# Mole Ratios and Stoichiometry Worksheet

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

## Mole Ratios and Stoichiometry

### Question 1

Choice (2)

Choice (2). The equation consumes 3 mol $H_2$ for every 2 mol $NH_3$ formed. Put mol $H_2$ in the denominator so it cancels.

### Question 2

0.600 mol Mg × (1 mol $O_2$ / 2 mol Mg) = 0.300 mol $O_2$. Award credit for an equivalent setup and the amount with units.

### Question 3

The coefficients of $H_2$ and $Cl_2$ are both 1, so 1.0 mol $H_2$ consumes 1.0 mol $Cl_2$. The coefficient 2 belongs to the HCl product. Accept equivalent reasoning.

### Question 4

Choice (3)

Choice (3). The $CaCO_3$ and $CO_2$ coefficients are each 1. Multiply 0.45 mol $CO_2$ by 1 mol $CaCO_3$ per 1 mol $CO_2$.

## Hydrogen for a Fuel Cell

### Question 5

0.80 mol $H_2$ × (1 mol $O_2$ / 2 mol $H_2$) = 0.40 mol $O_2$. Award credit for an equivalent setup and 0.40 mol $O_2$.

### Question 6

$O_2$ is in excess. Trial A supplies 0.60 mol $O_2$ and 0.80 mol $H_2$ uses 0.40 mol $O_2$ at a 2:1 ratio. Accept a comparison showing 0.60 mol $O_2$ would need 1.20 mol $H_2$.

### Question 7

Choice (3)

Choice (3). The available 0.30 mol $O_2$ can react with 0.60 mol $H_2$, which is less than the 0.80 mol supplied. The equation gives 2 mol $H_2O$ per mole $O_2$, so 0.60 mol $H_2O$ forms.

### Question 8

Trial A can use all 0.80 mol $H_2$ and form 0.80 mol $H_2O$. Trial B has enough $O_2$ to use only 0.60 mol $H_2$ and forms 0.60 mol $H_2O$. Award credit for explaining the oxygen limit and the difference in product amount. Exact product amounts are optional when the comparison is otherwise clear.