Teacher notes
Topic E

Energy released

Consider the fusion reaction:

$$^2_1H + ^3_1H \rightarrow ^1_0n + ^4_2He$$
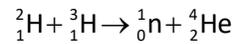
To calculate the energy released Q we can use binding energies to say: $Q = BE_{right} - BE_{left}$. In terms of binding energies per nucleon, b, then

$$Q = 4b_{He} - 2b_{H\text{-}2} - 3b_{H\text{-}3}$$

Putting in numbers: $Q = 4 \times 7.0739 - 2 \times 1.1123 - 3 \times 2.8273 = 17.6$ MeV

The reason for the energy released is that the product of the reaction lays to the right of H-2 and H-3 and so has **a larger binding energy per nucleon**.