

Name: _____

Date: _____

AQA A-LEVEL CHEMISTRY

Stereoisomerism: Explaining E/Z Isomerism

Learn Pack

Guided notes, worked examples and practice questions to be completed alongside the lesson.

WATCH THE LESSON

Isomerism

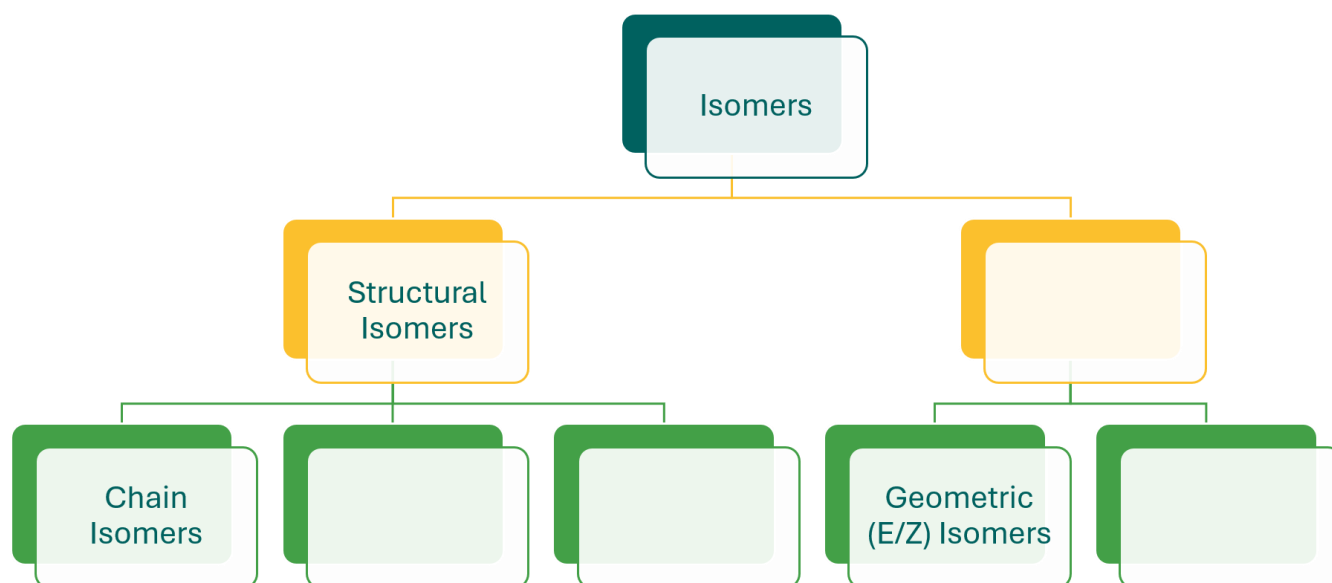
Isomers are molecules that have the same _____ but a different _____ of atoms.

Structural isomers have the same _____ formula but different _____ formulae.

Lesson Objectives:

- Know what stereoisomers are.
- Know what geometric (E/Z) isomerism is.
- Understand why carbon-carbon double bonds can give rise to E/Z isomerism.
- Be able to draw structural formulae of E and Z isomers.

Stereoisomers have the same molecular formula and the same _____ but a different arrangement of atoms in _____.



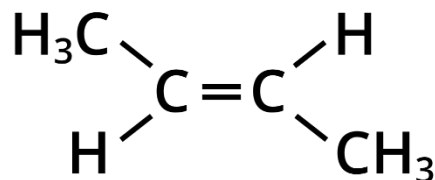
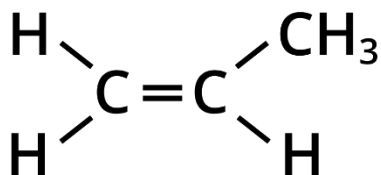
Geometric (E/Z) Isomerism

Geometric isomers are stereoisomers that differ because atoms or groups of atoms are arranged differently around carbon-carbon _____ bonds.

Explain what is meant by restricted rotation:

For E/Z isomerism to exist, each carbon atom in the carbon-carbon double bond must be attached to two different groups.

Annotate the formulae below to explain whether they would demonstrate E/Z isomerism or not:

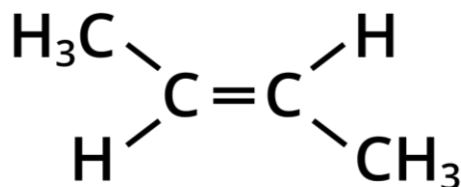
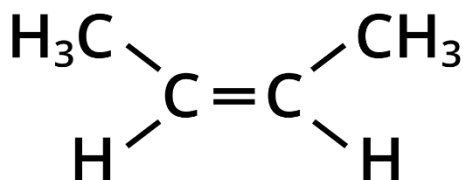


Naming E/Z Isomers:

For IUPAC naming conventions scientists need a way to identify the two different isomers that can be formed by geometric isomerism, they use the prefixes E and Z to do this.

Prefix	German Word	Meaning
E		
Z		

Name the following E/Z isomers:



Identifying E/Z Isomers

Determine whether the following molecules display E/Z isomerism or not, if they do draw both the E and Z isomer:

Chemical	Structural Formula	E/Z?	E-Isomer	Z-Isomer
2-methylpent-2-ene				
1-chloropropene				

Practise Questions – Fact Recall

1. What is a stereoisomer?

2. What is geometric (E/Z) isomerism?

3. What is it about carbon-carbon double bonds that allows E/Z isomerism to occur?

4. What condition is required for E/Z isomerism?

5. What is an E-isomer?

6. What is a Z-isomer?

Practise Questions – Application

1. Determine whether the following molecules display E/Z isomerism:

a) But-1-ene

b) Pent-2-ene

c) 2-methylbut-2-ene

d) 1-bromobut-1-ene

2. Draw both the E and Z isomer of but-2-ene.

3. Draw both the E and Z isomer of 1-bromobut-1-ene.

4. Explain why propene does not display E/Z isomerism.

5. A student says, "Every alkene shows E/Z isomerism.". Explain why this statement is incorrect.
