Separating Two Decay Signals in a Simulation

Scoring guide · one credit per question · review written work against each rubric

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Question 1

For P four hours is two half-lives, giving 80 ÷ 2 ÷ 2 = 20. For Q it is one half-life, giving 40 ÷ 2 = 20.

Question 2

Choice (1)

P drops from 80 to 20, losing 75% of its initial signal. Q drops from 40 to 20, losing 50%.

Question 3

The sum begins at 120 units and drops to 40 after four hours. One half of 120 is 60. A four-hour half-life for the total would give 60, which differs from 40.

Question 4

P has passed four half-lives and gives 80/16 = 5 units. Q has passed two half-lives and gives 40/4 = 10 units. Q supplies more of the summed signal.