Checking Decay With a Stable Tracer

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

Checking Decay With a Stable Tracer

Question 1

Choice (2)

The stable isotope still has 80 nuclei in the whole sample. The detector counts 40, or one half.

Question 2

The detector counts 20 parents from half the material. The whole sample therefore contains 40 remaining parents.

Question 3

The stable isotope shows that only half the material was counted at the end. Correcting the parent count to 40 shows that the whole sample went from 80 to 40, or one half-life.

Question 4

The whole sample has 40 parents and 80 stable nuclei, so the new reading is 10 parents and 20 stable nuclei. The ratio stays 1:2 because the same fraction of both populations is counted.