Mass-to-Mass Stoichiometry Worksheet

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

Mass-to-Mass Stoichiometry

Question 1

Choice (1)

Use the reactant molar mass, the balanced mole ratio, then the product molar mass.

Question 2

4.04 g H_2/(2.02 g/mol) = 2.00 mol H_2. The 2:2 ratio gives 2.00 mol H_2O. Multiply by 18.02 g/mol to get 36.0 g H_2O.

Question 3

Choice (3)

The balanced coefficients give 2 mol NH_3 per mole of N_2.

Question 4

The 2:1 coefficients are a ratio of moles, so the student should first convert N_2 grams to moles and convert the resulting NH_3 moles back to grams using NH_3's molar mass.

Products from a Limestone Sample

Question 5

Choice (1)

Only the $CaCO_3$ portion is the reactant in the modeled equation.

Question 6

M($CaCO_3$) = 100.09 g/mol and M(CaO) = 56.08 g/mol. Divide 25.0 g by 100.09 g/mol, multiply by the 1:1 mole ratio, then multiply by 56.08 g/mol. The prediction is 14.0 g CaO.

Question 7

Choice (2)

The model makes 25.0/100.09 mol of CO_2. Multiply by 44.01 g/mol to get 11.0 g.

Question 8

One mole of CO_2 gas leaves the solid per mole of $CaCO_3$ consumed. The solid loses the mass of that gas. The CaO, unchanged rock, and released CO_2 together account for the original mass.