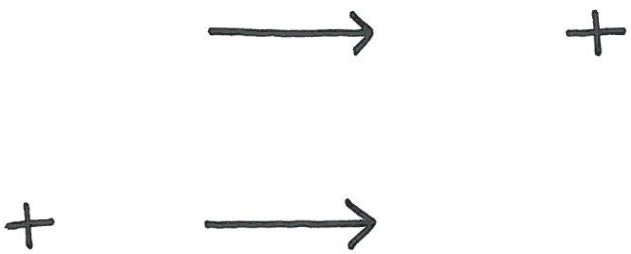
TT

ΔH_{latt}

Lattice Enthalpy - ΔH_{LATT}

1 2 3 4 5

Equal & Opposite



Factors Affecting ΔH_{LATT}

①

②

e.g.

e.g.

TT

"Need to know" ΔH's

1 2 3 4 5

ΔH_f

$\Delta H_{I.E.}$

ΔH_a

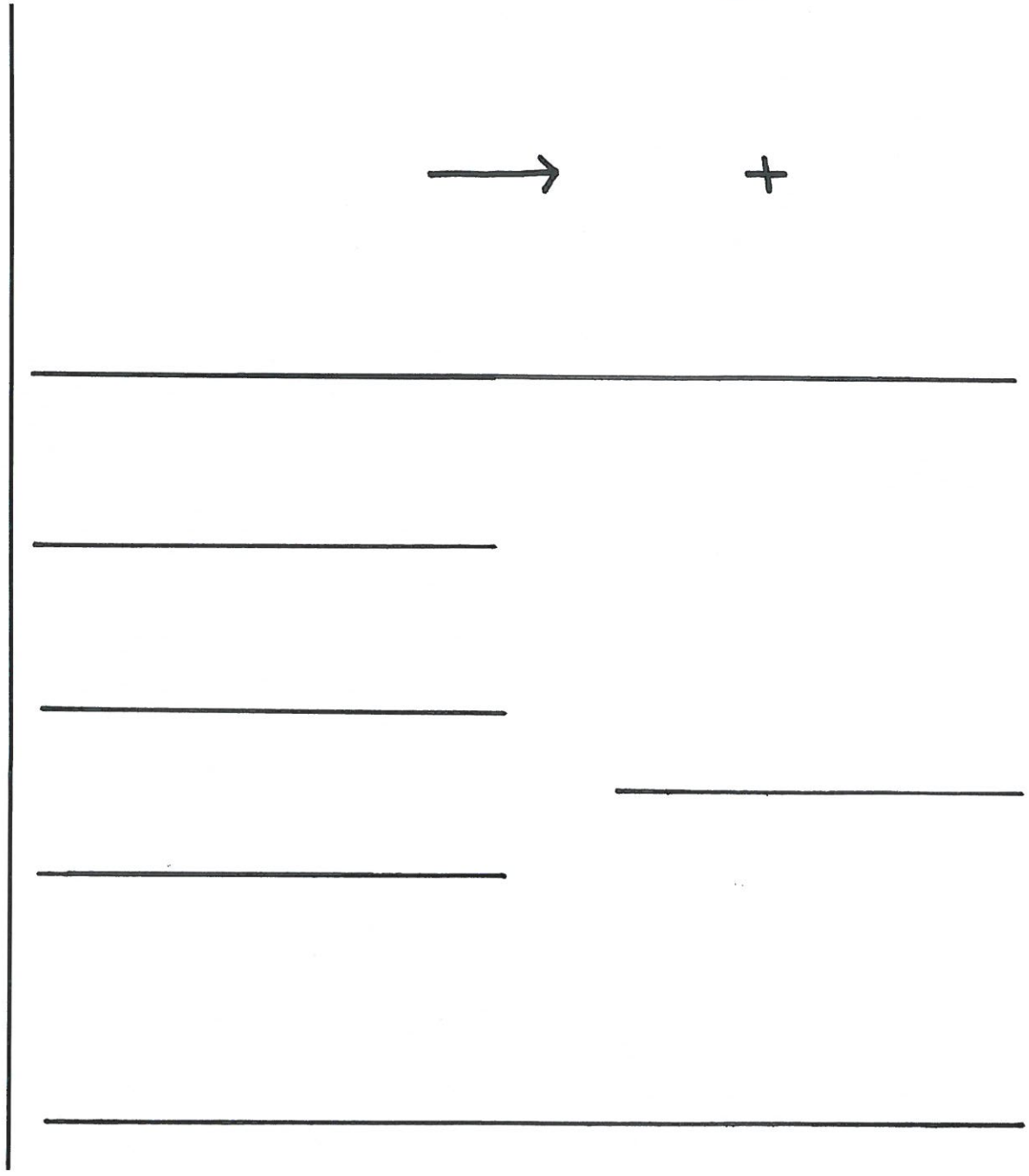
$\Delta H_{B.E}$

$\Delta H_{E.A.}$

ΔH_{LATT}

Born - Haber Cycles

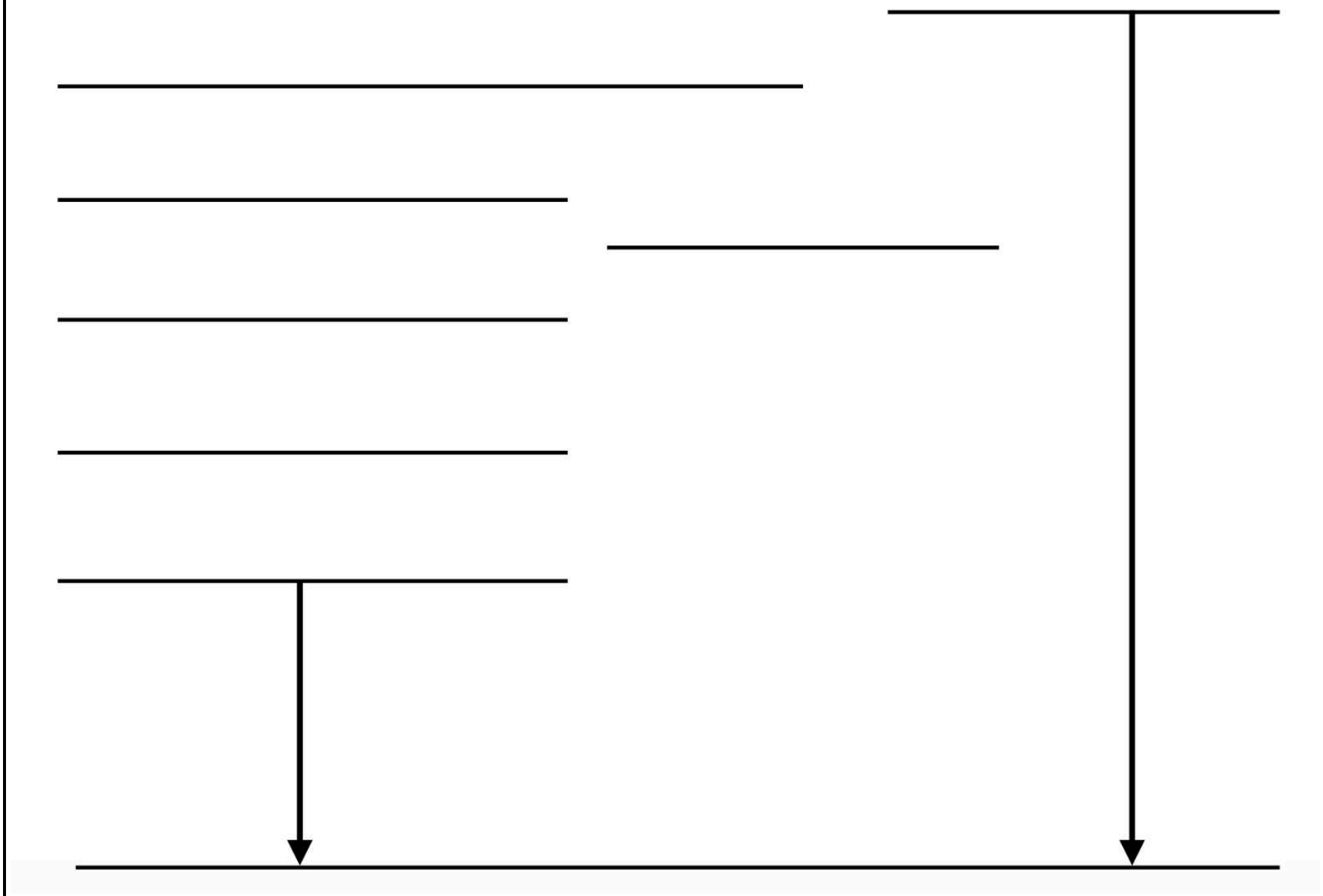
1 2 3 4 5



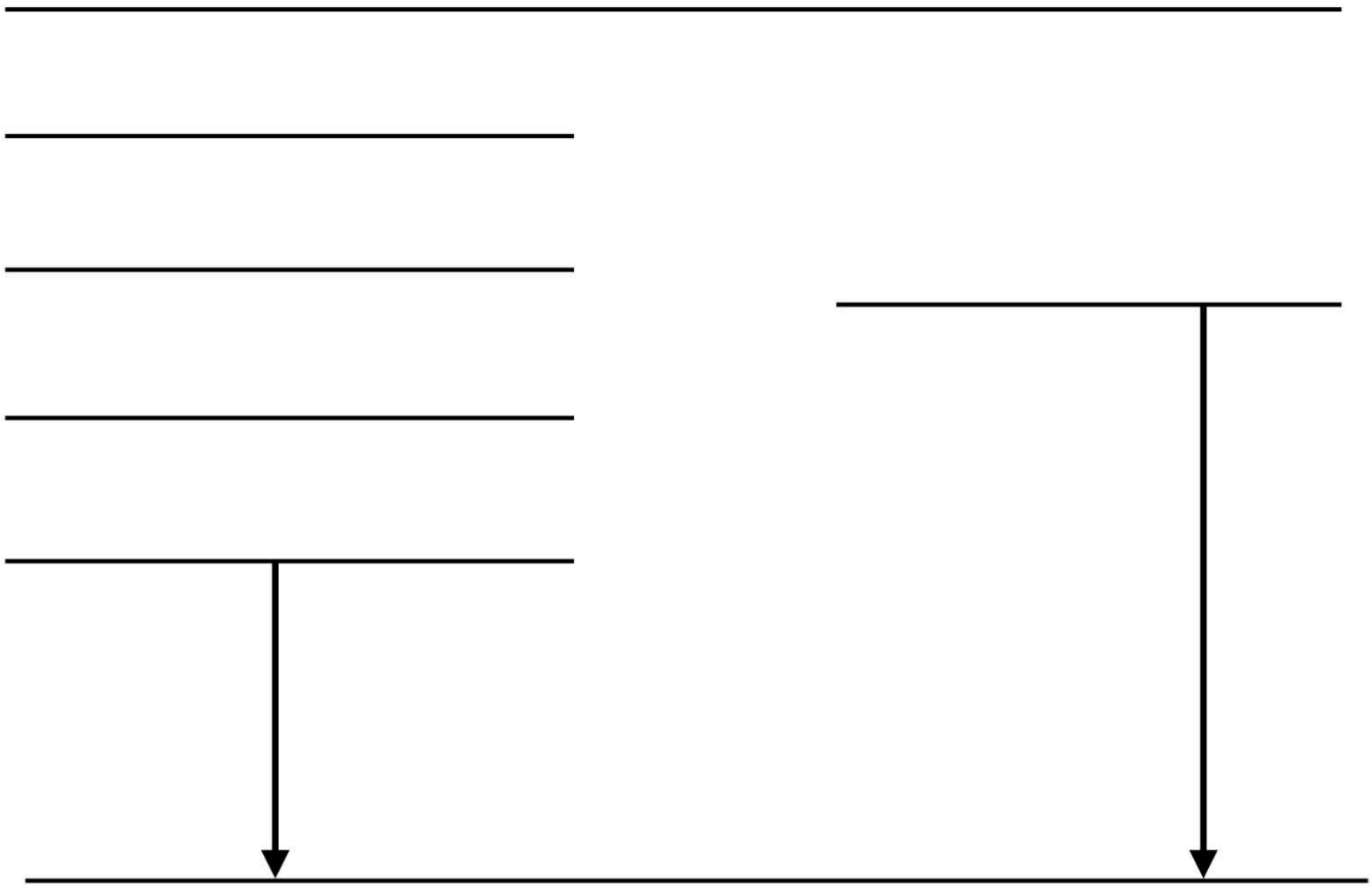
Enthalpy Changes Needed

-
-
-
-

BORN-HABER CYCLES - MgO



BORN-HABER CYCLES - $CaBr_2$



Born-Haber Vs Perfect Ionic Model

1 2 3 4 5

-

- The perfect ionic model assumes that ionic compounds have:
  a)

  b)

- Covalent character when:

The Difference

e.g.

TT

$\Delta H^{\ominus}_{sol}$

Enthalpy of Solution - $\Delta H^{\ominus}_{sol}$

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:

$\Delta H^{\ominus}_{Lattice}\ MgCl_2$ = 2493 kJ.mol^{-1}

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

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

.....

.....

.....

.....

.....

ENTHALPY OF SOLUTION - Example Question 2

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

Enthalpy Change	Equation	Value
$\Delta H^{\ominus}_{Lattice}\ BaSO_4$		+2383
$\Delta H^{\ominus}_{Hydration}\ Ba^{2+}$		*X*
$\Delta H^{\ominus}_{Hydration}\ SO_4^{2-}$		-1004
	$BaSO_{4(s)} \rightarrow Ba^{2+}_{(aq)} + SO_4^{2-}{}_{(aq)}$	+19

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

.....

.....

.....

.....

.....