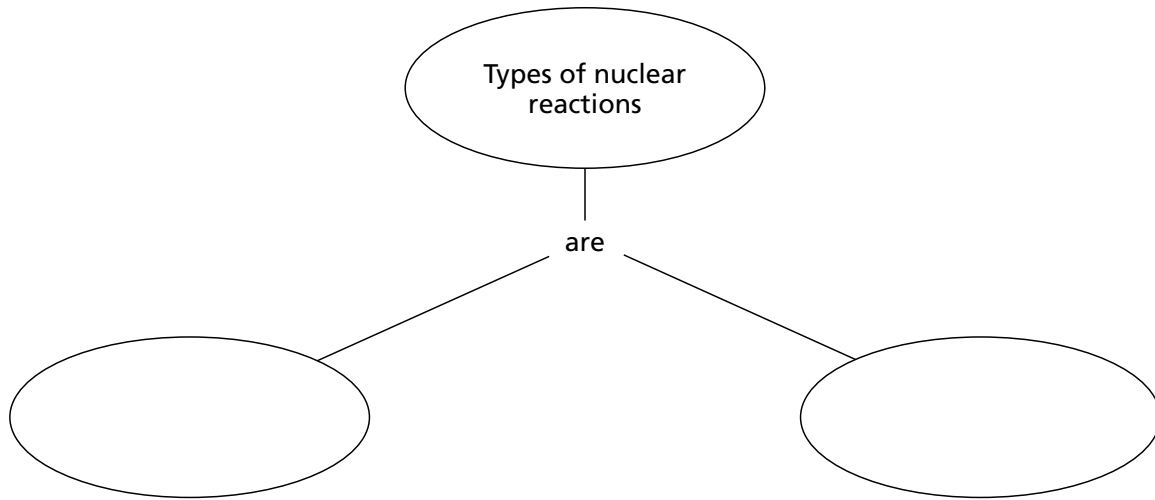


Energy Resources ▪ *Guided Reading and Study*

Nuclear Energy *(continued)*

Introduction

1. The central core of an atom that contains the protons and neutrons is called the _____.
2. Complete the concept map.



Nuclear Fission

3. Is the following sentence true or false? Nuclear reactions convert matter into energy. _____
4. What formula, developed by Albert Einstein, describes the relationship between energy and matter? _____
5. The splitting of an atom's nucleus into two smaller nuclei is called _____.
6. Is the following sentence true or false? In a controlled nuclear chain reaction, the energy released as heat can be used to generate electricity. _____

Energy Resources ▪ Guided Reading and Study**Nuclear Power Plants**

7. How is electricity produced in a nuclear power plant?

Match the part of a nuclear reactor with its function.

| Part of Reactor | Function |
|-------------------------|--|
| ____ 8. reactor vessel | a. It contains the uranium. |
| ____ 9. fuel rod | b. It is where nuclear fission occurs. |
| ____ 10. control rod | c. It controls the reactions. |
| ____ 11. heat exchanger | d. It changes hot water to steam. |

12. When fuel rods in a nuclear power plant generate so much heat that they start to melt, the condition is called a(n) _____.

13. Why is it difficult to dispose of radioactive wastes produced by power plants?

The Quest to Control Fusion

14. The combining of two atomic nuclei to produce a single larger nucleus is called _____.

15. Circle the letter of each sentence that is true about nuclear fusion.

- a. It produces less energy per atom than nuclear fission.
- b. The fuel it needs is readily available.
- c. It should produce less radioactive waste than nuclear fission.
- d. It is widely used today to produce electricity.