

- 4 (a) Cobalt-60 is a beta-emitter.

A student has a sample of cobalt-60 inside a box. The student defines the half-life of cobalt-60 as the time taken for the number of nuclei inside the box to decay to one half of its initial value.

State and explain one reason why this definition is inappropriate.

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[2]

- (b) A mass of 4.3×10^{-9} g of cobalt-60 is found to have an activity of 1.8×10^5 Bq.

Calculate the half-life, in years, of cobalt-60.

half-life = years [4]