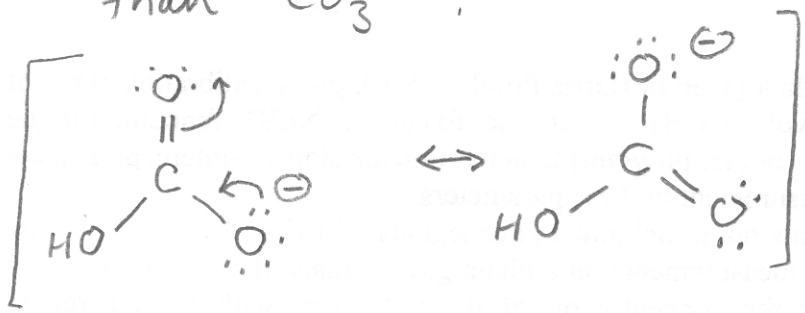
H_2CO_3 $K_1 = 4.45 \times 10^{-7}$, $K_2 = 4.69 \times 10^{-11}$

why such a large difference?

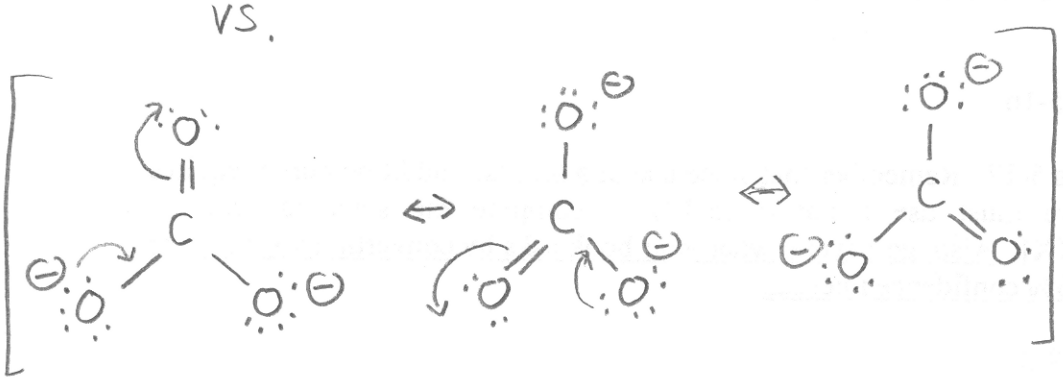
① Much less energy required to remove a H^+ from a neutral (H_2CO_3) than a negatively-charged (HCO_3^-) species

② HCO_3^- is a more stable structure than CO_3^{2-}:



In HCO_3^-, 1 negative charge is shared by 2 O's (-½ per O)

vs.



In CO_3^{2-}, 2 negative charges are shared by 3 O's (-⅔ per O)

Extra electrons in anions repel the other electrons present, so the more <u>delocalized</u> this extra charge is, the lower the energy.