## Six Types of Chemical Reaction Worksheet

Balance the following reactions and indicate which of the six types of chemical reaction are being represented:

1) $\qquad$ $\mathrm{NaBr}+$ $\qquad$ $\mathrm{Ca}(\mathrm{OH})_{2} \rightarrow$ $\qquad$ $\mathrm{CaBr}_{2}+$ $\qquad$ NaOH

Type of reaction: $\qquad$
2) $\qquad$ $\mathrm{NH}_{3}+$ $\qquad$ $\mathrm{H}_{2} \mathrm{SO}_{4} \rightarrow$ $\qquad$ $\left(\mathrm{NH}_{4}\right)_{2} \mathrm{SO}_{4}$

Type of reaction: $\qquad$
3) $\qquad$ $\mathrm{C}_{5} \mathrm{H}_{9} \mathrm{O}+$ $\qquad$ $\mathrm{O}_{2} \rightarrow$ $\qquad$ $\mathrm{CO}_{2}+$ $\qquad$ $\mathrm{H}_{2} \mathrm{O}$

Type of reaction: $\qquad$
4) $\qquad$ $\mathrm{Pb}+$ $\qquad$ $\mathrm{H}_{3} \mathrm{PO}_{4} \rightarrow$ $\qquad$ $\mathrm{H}_{2}+$ $\qquad$ $\mathrm{Pb}_{3}\left(\mathrm{PO}_{4}\right)_{2}$

Type of reaction: $\qquad$
5) $\qquad$ $\mathrm{Li}_{3} \mathrm{~N}+$ $\qquad$ $\mathrm{NH}_{4} \mathrm{NO}_{3} \rightarrow$ $\qquad$ $\mathrm{LiNO}_{3}+$ $\qquad$ $\left(\mathrm{NH}_{4}\right)_{3} \mathrm{~N}$

Type of reaction: $\qquad$
6) $\qquad$ $\mathrm{HBr}+$ $\qquad$ $\mathrm{Al}(\mathrm{OH})_{3} \rightarrow$ $\qquad$ $\mathrm{H}_{2} \mathrm{O}+$ $\qquad$ $\mathrm{AlBr}_{3}$

Type of reaction: $\qquad$
7) What's the main difference between a double displacement reaction and an acid-base reaction?
8) Combustion reactions always result in the formation of water. What other types of chemical reaction may result in the formation of water? Write examples of these reactions on the opposite side of this paper.

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## Answers

Balance the following reactions and indicate which of the six types of chemical reaction are being represented:

1) $2 \mathrm{NaBr}+1 \mathrm{Ca}(\mathrm{OH})_{2} \rightarrow 1 \mathrm{CaBr}_{2}+2 \mathrm{NaOH}$

Type of reaction: double displacement
2) $2 \mathrm{NH}_{3}+1 \mathrm{H}_{2} \mathrm{SO}_{4} \rightarrow 1\left(\mathrm{NH}_{4}\right)_{2} \mathrm{SO}_{4}$

Type of reaction: synthesis
3) $\quad 4 \mathrm{C}_{5} \mathrm{H}_{9} \mathrm{O}+27 \mathrm{O}_{2} \rightarrow 20 \mathrm{CO}_{2}+18 \mathrm{H}_{2} \mathrm{O}$

Type of reaction: combustion
4) $3 \mathrm{~Pb}+2 \mathrm{H}_{3} \mathrm{PO}_{4} \rightarrow 3 \mathrm{H}_{2}+1 \mathrm{~Pb}_{3}\left(\mathrm{PO}_{4}\right)_{2}$

Type of reaction: single displacement
5) $\quad 1 \mathrm{Li}_{3} \mathrm{~N}+3 \mathrm{NH}_{4} \mathrm{NO}_{3} \rightarrow 3 \mathrm{LiNO}_{3}+1\left(\mathrm{NH}_{4}\right)_{3} \mathrm{~N}$

Type of reaction: double displacement
6) $3 \mathrm{HBr}+1 \mathrm{Al}(\mathrm{OH})_{3} \rightarrow 3 \mathrm{H}_{2} \mathrm{O}+1 \mathrm{AlBr}_{3}$

Type of reaction: acid-base
7) What's the main difference between a double displacement reaction and an acid-base reaction?
Acid-base reactions form water.
8) Combustion reactions always result in the formation of water. What other types of chemical reaction may result in the formation of water? Write examples of these reactions on the opposite side of this paper.
Acid-base: $\mathrm{HCl}+\mathrm{NaOH} \rightarrow \mathrm{H}_{2} \mathrm{O}+\mathrm{NaCl}$
Synthesis: $2 \mathrm{H}_{2}+\mathrm{O}_{2} \rightarrow 2 \mathrm{H}_{2} \mathrm{O}$
Decomposition: $\mathrm{NH}_{4} \mathrm{OH} \rightarrow \mathrm{NH}_{3}+\mathrm{H}_{2} \mathrm{O}$
Single displacement: $\mathrm{H}_{2}+2 \mathrm{NaOH} \rightarrow 2 \mathrm{Na}+2 \mathrm{H}_{2} \mathrm{O}$ (not common)

