# Comparing Two Bicarbonate Powders by Mass

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

### Comparing Two Bicarbonate Powders by Mass

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### Question 1

Choice (1)

The samples have the same mass, but $NaHCO_3$ has the smaller molar mass. It supplies more formula units and therefore more $CO_2$.

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### Question 2

The predictions are 8.40/84.0 = 0.100 mol for sodium bicarbonate and 8.40/100.0 = 0.0840 mol for potassium bicarbonate. The $CO_2$ mole ratio is one to one in both.

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### Question 3

The target is 0.100 mol $CO_2$, so the model needs 0.100 mol $KHCO_3$. Multiply by 100.0 g/mol to obtain 10.0 g.

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### Question 4

The blend has 4.20 g of each powder. Sodium bicarbonate contributes 4.20/84.0 = 0.0500 mol $CO_2$. Potassium bicarbonate contributes 4.20/100.0 = 0.0420 mol $CO_2$. The total is 0.0920 mol, below the 0.100 mol from the pure sodium bicarbonate sample.