

23 Mass defect and binding energy — Part 2 — Answers

Answers

Work through these after trying the questions yourself.

23.1 How much less a nucleus weighs than its separate protons and neutrons.

23.2 The binding energy.

23.3 The energy needed to pull a nucleus apart.

23.4 Iron.

23.5 Fusion and fission.

23.6 $E = c^2 \Delta m = (3.0 \times 10^8)^2(4.0 \times 10^{-29}) = 3.6 \times 10^{-12} \text{ J}$.

23.7 Energy is released whenever the binding energy per nucleon *increases* (moves towards the iron peak). Light nuclei climb the curve by fusing together; heavy nuclei climb it by splitting apart. In both cases the products are more tightly bound, so energy is given out.