Charles’s Law Worksheet

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

Charles’s Law

Question 1

Choice (3)

V_2 = (0.600 L)(450 K)/(300 K) = 0.900 L.

Question 2

The temperatures are 300.00 K and 400.00 K. V_2 = (1.50 L)(400.00 K)/(300.00 K) = 2.00 L.

Question 3

Choice (1)

V/T is constant, so V is directly proportional to T in Kelvin.

Question 4

The gas-law ratio uses absolute temperature. Heating from 298.15 K to 323.15 K increases Kelvin temperature by a factor of about 1.08. Volume increases by the same factor at constant pressure.

A Freely Moving Piston

Question 5

A gives 120 mL/240 K = 0.50 mL/K. C gives 180 mL/360 K = 0.50 mL/K. The two readings have equal V/T ratios.

Question 6

Choice (3)

The measured V/T ratio is 0.50 mL/K. At 400 K, V = (0.50 mL/K)(400 K) = 200 mL.

Question 7

At the higher temperature, the particles have greater average kinetic energy. The gas expands from 120 to 180 mL as the piston moves outward at constant pressure.

Question 8

Choice (3)

With the volume fixed, the pressure rises as the gas warms, so the constant-pressure equation cannot describe that process.