Alpha Decay Worksheet

Scoring guide · one credit per question · review written work against each rubric

Alpha Decay

Question 1

Choice (2)

The parent loses two protons and two neutrons. It loses four nucleons in all, including two protons.

Question 2

The alpha particle carries away 4 − 2 = 2 neutrons. The daughter has 138 − 2 = 136 neutrons.

Question 3

Choice (3)

An alpha particle has two protons, while a neutron carries no protons or charge.

Question 4

The daughter has two fewer protons. The element’s identity depends on its proton count.

Decoding a Model Decay Record

Question 5

Choice (1)

The daughter has Z = 82, which identifies lead on the periodic table.

Question 6

Mass numbers balance as 222 = 218 + 4. Atomic numbers balance as 86 = 84 + 2.

Question 7

Choice (3)

Thorium has atomic number 90, the parent atomic number in R.

Question 8

Mass numbers still balance because 228 + 4 = 232. Atomic numbers fail because 90 + 2 = 92. The daughter must have Z = 88, so the corrected pair is (228, 88).