

Making Predictions Using the Types of Reactions

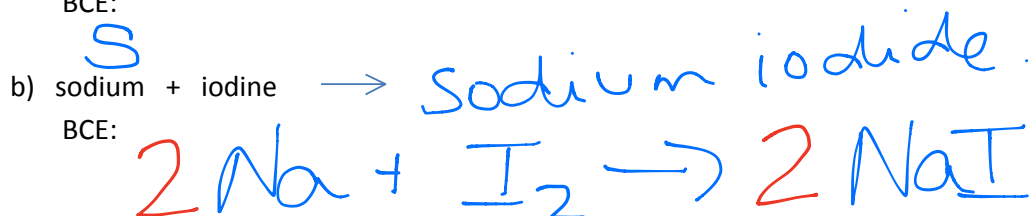
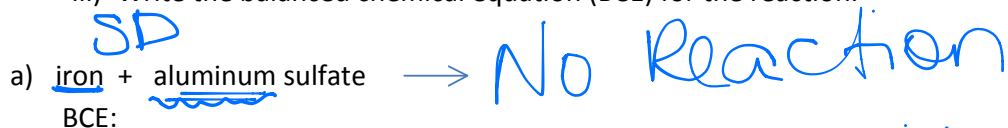
The 5 general reactions (synthesis, decomposition, single displacement, double displacement, combustion) can occur between elements and compounds. Classify each using the 5 types of reactions.

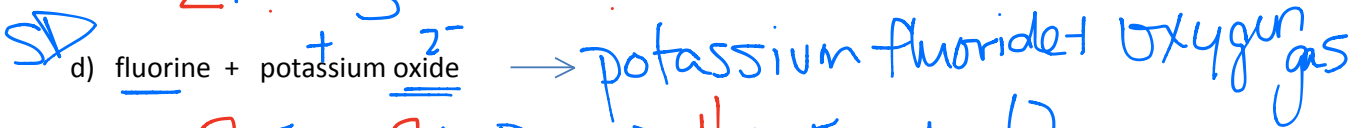
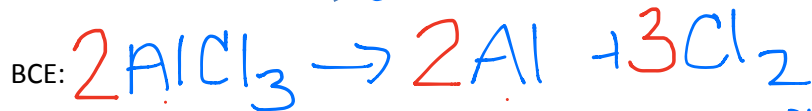
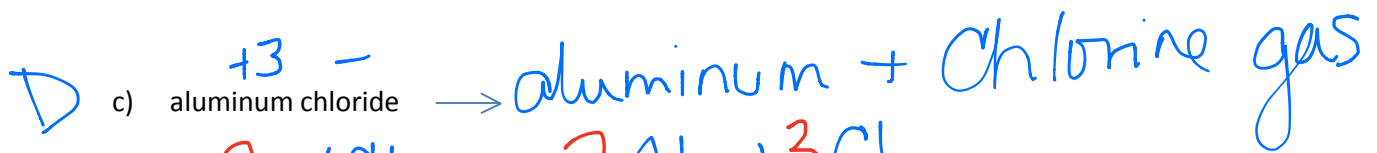
- 1) metal + non-metal \rightarrow ionic compound S
- 2) non-metal + non-metal \rightarrow molecular compound S
- 3) ionic compound \rightarrow metal + non-metal D
- 4) molecular compound \rightarrow non-metal + non-metal D
- 5) metal 1 + ionic compound 1 \rightarrow metal 2 + ionic compound 2 SD
- 6) ionic compound 1 + non-metal 1 \rightarrow ionic compound 2 + non-metal 2 SD
- 7) ionic compound 1 + ionic compound 2 \rightarrow ionic compound 3 + ionic compound 4 DD
- 8) C_xH_y hydrocarbon + oxygen \rightarrow carbon dioxide + water *energy* C
- 9) metal + oxygen \rightarrow metal oxide S

Questions:

1. Using the general reaction types:

- Identify the type of reaction using the list above as a guideline.
- Predict the name of the product(s) formed in the reaction.
- Write the balanced chemical equation (BCE) for the reaction.



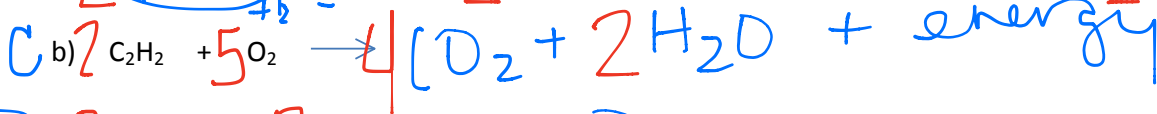
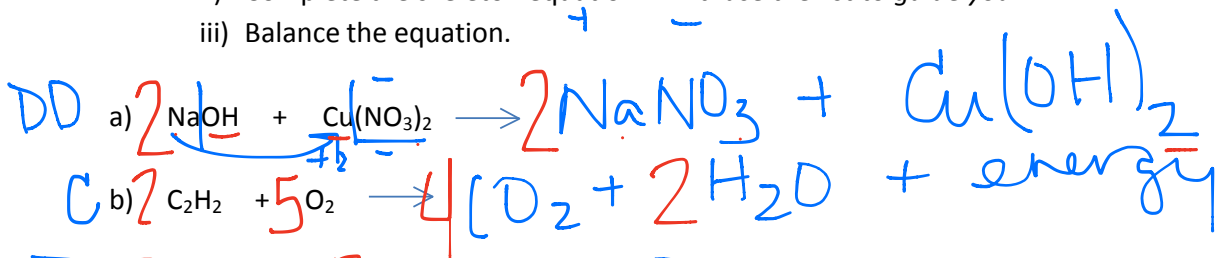


2. For each of these reactions:

i) Identify the type of reaction.

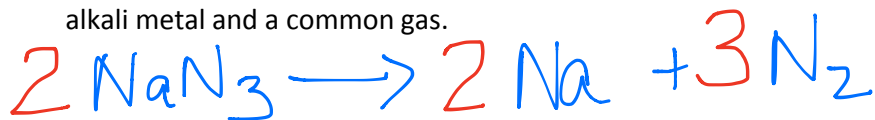
ii) Complete the skeleton equation. *Hint: use the list to guide you.*

iii) Balance the equation.

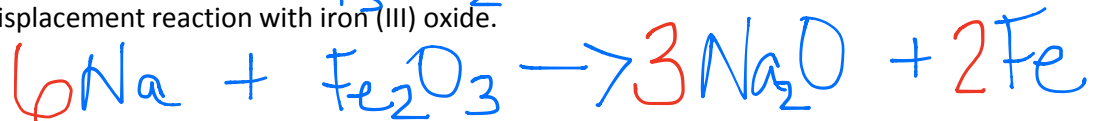


3. In cars, several reactions take place when an airbag inflates in an accident. Using your knowledge of types of reactions, complete balanced equations for each of the 3 reactions.

Reaction 1: Sodium azide (NaN_3) undergoes a decomposition reaction to produce an alkali metal and a common gas.



Reaction 2: The dangerous metal produced in reaction 1 is removed by a single displacement reaction with iron (III) oxide.



Reaction 3: The metal oxide produced in reaction 2 combines with carbon dioxide and water in a synthesis reaction to create sodium bicarbonate.

