

29. An introduction to A Level organic chemistry

Starter Quiz ·

A-Level Chemistry

Name: _____ Score: _____

1. Aromatic compounds are built on a:
 - ☐ long straight chain
 - ☐ single C=C bond
 - ☐ benzene ring (six carbons)
 - ☐ metal ion
2. Electrophilic substitution is when:
 - ☐ two molecules join with no loss
 - ☐ a nucleophile adds across a double bond
 - ☐ a radical removes an electron
 - ☐ an electrophile replaces a hydrogen atom on a benzene ring
3. Each carbon in benzene is:
 - ☐ sp hybridised and linear
 - ☐ sp³ hybridised and tetrahedral
 - ☐ sp² hybridised, forming a flat ring of sigma bonds
 - ☐ not bonded to hydrogen
4. Two enantiomers differ in that they:
 - ☐ react completely differently
 - ☐ have different melting points
 - ☐ have different molecular formulas
 - ☐ rotate plane-polarised light in opposite directions (and may differ in biological effect)
5. When naming an aromatic compound, you:
 - ☐ never use numbers
 - ☐ name only the longest chain
 - ☐ use the benzene ring as the parent and number the substituents
 - ☐ ignore the ring
6. Reduction adds hydrogen (or removes oxygen) to a molecule.
 - ☐ True ☐ False

7. Benzene is a flat, regular hexagon.

☐ True ☐ False

8. A racemic mixture rotates plane-polarised light.

☐ True ☐ False

9. A compound containing a benzene ring is described as _____.

10. Benzene readily undergoes addition reactions because its electrons are localised in three C=C bonds.

☐ True ☐ False

A-Level Chemistry

1. **benzene ring (six carbons)**

Aromatic compounds contain a benzene ring; new families also include the amide group.

2. **an electrophile replaces a hydrogen atom on a benzene ring**

Benzene reacts by electrophilic substitution, keeping its stable ring while swapping an H for the electrophile.

3. **sp² hybridised, forming a flat ring of sigma bonds**

sp² carbons give the flat hexagon; the leftover p-orbitals form the delocalised π system.

4. **rotate plane-polarised light in opposite directions (and may differ in biological effect)**

Enantiomers are otherwise identical; they rotate plane-polarised light oppositely and can act differently in the body.

5. **use the benzene ring as the parent and number the substituents**

e.g. 3-nitrobenzoic acid puts a -NO_2 on carbon 3 of the ring.

6. **True**

The opposite of oxidation.

7. **True**

Its sp² σ framework and delocalised π system make it planar and symmetrical.

8. **False**

False. A racemic mixture contains equal amounts of the two enantiomers, whose rotations cancel, so it is optically inactive. A single pure enantiomer is optically active.

9. **aromatic**

Aliphatic compounds have no benzene ring.

10. **False**

False. Benzene's π electrons are delocalised around the ring, which makes it unusually stable, so it resists addition and prefers substitution.