Reading a Mass Loss Record for a Hydrate

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

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Question 1

14.3 g − 5.30 g = 9.0 g of water, using the mass decrease.

Question 2

The water amount is 9.0/18.0 = 0.50 mol. The sodium carbonate amount is 5.30/106 = 0.0500 mol. The ratio is about 10 mol H_2O per mol Na_2CO_3.

Question 3

Choice (2)

The data support ten water molecules for each Na_2CO_3 formula unit, as written in $Na_2CO_3 \cdot 10H_2O$.

Question 4

The ratio is too low. The mass lost is smaller than the sample’s total crystal water mass. The final solid mass is too high to represent dry Na_2CO_3 alone, so it also overstates the carbonate amount in the denominator.