Checking Where Dissolved Zinc Came From

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

Checking Where Dissolved Zinc Came From

Question 1

Choice (2)

Only the metal route produces H_2, and it produces one mole of H_2 per mole of zinc metal.

Question 2

The hydrogen shows 0.020 mol of zinc metal. Both routes yield one mole of Zn^{2+} per mole of material used, so 0.050 − 0.020 = 0.030 mol came from zinc oxide.

Question 3

Select Refutes the claim. Zinc in the metal starts at oxidation number 0 and ends at +2. Zinc in ZnO is already +2 and remains +2 in solution. The oxide route adds dissolved zinc without oxidizing zinc metal.

Question 4

The metal route now produces 0.040 mol H_2, so 0.040 mol of Zn^{2+} comes from metal. The remaining 0.050 − 0.040 = 0.010 mol comes from zinc oxide.

Question 5

Both routes use two moles of H^+ per mole of Zn^{2+} produced. Each sample gives 0.050 mol Zn^{2+} and uses 0.100 mol H^+. That measurement would match across the mixtures even though their hydrogen readings differ.