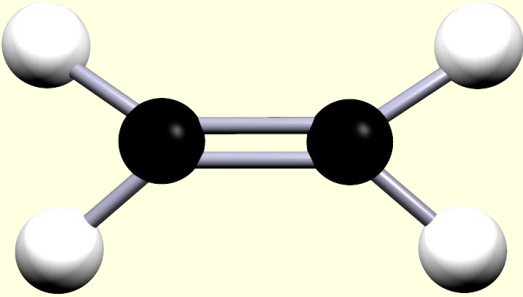


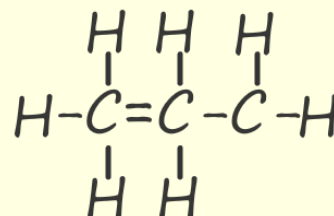
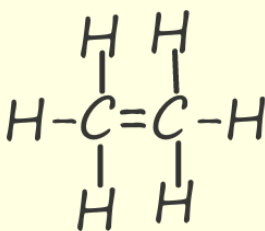
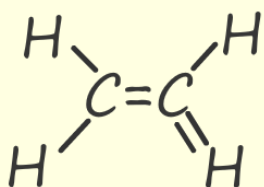
The alkenes

Answer the questions below then check your answers.

1. What functional group is present in all alkenes?
 - a. The alkenes are all unsaturated molecules, what does this mean?
2. Complete the table below which shows the first 3 alkenes.

alkene	Molecular formula	Ball and stick model
		
propene		
	C_4H_8	

2. What is the general formula for the alkenes?
3. Which of the following molecules are alkenes?
i. C_5H_{10} ii. $C_{25}H_{152}$ iii. $C_{10}H_{20}$ iv. $C_{100}H_{202}$
4. How many bonds does a carbon and a hydrogen atom make?
- a. What is wrong with each of the molecules in the image below?



5. Explain the difference between saturated and unsaturated hydrocarbons.
6. Why are alkenes considered more reactive than alkanes?

Answers

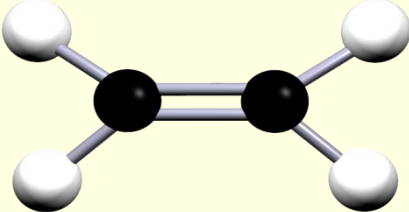
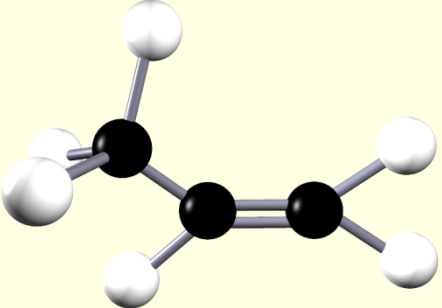
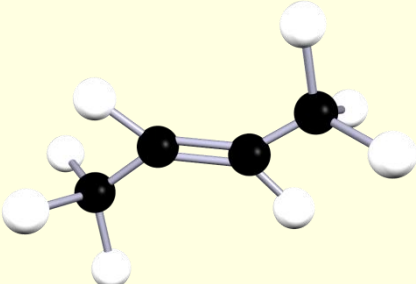
1. What functional group is present in all alkenes?

$C=C$, carbon carbon double bond.

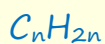
a. The alkenes are all unsaturated molecules, what does this mean?

They all contain $C=C$, carbon carbon double bond.

2. Complete the table below which shows the first 3 alkenes.

alkene	Molecular formula	Model of the alkene
ethene	C_2H_4	
propene	C_3H_6	
butene	C_4H_8	

2. What is the general formula for the alkenes?



3. Which of the following molecules are alkenes

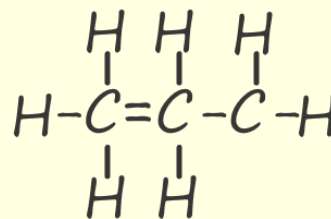
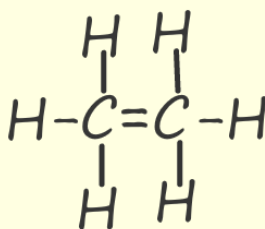
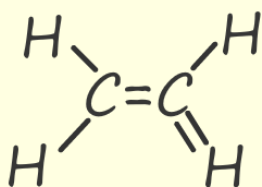
i. C_5H_{10} ii $C_{25}H_{152}$ iii $C_{10}H_{20}$ iv $C_{100}H_{202}$

Molecules i and iii are unsaturated. Their formula matches the general formula of alkenes, C_nH_{2n}

4. How many bonds does a carbon and a hydrogen atom make?

Carbon makes 4 bonds and hydrogen makes 1 bond.

a. What is wrong with each of the molecules in the image below?



One of the carbon atoms is making 5 bonds.

One of the hydrogen atoms is making 2 bonds.

Both the carbon atoms are making 5 bonds.

One of the carbon atoms is only making 3 bonds and one is making 5 bonds

5. Explain the difference between saturated and unsaturated hydrocarbons.

Saturated hydrocarbons contain only single bonds between carbon atoms, while unsaturated hydrocarbons contain one or more double or triple bonds between carbon atoms. Saturated hydrocarbons are alkanes, and unsaturated hydrocarbons include alkenes and alkynes.

6. Why are alkenes considered more reactive than alkanes?

Alkenes are more reactive than alkanes because they contain a double bond, which is more reactive than the single bonds found in alkanes. The double bond provides a site for chemical reactions to occur more easily.