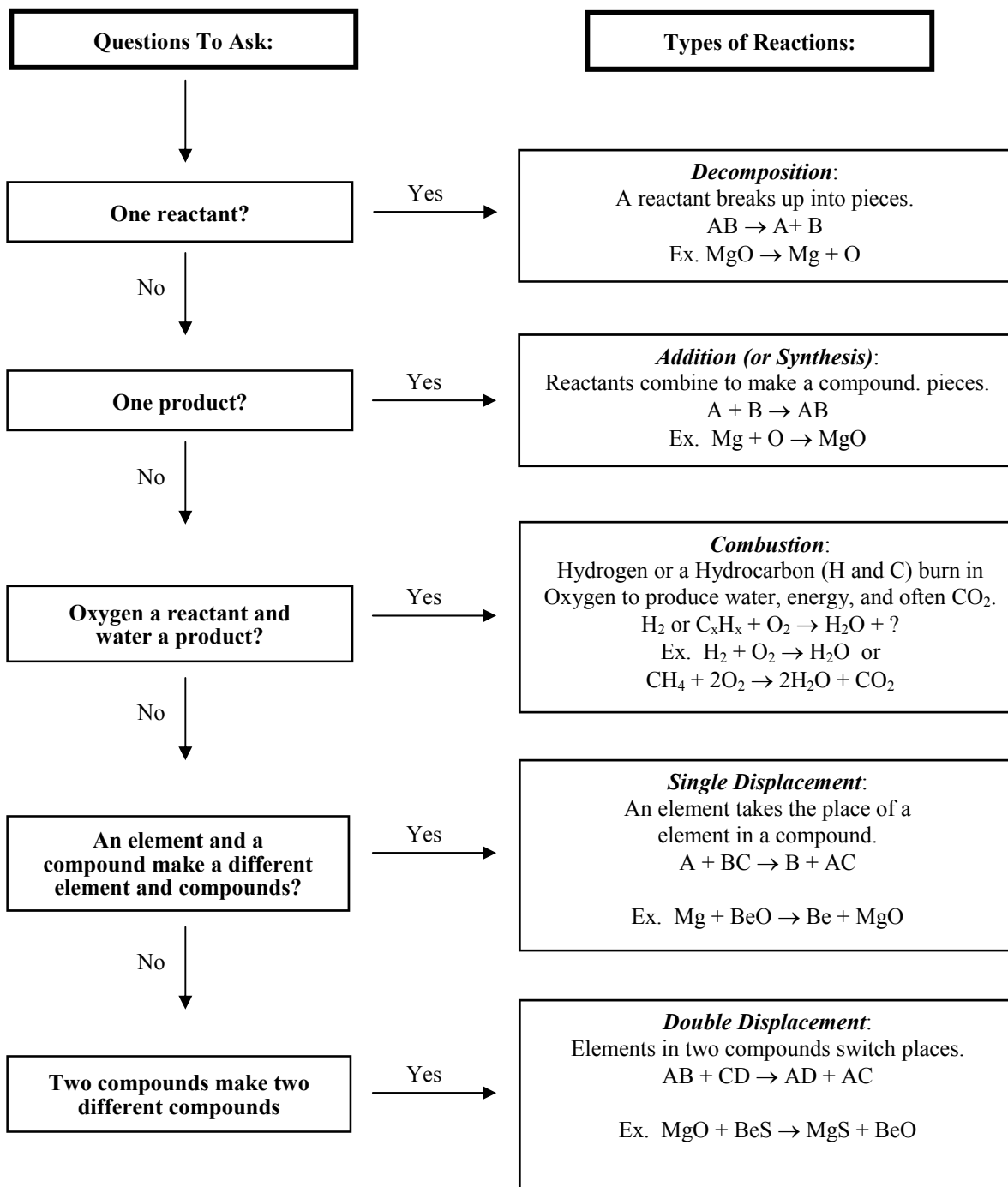


## Classifying Chemical Reactions



Type	Description	Form	Example
Decomposition	Compounds break down.	$AB \rightarrow A + B$	$MgO \rightarrow Mg + O$
Addition	Compounds are formed.	$A + B \rightarrow AB$	$Mg + O \rightarrow MgO$
Combustion	Burning in oxygen, forms water and often $CO_2$ .	$C_xH_x + O_2 \rightarrow H_2O + ?CO_2$	$H_2 + O_2 \rightarrow H_2O$
Single Displacement	One element replaces another in a compound.	$A + BC \rightarrow B + AC$	$Mg + BeO \rightarrow Be + MgO$
Double Displacement	Two elements switch places in two compounds.	$AB + CD \rightarrow CB + AD$	$MgO + BeS \rightarrow MgS + BeO$

Name: \_\_\_\_\_

Period: \_\_\_\_\_

Type of Reaction	Balance the reactions:
_____	$___ \text{NaS} + ___ \text{ZnNO}_3 \rightarrow ___ \text{NaNO}_3 + ___ \text{ZnS}$
_____	$___ \text{Li} + ___ \text{N}_2 \rightarrow ___ \text{Li}_3\text{N}$
_____	$___ \text{KClO} \rightarrow ___ \text{KCl} + ___ \text{O}_2$
_____	$___ \text{CH}_4 + ___ \text{O}_2 \rightarrow ___ \text{H}_2\text{O} + ___ \text{CO}_2$
_____	$___ \text{Mg} + ___ \text{AgNO}_3 \rightarrow ___ \text{Mg}(\text{NO}_3)_2 + ___ \text{Ag}$

**Endothermic—heat enters**

Heat enters when you get *cold*!



Endothermic reactions get cold, meaning they absorb heat.

**Exothermic—heat exits**

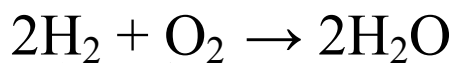
Heat exits when you get *hot*!



Exothermic reactions get hot, meaning they release heat.

So where does this heat come from?

**Chemical Bonds!** When chemical bonds break or form they release or absorb *energy*.



Breaking these covalent bonds releases heat!

Which type of reaction is always exothermic?

How do you know?