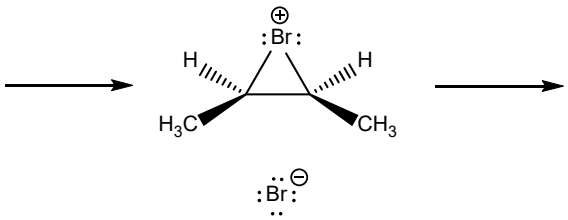
Exercise 11.6
Addition of "X_2" to Alkenes and Alkynes

1. The following intermediates were produced in an addition reaction:



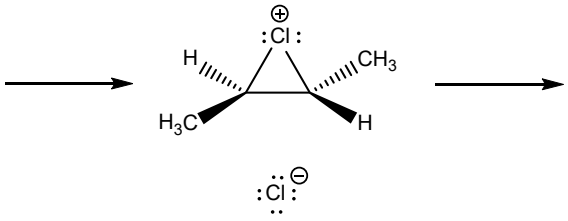
(a) Draw the two reactants required to produce these intermediates. Pay close attention to the stereochemistry of the alkene.

(b) Add curved arrows to show the movement of electrons producing these intermediates from the reactants you drew.

(c) Add curved arrows to show the movement of electrons when these two intermediates react with each other to give the product of this addition reaction.

(d) Draw the product of this addition reaction. *(Either of two enantiomers can form. Draw the one that is consistent with the arrows you drew in part (c).)*

2. The following intermediates were produced in an addition reaction:



(a) Draw the two reactants required to produce these intermediates. Pay close attention to the stereochemistry of the alkene.

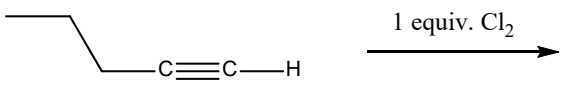
(b) Add curved arrows to show the movement of electrons producing these intermediates from the reactants you drew.

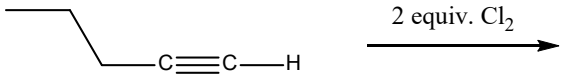
(c) Add curved arrows to show the movement of electrons when these two intermediates react with each other to give the product of this addition reaction.

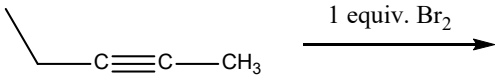
(d) Draw the product of this addition reaction.

3. Draw the product of each of the following addition reactions.

"equiv." is short for "molar equivalent". As such, "1 equiv. Cl_2" means 1 mole of Cl_2 for every mole of alkyne while "2 equiv. Cl_2" means 2 moles of Cl_2 for every mole of alkyne.

(a) 

(b) 

(c) 

(d)