

GCSE Physics A (Gateway)

J249/04 Physics A P5-P8 and P9 (Higher Tier)

Question Set 13

1

A teacher measures the activity of different radioactive isotopes.

Fig. 1.1 is a graph of her results for isotope **A**.

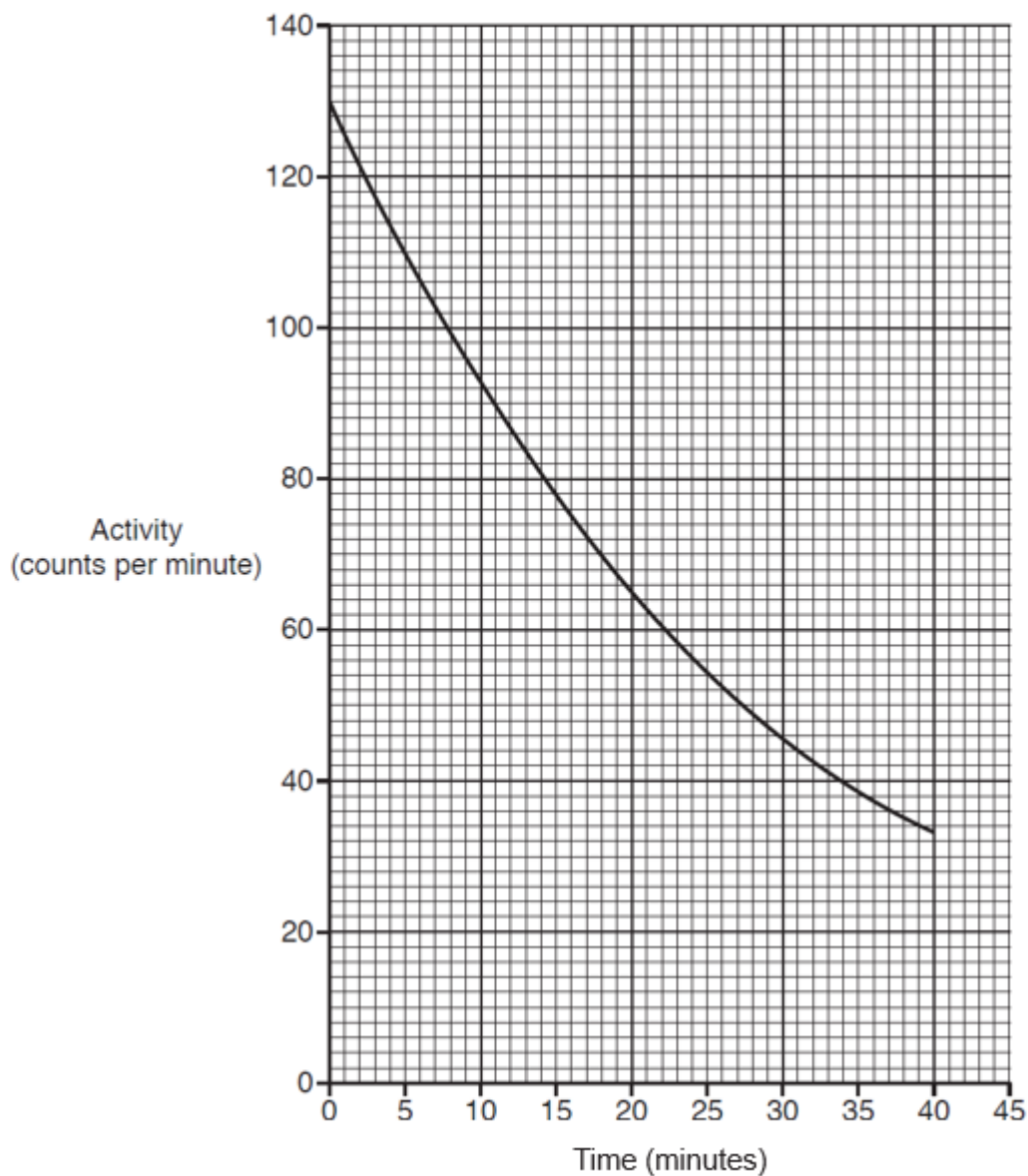


Fig. 1.1

(a) Use **Fig. 1.1** to calculate the half-life of isotope **A**.

Show your working on the graph in **Fig. 1.1**.

Half-life = minutes

[2]

- (b) The teacher measures the activity of isotope **B**.
She starts taking activity measurements after 20 minutes.

Table 1.1 shows her results for isotope **B**.

Time (minutes)	Activity (counts per minute)
0	
10	
20	84
30	64
40	52
50	40
60	32
70	25
80	20
90	16

Table 1.1

Predict the activity of isotope **B** at 0 minutes.

Use the information in **Table 1.1** to help you.

Activity =counts per minute

[2]

(c) The teacher measures the activity of isotope **C**.

Fig. 1.2 is a graph which shows how activity varies with time for isotope **C**.

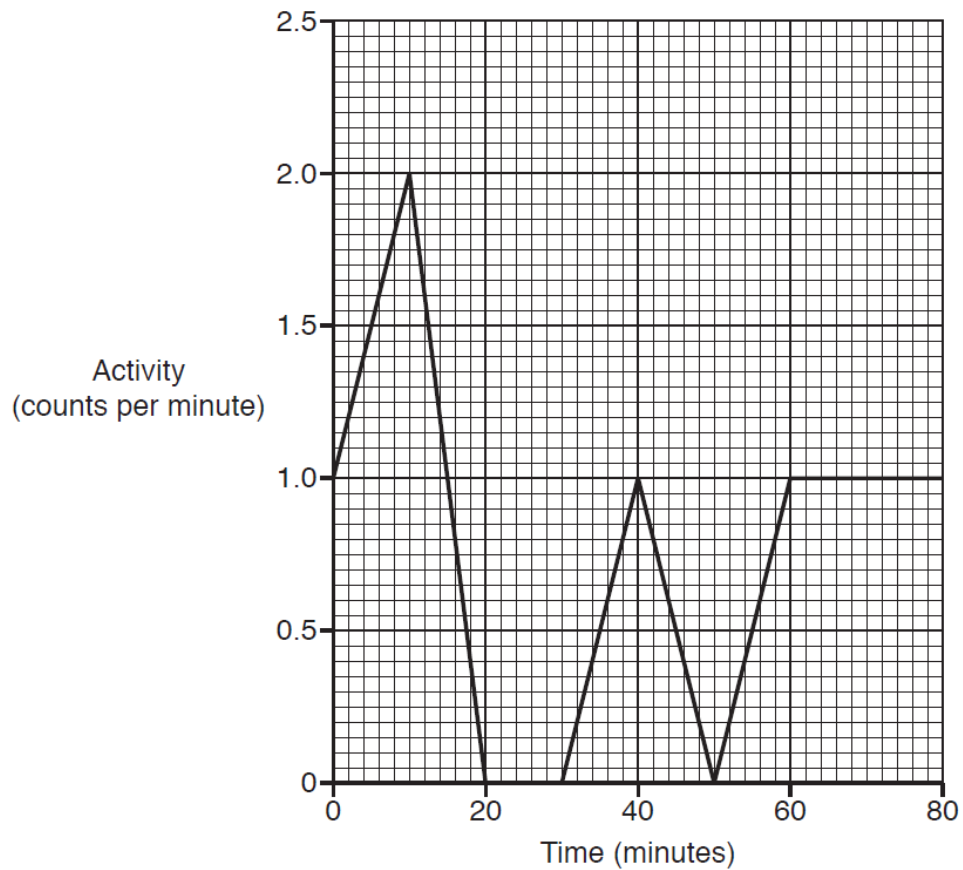


Fig. 1.2

A student makes two conclusions from the graph in **Fig. 1.2**:

Conclusion 1: I think the results are very inaccurate.
The isotope stops being radioactive and then gets more radioactive again.

Conclusion 2: I do **not** think the isotope has a half-life.

Is the student correct?

Evaluate **each** conclusion and explain your answer.

[2]

Total Marks for Question Set 13: 6

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