

# Organic Reaction Pathways — Synthesis & Multi-Step Problems

Use this worksheet after reading the lesson to practise the key ideas and prove you can meet the success criteria.

Name \_\_\_\_\_

Date \_\_\_\_\_

Class \_\_\_\_\_

## 1. Key Ideas

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- All 15+ reaction types and their conditions from L06–L18
- Why distillation vs reflux determines aldehyde vs carboxylic acid

## 2. Success Criteria

By the end, you should be able to:

- All 15+ reaction types and their conditions from L06–L18
- Which functional group conversions are possible vs impossible in Module 7
- The Markovnikov limitation in hydration of asymmetrical alkenes

## 3. Key Terms

### Hydrocarbon

An organic compound containing only carbon and hydrogen atoms.

### Functional group

A specific atom arrangement determining characteristic chemical reactions.

### Homologous series

A family of compounds with the same functional group, differing by  $\text{CH}_2$ .

### Addition polymer

A polymer formed by monomers adding together without loss of atoms.

### Condensation polymer

A polymer formed with elimination of a small molecule such as water.

### Esterification

A condensation reaction between a carboxylic acid and an alcohol forming an ester.

## 4. Activity: Build the Lesson Map

Use the lesson to complete the table. Keep answers brief but specific.

Prompt	Your answer
Main concept	
Important example	
Common mistake to avoid	
How this links to the next lesson	

## 5. Short Answer Questions

1. Explain this lesson goal in your own words: "All 15+ reaction types and their conditions from L06–L18". Use one specific example from the lesson.

**BAND 3** **2 MARKS**

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2. Apply this idea to a new example: "Which functional group conversions are possible vs impossible in Module 7". Show your reasoning clearly.

**BAND 4** **3 MARKS**

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3. Analyse why this idea matters for understanding Organic Reaction Pathways — Synthesis & Multi-Step Problems: "The Markovnikov limitation in hydration of asymmetrical alkenes".

**BAND 5** **4 MARKS**

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## 6. Extend: Apply the Idea

BAND 5/6

5 MARKS

**A student gives a memorised answer about Organic Reaction Pathways — Synthesis & Multi-Step Problems but does not use evidence or reasoning.**

Improve the answer by writing a stronger response that uses accurate terminology, a relevant example and a clear explanation.

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## 7. Multiple Choice

1. What is the best first step when answering a question about Organic Reaction Pathways — Synthesis & Multi-Step Problems?

- A. Identify the key concept being tested
- B. Write every fact from memory
- C. Ignore the command word
- D. Skip examples and evidence

2. Which answer would show stronger understanding of Organic Reaction Pathways — Synthesis & Multi-Step Problems?

- A. An answer with accurate terms and reasoning
- B. A copied definition only
- C. A single-word response
- D. An answer with no example

3. What should you do if a question asks you to explain?

- A. Link the idea to a reason or cause
- B. List unrelated facts
- C. Only draw a diagram
- D. Write the shortest possible answer

## 8. Success Criteria Proof

Finish with evidence that you can do each success criterion.

### SUCCESS CRITERION 1

**Prove that you can: All 15+ reaction types and their conditions from L06–L18**

**BAND 3**

**2 MARKS**

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### SUCCESS CRITERION 2

**Prove that you can: Which functional group conversions are possible vs impossible in Module 7**

**BAND 4**

**3 MARKS**

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### SUCCESS CRITERION 3

**Prove that you can: The Markovnikov limitation in hydration of asymmetrical alkenes**

**BAND 5**

**4 MARKS**

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**One thing I still need help with:**

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