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.

e.g. $CH_4 + O_2 \rightarrow CO_2 + H_2O$

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) $Ca + O_2 \rightarrow CaO$

2) $Na_2O + H_2O \rightarrow NaOH$

3) $Al + O_2 \rightarrow Al_2O_3$

4) $Na + Cl_2 \rightarrow NaCl$

5) $Na_2CO_3 \rightarrow Na_2O + CO_2$

6) $K + O_2 \rightarrow K_2O$

7) $C_4H_8 + O_2 \rightarrow CO_2 + H_2O$

8) $Fe_2O_3 + HCl \rightarrow FeCl_3 + H_2O$

9) $F_2 + KBr \rightarrow KF + Br_2$

10) $C_5H_{12} + O_2 \rightarrow CO_2 + H_2O$

11) $NH_3 + O_2 \rightarrow NO + H_2O$

12) $HNO_3 \rightarrow NO_2 + H_2O + O_2$