Reading a Gas Mass With Air Displacement

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

Reading a Gas Mass With Air Displacement

Question 1

Choice (4)

Multiply the 2.0 L displaced volume by 1.2 g/L to get 2.4 g of displaced air.

Question 2

The true filled mass is 5.0 + 2.4 = 7.4 g. Subtracting the bag’s 4.0 g gives 3.4 g of gas. Dividing by 2.0 L gives 1.7 g/L.

Question 3

The actual Q mass is 0.2 × 2.0 = 0.4 g. The bag and contents have a true mass of 4.4 g. Subtract 2.4 g for displaced air to predict 2.0 g on the scale.

Question 4

Adding Q increases the true mass by 0.4 g. Filling the bag also increases the displaced air mass by 2.4 g. The upward effect of the displaced air accounts for the decrease in the scale reading.