How to balance a chemical equation: (4 step process)

Step 1: Write the skeleton equation

Word eqn: (Methane + Oxygen → Water + Carbon dioxide)

$$CH_4 + 2O_2 \longrightarrow 2H_2O + CO_2$$

Step 2: Count the # of atoms of each type on each side of the reaction.

Atoms	Reactants	Products
C	1	1 ✓
H	4	2×4 ✓
O	2×4	2×4 ✓

Step 3: Multiply each of the chemical formulas by the appropriate COEFFICIENT to balance the eqn. (start with the largest imbalance)

$$CH_4 + 2\ O_2 \longrightarrow 2\ H_2O + CO_2$$

Step 4: Count atoms again to make sure the eqn is balanced.

Atoms	Reactants	Products
C	1	1 ✓
H	4	4 ✓
O	4	4 ✓

Ex 2: Magnesium + Nitric acid → hydrogen + Magnesium Nitrate

Skeleton:

$$Mg + 2H\ NO_3 \longrightarrow H_2 + Mg(NO_3)_2$$

NTB: i⁺¹ acid

LTB: oxoacid

atom	Reactant	Product
Mg	1	1 ✓
H	1×2	2 ✓
N	1×2	2 ✓
O	3×6	6 ✓

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