



# Lattice Enthalpy - $\Delta H_{LATT}$

Equal & Opposite

→ +

+ →

Factors Affecting  $\Delta H_{LATT}$

①

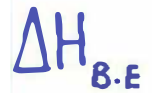
②

e.g.

e.g.



TT



"Need to know"  $\Delta H$ 's

1

2

3

4

5

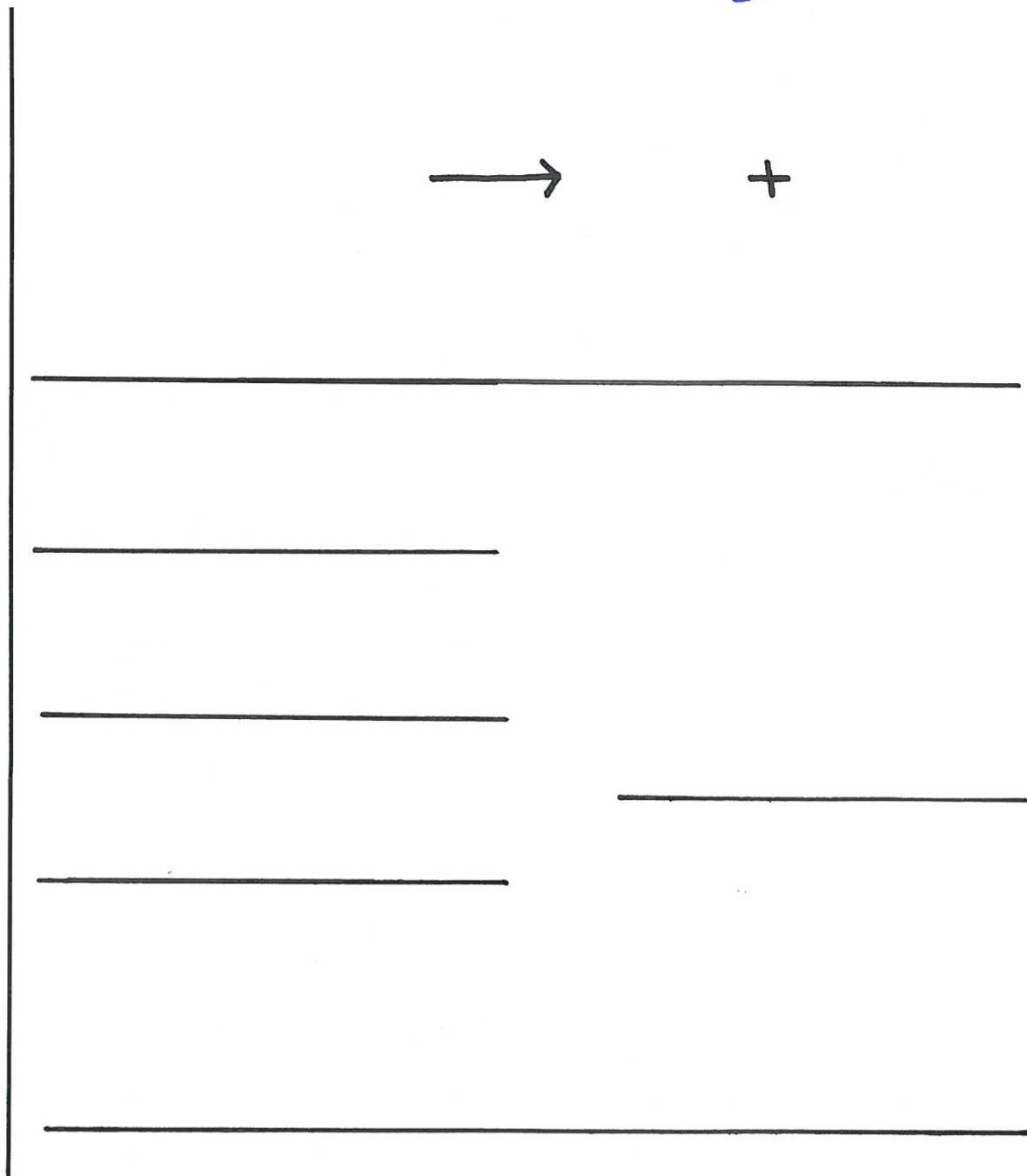


# Born - Haber Cycles

1 2 3 4 5

→ +

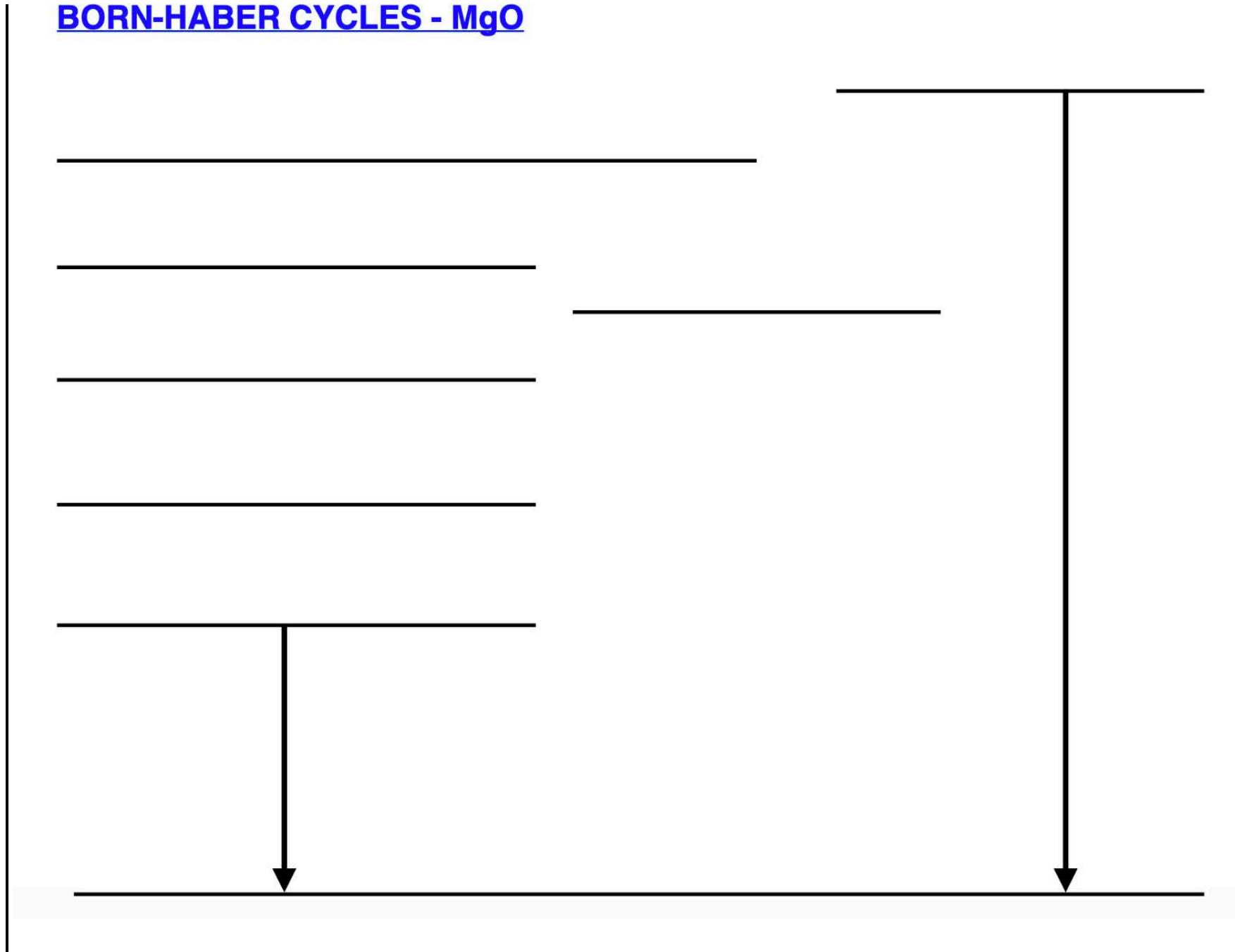
Enthalpy Changes Needed



- 
- 
- 
-

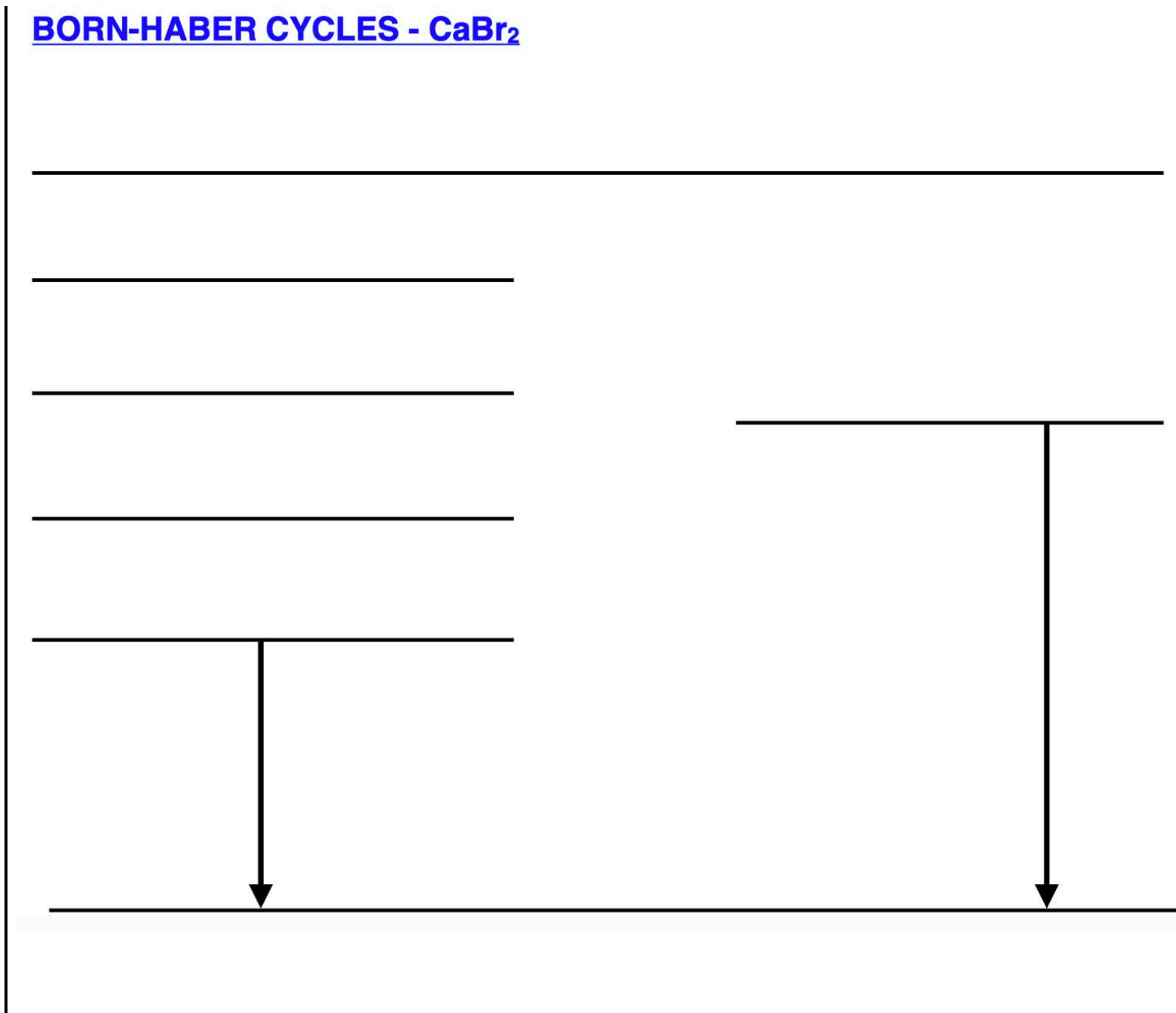


## BORN-HABER CYCLES - MgO





## BORN-HABER CYCLES - CaBr<sub>2</sub>



# Enthalpy of Solution - $\Delta H_{\text{sol}}^{\ominus}$

- 1
- 2
- 3
- 4
- 5



ie.

→ +

## The Equation!

= +

①

→ +

②

→

→

## The Balance



## ENTHALPY OF SOLUTION - Example Question 1

1. Define the term Enthalpy of Solution?

.....  
.....

2. Write the equation that represents the Enthalpy of Solution of Magnesium Chloride.

.....

3. Calculate the Enthalpy of Solution for Magnesium Chloride, given that:

$$\Delta H^{\ominus}_{\text{Lattice}} \text{MgCl}_2 = 2493 \text{ kJ.mol}^{-1}$$

$$\Delta H^{\ominus}_{\text{Hydration}} \text{Mg}^{2+} = -1920 \text{ kJ.mol}^{-1}$$

$$\Delta H^{\ominus}_{\text{Hydration}} \text{Cl}^- = -364 \text{ kJ.mol}^{-1}$$

.....  
.....  
.....  
.....  
.....



### ENTHALPY OF SOLUTION - Example Question 2

1. Complete the Enthalpy changes and equations for Barium Sulfate.

Enthalpy Change	Equation	Value
$\Delta H^\ominus_{\text{Lattice BaSO}_4}$		+2383
$\Delta H^\ominus_{\text{Hydration Ba}^{2+}}$		X
$\Delta H^\ominus_{\text{Hydration SO}_4^{2-}}$		-1004
	$\text{BaSO}_{4(s)} \rightarrow \text{Ba}^{2+}_{(aq)} + \text{SO}_4^{2-}_{(aq)}$	+19

2. Calculate the missing value for the  $\Delta H^\ominus_{\text{Hydration}}$  of  $\text{Ba}^{2+}$  (X)

.....

.....

.....

.....

.....