

Knowledge check

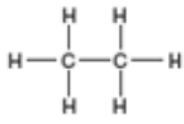
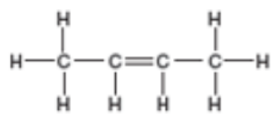
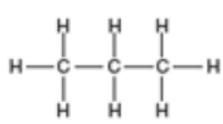
Subject area: Organic chemistry

Level: 14–16 years (Higher)

Topic: Alkenes

Source: rsc.li/34R2Wqn

1. This question is about the molecules in the table.

			
Alkane or alkene			
Name of molecule			
Molecular formula of molecule			

a) What do all of these molecules have in common?

Write your answers to parts b), c) and d) into the table.

b) State which are alkanes and which are alkenes.

c) Name each of the molecules.

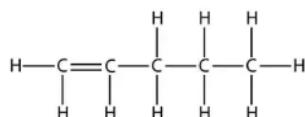
d) Write down the molecular formula of each molecule.

e) Which molecule(s) react using addition reactions?

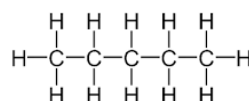
f) What is the general formula for an alkene?

2. This question is about ethane and ethene.

The structures of these molecules are shown below.



Pentene



Pentane

Which of these statements are true or false about these molecules?

Write your answers into the box – 'T' for true, and 'F' for false.

- | | |
|---|--------------------------|
| a) The molecular formula for pentene is C ₅ H ₁₀ . | <input type="checkbox"/> |
| b) Pentene is a saturated molecule. | <input type="checkbox"/> |
| c) Bromine water can be used to distinguish between these two molecules. | <input type="checkbox"/> |
| d) Pentene burns with a smokier flame than pentane. | <input type="checkbox"/> |
| e) The carbon double bond in pentene makes it more reactive than pentane. | <input type="checkbox"/> |
| f) Hydrogen gas will react with pentene to make pentane. | <input type="checkbox"/> |
| g) Pentene could react with steam, in the presence of a catalyst, to form an alcohol called pentanol. | <input type="checkbox"/> |
| h) When pentene reacts, its carbon double bond turns into a carbon single bond. | <input type="checkbox"/> |

3. This question is about the use of bromine water for testing for the presence of a carbon double bond.

Indicate the colour change seen when these molecules are added, separately, to bromine water.

Draw a straight line between the molecule and the correct colour change.

		Colour change of bromine water
Butene		Stays orange
C ₆ H ₁₄		Orange to colourless
$ \begin{array}{c} \text{H} \quad \text{H} \quad \text{H} \\ \quad \quad \\ \text{H}-\text{C}-\text{C}=\text{C}-\text{H} \\ \\ \text{H} \end{array} $		Colourless to orange
