CHEMISTRY YEAR 12 - MODULE 5 - LESSON 18

Qsp, Precipitate Prediction & Common Ion Effect

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

width=device-width, initial-scale=1.0

- Qsp uses the same expression as Ksp but with current ion concentrations
- Why the dilution step is critical when mixing two solutions

2. Success Criteria

By the end, you should be able to:

- Qsp uses the same expression as Ksp but with current ion concentrations
- Qsp > Ksp means precipitation; Qsp < Ksp means dissolution; Qsp = Ksp means saturation
- The common ion effect decreases solubility by shifting equilibrium left

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: "Qsp uses the same expression as Ksp but with current ion concentrations". Use one specific example from the lesson.

BAND 3 2 MARKS

2. Apply this idea to a new example: "Qsp > Ksp means precipitation; Qsp < Ksp means dissolution; Qsp = Ksp means saturation". Show your reasoning clearly.

BAND 4 3 MARKS

3. Analyse why this idea matters for understanding Qsp, Precipitate Prediction & Common Ion Effect: "The common ion effect decreases solubility by shifting equilibrium left".

BAND 5 4 MARKS

6. Extend: Apply the Idea

BAND 5/6 5 MARKS

A student gives a memorised answer about Qsp, Precipitate Prediction & Common Ion Effect 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 Qsp, Precipitate Prediction & Common Ion Effect?

☐ 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 Qsp, Precipitate Prediction & Common Ion Effect?

☐ 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: Qsp uses the same expression as Ksp but with current ion concentrations

BAND 3 2 MARKS

SUCCESS CRITERION 2

Prove that you can: Qsp > Ksp means precipitation; Qsp < Ksp means dissolution; Qsp = Ksp means saturation

BAND 4 3 MARKS

SUCCESS CRITERION 3

Prove that you can: The common ion effect decreases solubility by shifting equilibrium left

BAND 5 4 MARKS

One thing I still need help with: