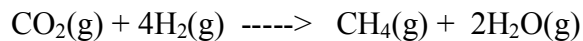


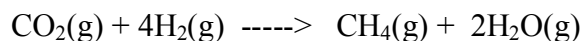
Chapter 6 - Lecture Worksheet 3

1. Using standard heats of formation, calculate the standard enthalpy change for the following reaction.



(1) -711 kJ (2) -165 kJ (3) -15 kJ (4) 15 kJ (5) 165 kJ (6) 229 kJ (7) 711 kJ

2. Using average bond enthalpies estimate the standard enthalpy change for the same reaction.



Which is more accurate ? Why ?

	<u>Standard Enthalpy of formation (kJ/mol)</u>
CH ₄ (g)	-75
CO ₂ (g)	-394
C ₂ H ₂ (g)	+227
H ₂ O(g)	-242
H ₂ O(l)	-286
NH ₃ (g)	-46
HCl(g)	-92
HCl(aq)	-167
CaCO ₃ (s)	-1208
Ca(OH) ₂ (aq)	-1003
Ca(OH) ₂ (s)	-986
CaO(s)	-635
SO ₂ (g)	-297
SO ₃ (g)	-396

	<u>Average Bond Enthalpies (kJ/mol)</u>
H-H	436
N-H	391
N-N	161
N=N	418
N≡N	945
O-H	463
C-O	351
C=O	728
C≡O	1072
Cl-Cl	242
Cl-H	432
Br-Br	193
Br-H	366
C-H	413