

Standard CHEM.1.2

Analyze and interpret data to identify patterns in the stability of isotopes and predict likely modes of radioactive decay. Emphasize that different isotopes of the same element decay by different modes and at different rates depending on their nuclear stability. Examples of data could include a band of stability charts.

◇ Sentence Stems (student-generated endings)

1. On the stability graph, isotopes with a 1:1 ratio of protons and neutrons are found...
2. When the number of neutrons is much greater than the number of protons, the isotope tends to undergo...
3. When there are too many protons compared to neutrons, the isotope often decays by...
4. Alpha radiation becomes more common in isotopes that have an atomic number greater than...
5. I notice that stable isotopes cluster around the line where...
6. As the atomic number increases, stable isotopes need more...
7. Beta negative decay happens when an isotope has too many...
8. Positron emission happens when an isotope has too many...
9. The "band of stability" is important because it shows...
10. Unstable isotopes are located on the graph when they are...

◇ Framed Sentences (fill-in-the-blank supports)

1. Isotopes near the line where protons = neutrons are usually _____.
2. When an isotope has more neutrons than protons, it often decays by _____.
3. When an isotope has too many protons, it may release a _____ particle.
4. Elements with an atomic number greater than 82 often undergo _____ radiation.
5. Stable isotopes form in the _____ of the graph and different radiation is emitted on either side.
6. Beta negative decay occurs when there are _____ neutrons compared to stable isotopes.
7. Positron emission occurs when there are _____ neutrons than the stable isotopes.
8. The heavier the nucleus, the _____ likely it will be stable when it has the same number of protons and neutron. .
9. Alpha decay occurs in _____ elements.
10. Isotopes outside the band of stability are usually _____ on the neutron side and _____ of the proton side.

