Tracing Gases Through a Tiny Opening

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

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Question 1

Choice (1)

The periodic table lists helium near 4 u and argon near 40 u.

Question 2

Three quarters of the helium leave and one quarter of the argon leaves. P keeps 8 × 1/4 = 2 He and 12 × 3/4 = 9 Ar. Q keeps 12 × 1/4 = 3 He and 8 × 3/4 = 6 Ar.

Question 3

At fixed volume and temperature the pressure scales with gas particle count. P keeps 11 of 20 units, giving 55 kPa. Q keeps nine of 20, giving 45 kPa.

Question 4

Add two helium units to bring Q to 11 total units, matching P. The addition leaves Q with six argon units while P still has nine, so equal pressure does not establish equal composition.