

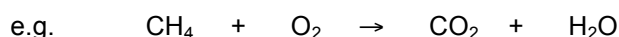


BALANCING EQUATIONS 1

- An equation is balanced when there are the same number of atoms of each type on both sides of the equation.
- An equation can only be balanced by putting numbers in front of formulas – you cannot change the formula itself.
- Equations can be written with state symbols: (s) = solid, (l) = liquid, (g) = gas, (aq) = aqueous (dissolved in water).

How to balance an equation:

- a) Calculate how many atoms of each type are on each side of the equation.
- b) If the numbers are the same then the equation is balanced.
- c) If the numbers are not the same, then numbers are put in front of the formulas (this adds more of that substance). You cannot change the formulas (this would make a different substance). Hint – start with unbalanced elements that only appear in one substance on each side of the equation.
- d) Keep doing this until the equation is balanced.



Questions

Put your final answers here although you may wish to do your working on a separate sheet of paper or on the back.

- 1) $\text{Ca} + \text{O}_2 \rightarrow \text{CaO}$
- 2) $\text{Na}_2\text{O} + \text{H}_2\text{O} \rightarrow \text{NaOH}$
- 3) $\text{Al} + \text{O}_2 \rightarrow \text{Al}_2\text{O}_3$
- 4) $\text{Na} + \text{Cl}_2 \rightarrow \text{NaCl}$
- 5) $\text{Na}_2\text{CO}_3 \rightarrow \text{Na}_2\text{O} + \text{CO}_2$
- 6) $\text{K} + \text{O}_2 \rightarrow \text{K}_2\text{O}$
- 7) $\text{C}_4\text{H}_8 + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$
- 8) $\text{Fe}_2\text{O}_3 + \text{HCl} \rightarrow \text{FeCl}_3 + \text{H}_2\text{O}$
- 9) $\text{F}_2 + \text{KBr} \rightarrow \text{KF} + \text{Br}_2$
- 10) $\text{C}_5\text{H}_{12} + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$
- 11) $\text{NH}_3 + \text{O}_2 \rightarrow \text{NO} + \text{H}_2\text{O}$
- 12) $\text{HNO}_3 \rightarrow \text{NO}_2 + \text{H}_2\text{O} + \text{O}_2$