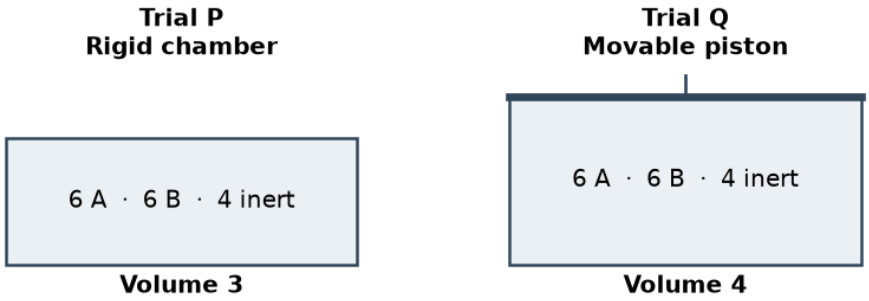
Checking Equilibrium With an Added Inert Gas

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

A model gas reaction is A ⇌ 2 B. It is initially at equilibrium at fixed temperature. A chamber contains six A and six B particle units in volume three. In the model each gas's pressure contribution equals its count divided by volume. A separate inert gas does not react.



Chambers just after inert gas enters, before A and B respond.

1 Which trial keeps both reactive pressure contributions at their original values just after the addition?

(1) P only

(2) Q only

(3) Both trials

(4) Neither trial

2 Find the total pressure just after adding inert gas in each trial. Include the inert contribution. [1]

Answer and work

In the display, adding inert gas at fixed volume leaves the original equilibrium unchanged. A volume increase favors the side with more gas particles until a new equilibrium is reached.

3 Predict which trial changes its A-to-B composition as it settles and which side it favors. [1]

Answer and work

4 A student says the larger change in total pressure marks the trial with a composition shift. Evaluate the claim with the two trials. [1]

Answer and work