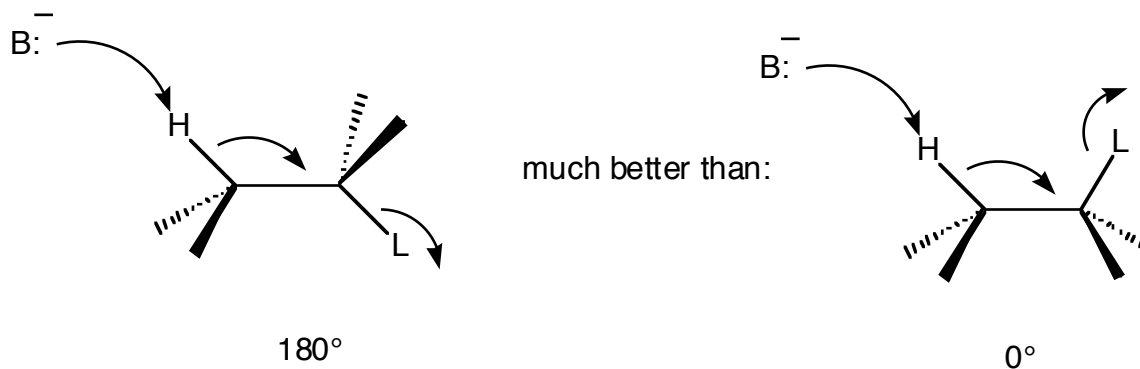


Answers to Problem 63, Chemistry 301X-2006

Develop an orbital argument for why the E2 elimination favors the 180° arrangement over the 0° arrangement.



Hint: If the C-H bond is full (it is) what orbital of C-L must it interact with?

If the CH bond is full, we must look for an empty orbital on C—L, and that is σ^* . Here are the two arrangements with C—H (σ) and C—L (σ^*) drawn in:



The 180° arrangement is fine, with strong overlap. By contrast, 0° has little overlap at all, and what there is is both bonding and antibonding. No contest.