When a Seed Crystal Grows or Shrinks

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

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Question 1

Choice (1)

P loses 4 g of solid, from 8 g to 4 g. Q gains 6 g of solid. The net change in P is from solid to dissolved.

Question 2

P contains 46 + 4 = 50 g of sodium acetate after adding the 8 g crystal, so it originally had 42 g dissolved. Q contains 46 + 14 = 60 g after adding 8 g, so it originally had 52 g dissolved.

Question 3

Both tubes have 100 g of water. P started at 42 g sodium acetate per 100 g water, below equilibrium capacity, and part of the seed dissolved. Q started at 52 g per 100 g water, above capacity, and more solid formed. Both have 46 g dissolved at equilibrium because both still contain solid at the same temperature.

Question 4

The repeat contains 42 + 2 = 44 g sodium acetate in all. All 44 g can dissolve, so no solid remains and the dissolved mass stays 2 g below the 46 g capacity.