Checking Salt Content in Two Concentration Units

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

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Question 1

Choice (2)

One liter of Q has a mass of 1.20 kg, compared with 1.00 kg for one liter of P.

Question 2

P gives 12/1.00 = 12 mg/kg. Q gives 12/1.20 = 10 mg/kg. Q is at or below 11 mg/kg.

Question 3

A liter of each contains 12 mg salt, but a liter of Q contains more solution mass. Dividing the equal salt masses by different solution masses gives different mg/kg values.

Question 4

The sample starts with 6.0 mg salt and 0.50 kg solution. The lighter diluent adds 0.08 kg, giving 6.0/0.58 ≈ 10.3 mg/kg. The denser one adds 0.12 kg, giving 6.0/0.62 ≈ 9.7 mg/kg. Only the denser diluent meets 10.0 mg/kg.

Question 5

Both treated samples hold the same 6.0 mg of salt in the same 0.60 L volume. Both give 10 mg/L even though their solution masses and their mg/kg results differ.