CHEMISTRY YEAR 12 - MODULE 5 - LESSON 13

Temperature & Keq — Colourimetry

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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- Temperature is the only factor that changes the value of Keq
- Why temperature affects Keq through collision theory and energy distribution

2. Success Criteria

By the end, you should be able to:

- Temperature is the only factor that changes the value of Keq
- Endothermic reactions have Keq increase with temperature; exothermic reactions have Keq decrease
- The Beer-Lambert law and calibration curve method for colourimetry

3. Key Terms

Dynamic equilibrium
A state where forward and reverse reaction rates are equal.

Le Chatelier's Principle
A system at equilibrium shifts to minimise applied disturbances.

Equilibrium constant (Keq)
The ratio of product to reactant concentrations at equilibrium.

Reaction quotient (Q)
The ratio of product to reactant concentrations at any instant.

Closed system
A system where neither matter nor energy can escape to surroundings.

Reversible reaction
A reaction that can proceed in both forward and reverse directions.

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: "Temperature is the only factor that changes the value of Keq". Use one specific example from the lesson.

BAND 3 2 MARKS

2. Apply this idea to a new example: "Endothermic reactions have Keq increase with temperature; exothermic reactions have Keq decrease". Show your reasoning clearly.

BAND 4 3 MARKS

3. Analyse why this idea matters for understanding Temperature & Keq — Colourimetry: "The Beer-Lambert law and calibration curve method for colourimetry".

BAND 5 4 MARKS

6. Extend: Apply the Idea

BAND 5/6 5 MARKS

A student gives a memorised answer about Temperature & Keq — Colourimetry 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 Temperature & Keq — Colourimetry?

☐ 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 Temperature & Keq — Colourimetry?

☐ 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: Temperature is the only factor that changes the value of Keq

BAND 3 2 MARKS

SUCCESS CRITERION 2

Prove that you can: Endothermic reactions have Keq increase with temperature; exothermic reactions have Keq decrease

BAND 4 3 MARKS

SUCCESS CRITERION 3

Prove that you can: The Beer-Lambert law and calibration curve method for colourimetry

BAND 5 4 MARKS

One thing I still need help with: