Counting Both Directions at Equilibrium

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

Counting Both Directions at Equilibrium

Question 1

Choice (1)

The first window has 12 forward events and eight reverse events, for a net gain of four B particles. The other windows have equal counts in both directions.

Question 2

Before the addition both rates are 9/10 = 0.9 event per second. Afterward both are 18/10 = 1.8 events per second.

Question 3

After adding the catalyst, each direction rises from nine to 18 events per 10 seconds. The number of new B particles equals the number changed back to A, so the net B change stays zero. The record supports faster conversion in both directions, with no net shift toward B.

Question 4

The longer window gives 36/20 = 1.8 events per second in each direction. The event totals are larger because the window is longer. They give the same rates as the previous catalyzed observation.