**2.1.1 Exercise 4 – Alkenes, Cycloalkanes and stereoisomerism**

**Alkenes and -bonding**

1. Draw a diagram to show the shape of an ethene molecule. Show the bond angles.
2. Draw a diagram to show the shape of a propene molecule. Show the bond angles.
3. Alkenes are unsaturated aliphatic hydrocarbons. Explain the meaning of the terms unsaturated, aliphatic and hydrocarbon.
4. What is a -bond?

**Alkenes and stereoisomers**

1. What is meant by the term stereoisomerism?
2. Draw the structures of E-but-2-ene and Z-but-2-ene and explain why they are different.
3. Explain why but-1-ene and methylpropene do not form stereoisomers.
4. What is meant by the term structural isomerism?
5. Hence draw the structures of all four isomers of C4H8 which contain a C=C double bond.
6. What is the general formula of alkenes?

**Alkenes and cycloalkanes**

1. A cycloalkane is a saturated alicyclic hydrocarbon. Explain the meaning of the terms saturated, alicyclic and hydrocarbon.
2. Draw and name the two cycloalkanes with molecular formula C4H8.
3. Draw and name the five cycloalkanes with molecular formula C5H10.
4. What is the general formula of cycloalkanes?
5. Draw and name all six molecules which have the molecular formula C4H8.
6. There are eleven different molecules with the molecular formula C5H10. How many can you draw and name?