1 The lattice enthalpy of formation of some ionic compounds are shown. For each compound, both the value determined from a Born-Haber cycle and that calculated from the perfect ionic model are shown.

compound		NaCl	AgCl
lattice enthalpy of formation ($kJ\ mol^{-1}$)	Born-Haber cycle	–771	–905
	perfect ionic model	–766	–770

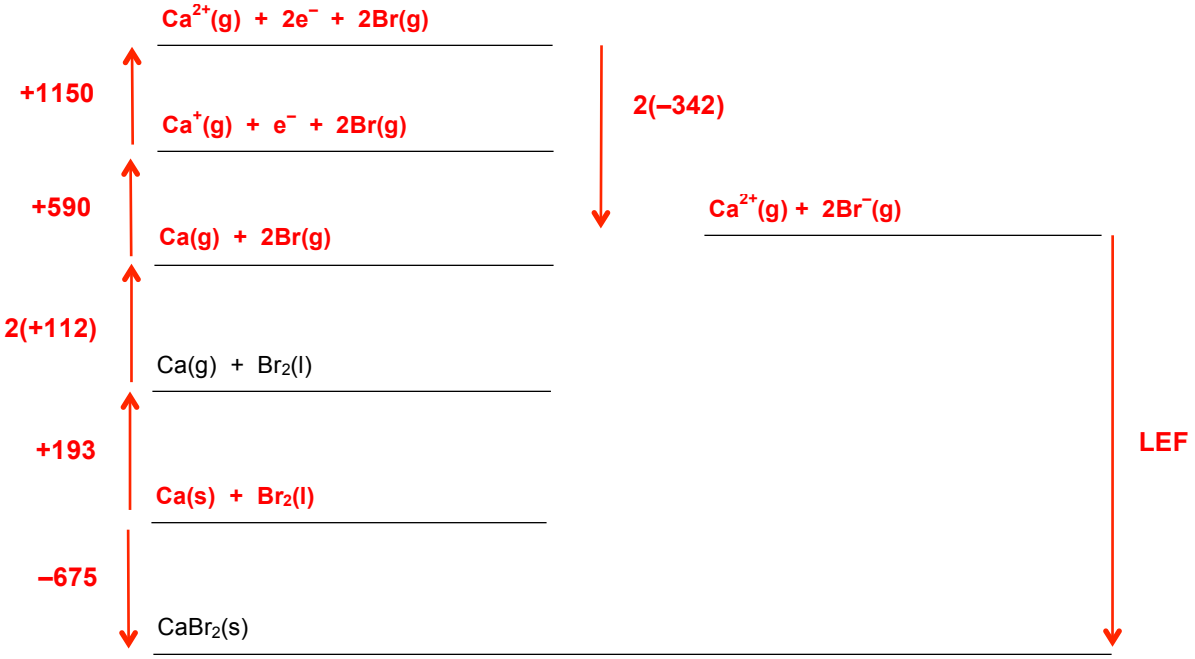
a Which of these compounds has the strongest ionic bonding? Explain your answer.

silver chloride – it has a greater magnitude of lattice enthalpy

b Which of these compounds has the greatest covalent character? Explain your answer.

silver chloride – it has the greatest different between the value from the Born-Haber cycle and the perfect ionic model

2 Complete the Born Haber cycle below for calcium bromide. Complete the lines, put arrows from one stage to another, and write on the values for the enthalpy change for each step on those arrows using the data below. Use it to find the lattice enthalpy of formation of calcium bromide.



enthalpy of formation of calcium bromide = $-675\ kJ\ mol^{-1}$

1^{st} ionisation enthalpy of calcium = $+590\ kJ\ mol^{-1}$

2^{nd} ionisation enthalpy of calcium = $+1150\ kJ\ mol^{-1}$

atomisation enthalpy of bromine = $+112\ kJ\ mol^{-1}$

atomisation enthalpy of calcium = $+193\ kJ\ mol^{-1}$

1^{st} electron affinity of bromine = $-342\ kJ\ mol^{-1}$

$-675 = 193 + 2(112) + 590 + 1150 + 2(-342) + LEF$

$LEF = -675 - 193 - 2(112) - 590 - 1150 + 2(342)$

$LEF = -2148\ kJ\ mol^{-1}$