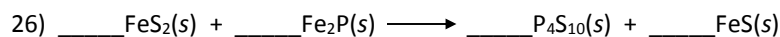
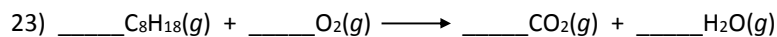


21) Solid dinitrogen pentoxide reacts with sodium metal to form solid sodium nitrate and nitrogen dioxide gas.

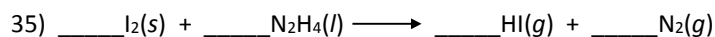
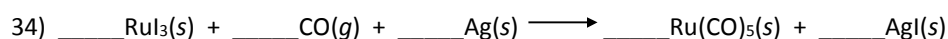
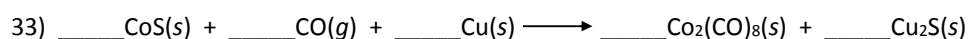
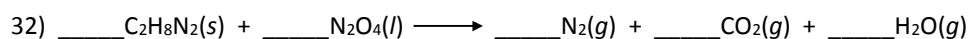
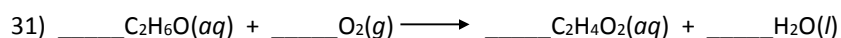
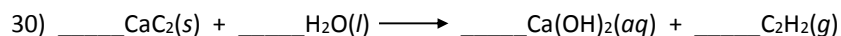
22) Nitrogen monoxide gas decomposes to dinitrogen monoxide and nitrogen dioxide gases.



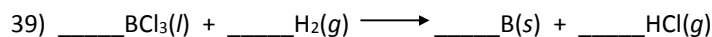
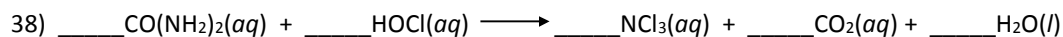
27) Gaseous uranium(IV) oxide reacts with aqueous hydrofluoric acid to form uranium(IV) fluoride gas and liquid water.

28) Chromium metal can be produced by reacting solid chromium(III) oxide with molten aluminum to form molten chromium and solid aluminum oxide.

29) Sodium chlorate (a solid) decomposes when heated to yield solid sodium chloride and oxygen gas.



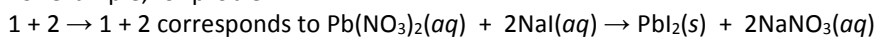
37) Metallic silver reacts with dihydrogen sulfide gas and oxygen gas to form solid silver(I) sulfide and liquid water.



40) Solid diboron trioxide reacts with graphite and chlorine gas to form liquid boron trichloride and carbon monoxide gas.

**Solutions. Numbers correspond to coefficients in each blank**

For example, for problem 2:



1.  $2 + 1 \rightarrow 2 + 1 + 1$
2.  $1 + 2 \rightarrow 1 + 2$
3.  $6 + 6 \rightarrow 1 + 6$
4.  $2 + 1 \rightarrow 2$
5.  $1 + 3 \rightarrow 3 + 3$
6.  $1 + 3 \rightarrow 2 + 1$
7.  $8 + 8 \rightarrow 4 + 1$
8.  $3 + 4 \rightarrow 1 + 1$
9.  $1 + 2 + 2 \rightarrow 2 + 1$
10.  $1 + 3 + 2 \rightarrow 3 + 2$
11.  $1 + 1 \rightarrow 1 + 3$
12.  $2 \rightarrow 1 + 3$
13. --
14.  $1 + 1 \rightarrow 1 + 1$
15.  $2 + 1 \rightarrow 2$
16.  $2 + 3 \rightarrow 2 + 2$
17.  $16 + 8 \rightarrow 3 + 16$
18.  $2 + 2 + 6 \rightarrow 2 + 3$
19.  $2 + 1 \rightarrow 6 + 1$
20.  $1 + 1 \rightarrow 2 + 2 + 1$
21.  $\text{N}_2\text{O}_5 + \text{Na} \rightarrow \text{NaNO}_3 + \text{NO}_2$
22.  $3\text{NO} \rightarrow \text{N}_2\text{O} + \text{NO}_2$
23.  $2 + 25 \rightarrow 16 + 18$
24.  $4 + 8 + 1 \rightarrow 2 + 4 + 4$
25.  $6 + 3 \rightarrow 1 + 3 + 1$
26.  $18 + 4 \rightarrow 1 + 26$
27.  $\text{UO}_2 + 4\text{HF} \rightarrow \text{UF}_4 + 2\text{H}_2\text{O}$
28.  $\text{Cr}_2\text{O}_3 + 2\text{Al} \rightarrow 2\text{Cr} + \text{Al}_2\text{O}_3$
29.  $2 \text{NaClO}_3 \rightarrow 2\text{NaCl} + 3\text{O}_2$
30.  $1 + 2 \rightarrow 1 + 1$
31.  $1 + 1 \rightarrow 1 + 1$
32.  $1 + 2 \rightarrow 3 + 2 + 4$
33.  $2 + 8 + 4 \rightarrow 1 + 2$
34.  $1 + 5 + 3 \rightarrow 1 + 3$
35.  $2 + 1 \rightarrow 4 + 1$
36.  $2 + 6 \rightarrow 1 + 3 + 3$
37.  $4\text{Ag} + 2\text{H}_2\text{S} + \text{O}_2 \rightarrow 2\text{Ag}_2\text{S} + 2\text{H}_2\text{O}$
38.  $1 + 6 \rightarrow 2 + 1 + 5$
39.  $2 + 3 \rightarrow 2 + 6$
40.  $\text{B}_2\text{O}_3 + 3\text{C} + 3\text{Cl}_2 \rightarrow 2\text{BCl}_3 + 3\text{CO}$