

Exercise 8.7
Bond Length and Bond Energy

1. Complete the table below given the available information.

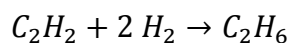
Bond	Bond Length	Enthalpy of Bond Dissociation
H-F		
H-Cl		
Cl-Cl		
Cl-Br		
Br-Br		
Br-I		
I-I		

Missing pieces:

92 pm, 127 pm, 199 pm, 214 pm, 228 pm, 248 pm, 266 pm,

151 kJ/mol, 175 kJ/mol, 193 kJ/mol, 215 kJ/mol, 243 kJ/mol, 427 kJ/mol, 565 kJ/mol

2. Use enthalpies of bond dissociation to estimate the enthalpy change for the reaction below:



$$\Delta_{bd}H(H-H) = 432 \text{ kJ/mol}$$

$$\Delta_{bd}H(C-H) = 413 \text{ kJ/mol}$$

$$\Delta_{bd}H(C-C) = 347 \text{ kJ/mol}$$

$$\Delta_{bd}H(C=C) = 614 \text{ kJ/mol}$$

$$\Delta_{bd}H(C\equiv C) = 839 \text{ kJ/mol}$$