Checking a Reaction When One Signal Stays Flat

Base your answers on the information provided and your knowledge of chemistry. Use the 2025 Chemistry Reference Tables as needed.

A display follows a model reaction that converts one B particle into one C particle. Channel X gives one signal unit for each B or C particle. Channel Y gives two signal units for each B particle and one for each C particle. The particles stay in the same liquid throughout.

Time (s)	Channel X	Channel Y
0	6	12
10	6	10
20	6	6

1 Which quantity does channel X report directly?

(1) B count only

(2) C count only

(3) The combined B and C count

(4) The amount of B converted per second

2 Complete the table with the B and C counts at 10 s. Explain how the channel readings give the counts. [1]

Particle	Count at 10 s
B	
C	

Explain how you used the channels

3 Compare the average C formation rates from 0 to 10 s and from 10 to 20 s. [1]

Answer and work

4 A student says the flat X signal establishes that the reaction did not occur. Evaluate the claim with both channels. [1]

Answer and work