Pressure and Temperature of Gases Worksheet

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

Pressure and Temperature of Gases

Question 1

Choice (3)

P_2 = (80.0 kPa)(375 K)/(250. K) = 120. kPa.

Question 2

26.85 °C is 300.00 K and 66.85 °C is 340.00 K. P_2 = (90.0 kPa)(340.00 K)/(300.00 K) = 102 kPa.

Question 3

The gas particles move faster on average. Their collisions with the walls become more frequent and transfer more momentum on average, raising pressure.

Question 4

Choice (2)

The equation describes a fixed amount of gas in a constant volume.

Pressure Sensor Test

Question 5

A gives 84 kPa/280 K = 0.30 kPa/K. C gives 108 kPa/360 K = 0.30 kPa/K. The equal ratios support direct proportionality to Kelvin temperature.

Question 6

Choice (3)

Multiply 400 K by the constant ratio of 0.30 kPa/K to get 120 kPa.

Question 7

The cell volume can increase. The original pressure–temperature proportionality requires fixed volume, so an expanding cell needs a model that includes the volume change.

Question 8

Choice (3)

Trial C is warmer, so particles have greater average kinetic energy.