

15 The nucleus - fission, fusion, and decay — Part 2 — Answers

Answers

Work through these after you have tried the questions yourself.

2.1 fission splits a heavy nucleus into lighter ones; fusion joins light nuclei into a heavier one.

2.2 $E = mc^2 = 2.0 \times 10^{-4} \times (3.0 \times 10^8)^2 = 2.0 \times 10^{-4} \times 9.0 \times 10^{16} = 1.8 \times 10^{13} \text{ J}$.

2.3 alpha, then beta, then gamma (gamma penetrates most).

2.4 $15/5.0 = 3$ half-lives, so the fraction left is $\left(\frac{1}{2}\right)^3 = \frac{1}{8}$ (12.5%).

2.5 the total mass number (nucleon number) and the total charge (proton number).