Boyle’s Law Worksheet

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

Boyle’s Law

Question 1

Choice (4)

P_2 = (100 kPa × 40 mL) ÷ 20 mL = 200 kPa.

Question 2

V_2 = (120 kPa × 3.0 L) ÷ 180 kPa = 2.0 L.

Question 3

The same number of particles occupies a smaller space. The particles hit the container walls more frequently per unit area, increasing pressure.

Question 4

Choice (2)

Boyle’s law relates pressure and volume for a fixed amount of gas at constant temperature.

Sealed Piston

Question 5

Trial 1 gives 60 mL × 100 kPa = 6,000 kPa·mL. Trial 3 gives 40 mL × 150 kPa = 6,000 kPa·mL. The products are equal.

Question 6

Choice (1)

30 mL × 200 kPa = 6,000 kPa·mL, matching the other trials.

Question 7

Choice (3)

Average kinetic energy stays the same because the temperature stays the same.

Question 8

The amount of gas changed. The constant PV product applies only to the original fixed amount at the same temperature.