

Unit 7A
Radioactive Decay

Note-Taking Guide and Questions to Consider TEACHER

➤ Main Ideas, Key Points, Questions:

After watching the video segment, write down key points, main ideas, and big questions.

➤ Objective(s):

- *Understand the role of protons, neutrons, and electrons in determining an element's identity and atomic mass.*
- *Describe the conditions under which alpha, beta, and gamma radioactive decay occur, and the changes in the atom that happen when each type of decay occurs.*
- *Determine the resulting nuclei that are formed from alpha, beta, and gamma decay of a nucleus.*

➤ Notes:

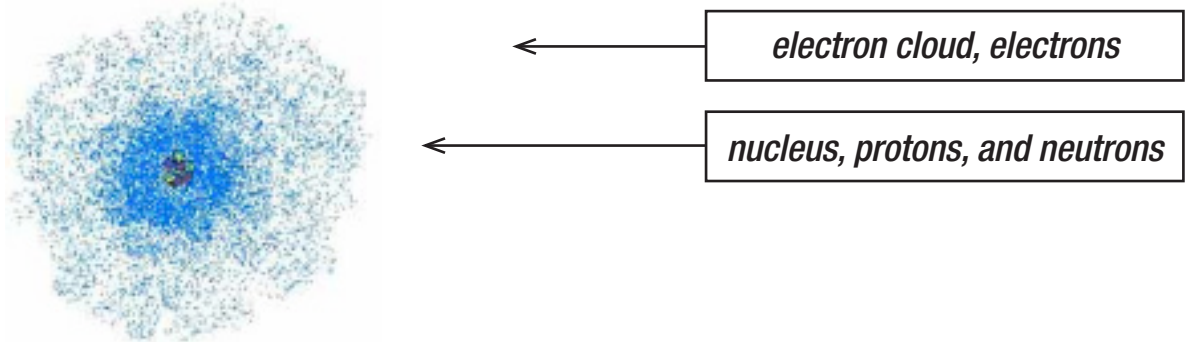
During the video segment, use words, phrases, or drawings to take notes.

➤ Summary:

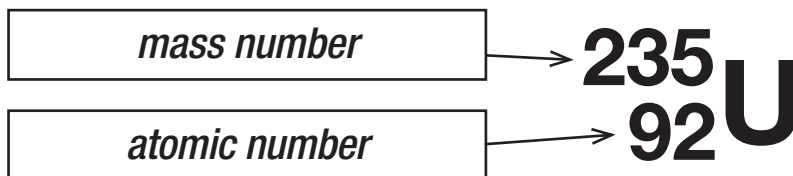
After watching the video segment, write at least three sentences explaining what you learned. You may ask yourself: "If I was going to explain this to someone else, what would I say?"

Answer the following.

1. Label the diagram of the atom below. Identify the nucleus, the electron cloud, and where protons, neutrons, and electrons are located.



2. The strong nuclear force holds the nucleus together.
3. The number of protons in the nucleus determines an atom's identity.
4. An object's mass number is equal to the sum of the protons and neutrons in the nucleus of the atom.
5. Atoms that have the same number of protons but a different numbers of neutrons are called isotopes.
6. For the symbol of Uranium-235 below, label the mass number and atomic number:



7. Define radioactivity in your own words:

Radioactivity is the release of particles from a nucleus, causing it to become more stable.

8. Complete the chart for each of the three types of radioactive decay:

Type of Decay	Particles Emitted	Change in Mass and/or Atomic Number	Charge of Emitted Particle(s)
Alpha	<i>2 protons 2 neutrons (a helium nucleus)</i>	<i>lose 4 from mass number and lose 2 from atomic number</i>	<i>+2</i>
Beta minus	<i>1 electron 1 antineutrino</i>	<i>no change in mass number, gain 1 in atomic number</i>	<i>-1</i>
Beta plus	<i>1 positron 1 neutrino</i>	<i>no change in mass number, lose 1 in atomic number</i>	<i>+1</i>
Gamma	<i>no particles, just energy</i>	<i>no change in either</i>	<i>no charge</i>

9. Rank the types of radioactive decay in order from most energetic to least energetic:

gamma > beta > alpha