CHEMISTRY YEAR 12 - MODULE 7 - LESSON 6

Reactions of Alkenes — Hydrogenation, Halogenation, Hydrohalogenation & Hydration

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

Alkenes are the most chemically useful class of hydrocarbons — the C=C double bond is a reactive site that industry uses to make everything from margarine to PVC to antifreeze, all from the same fundamental reaction type: addition.

- The reagents, conditions, and products for all four alkene addition reactions
- Why the pi bond — not the sigma bond — is the reactive part of the C=C bond

2. Success Criteria

By the end, you should be able to:

- The reagents, conditions, and products for all four alkene addition reactions
- That bromine water decolourises as a test for unsaturation (C=C or C≡C)
- Markovnikov's rule: H adds to the carbon with more H atoms

3. Key Terms

Key idea
The central concept from Reactions of Alkenes — Hydrogenation, Halogenation, Hydrohalogenation & Hydration.

Evidence
Information, observations or calculations used to support an answer.

Explain
Give a reasoned answer that links cause and effect.

Apply
Use a learned idea in a new example, problem or scenario.

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: "The reagents, conditions, and products for all four alkene addition reactions". Use one specific example from the lesson.

BAND 3 2 MARKS

2. Apply this idea to a new example: "That bromine water decolourises as a test for unsaturation (C=C or C≡C)". Show your reasoning clearly.

BAND 4 3 MARKS

3. Analyse why this idea matters for understanding Reactions of Alkenes — Hydrogenation, Halogenation, Hydrohalogenation & Hydration: "Markovnikov's rule: H adds to the carbon with more H atoms".

BAND 5 4 MARKS

6. Extend: Apply the Idea

BAND 5/6 5 MARKS

A student gives a memorised answer about Reactions of Alkenes — Hydrogenation, Halogenation, Hydrohalogenation & Hydration 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.

7. Multiple Choice

1. What is the best first step when answering a question about Reactions of Alkenes — Hydrogenation, Halogenation, Hydrohalogenation & Hydration?

- [ ] 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 Reactions of Alkenes — Hydrogenation, Halogenation, Hydrohalogenation & Hydration?

- [ ] 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: The reagents, conditions, and products for all four alkene addition reactions

BAND 3 2 MARKS

SUCCESS CRITERION 2

Prove that you can: That bromine water decolourises as a test for unsaturation (C=C or C≡C)

BAND 4 3 MARKS

SUCCESS CRITERION 3

Prove that you can: Markovnikov's rule: H adds to the carbon with more H atoms

BAND 5 4 MARKS

One thing I still need help with: