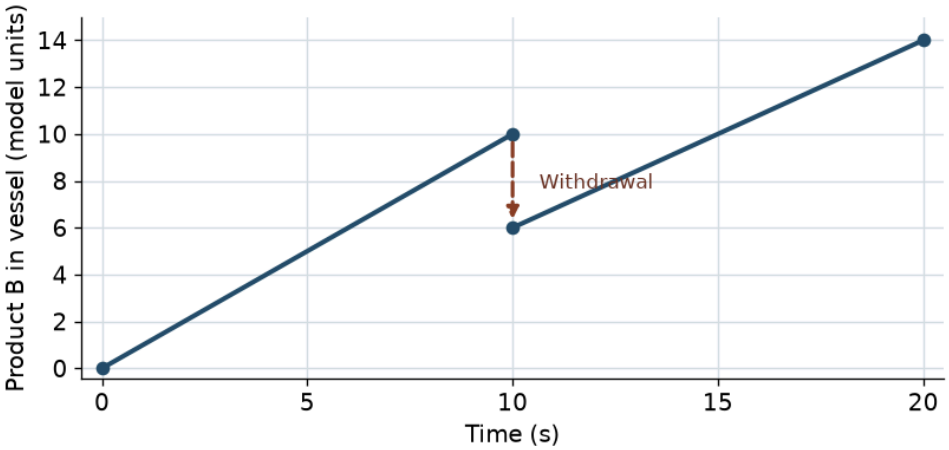
Reading a Reaction After a Sample Is Removed

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

A model vessel forms product B. Its detector reports the number of B units still in the vessel. At 10 seconds a sampler withdraws a portion of liquid and records the detector reading just before and just after. The withdrawal is effectively instantaneous. Outside that moment B stays in the vessel as it forms.



Detector readings before and after a liquid sample is withdrawn.

1 How many B units does the sampler remove?

(1) Four

(2) Six

(3) Ten

(4) Fourteen

2 Calculate the average rate of B formation before the withdrawal and over the ten seconds after it. [1]

Answer and work

3 A student says the drop at 10 seconds proves that B reacted away. Evaluate the claim with the measurement procedure. [1]

Answer and work

The sampler keeps all of its withdrawn liquid for a separate analysis. The vessel is stopped after the 20-second reading.

4 Calculate how much B formed over the whole run. Include the product in both locations. [1]

Answer and work