Gas Particles and Diffusion Worksheet

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

Gas Particles and Diffusion

Question 1

Choice (1)

Random motion and collisions distribute the tracer throughout the available volume.

Question 2

Individual particles move in many directions. More particles start in the concentrated region, so more cross outward than inward until concentrations become more uniform.

Question 3

Choice (1)

Particles keep moving, with no overall concentration difference to drive net diffusion.

Question 4

Both increase. A higher temperature means greater average kinetic energy, and particles of the same mass move faster on average.

A Tracer in a Model Tube

Question 5

Choice (1)

P and Q use the same sensor distance and differ in temperature.

Question 6

60 s − 48 s = 12 s shorter.

Question 7

Choice (2)

Q and R both use 320 K. Moving the sensor from 20 to 30 cm increases the time from 48 to 100 s.

Question 8

Both temperature and sensor distance change. The difference in times cannot be attributed to temperature alone.