CHEMISTRY YEAR 12 - MODULE 8 - LESSON 14

Solubility, Polarity & Drug Delivery

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

Some heart medicines are not simply swallowed as ordinary tablets because delivery route is part of the chemistry problem. A drug must dissolve in the right environment, survive metabolism long enough to work, and reach its target in a useful form and concentration.

- How polarity and hydrogen bonding affect drug solubility
- Why aqueous and lipid environments favour different molecular features

2. Success Criteria

By the end, you should be able to:

- How polarity and hydrogen bonding affect drug solubility
- The meaning of first-pass metabolism, prodrug and controlled-release formulation
- The main drug delivery systems named in the course

3. Key Terms

Like dissolves like
a useful guiding principle: polar substances dissolve more easily in polar solvents, and non-polar substances dissolve m

prodrug
an inactive or less active compound that is

First-pass metabolism
the metabolism of a drug in the gut wall and especially the

Some heart medicines
not simply swallowed as ordinary tablets because delivery route is part of the chemistry problem

but the drug
partly broken down during its first trip through the liver after being swallowed

Why delivery route
tied to chemistry, not just convenience

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: "How polarity and hydrogen bonding affect drug solubility". Use one specific example from the lesson.

BAND 3 2 MARKS

2. Apply this idea to a new example: "The meaning of first-pass metabolism, prodrug and controlled-release formulation". Show your reasoning clearly.

BAND 4 3 MARKS

3. Analyse why this idea matters for understanding Solubility, Polarity & Drug Delivery: "The main drug delivery systems named in the course".

BAND 5 4 MARKS

6. Extend: Apply the Idea

BAND 5/6 5 MARKS

A student gives a memorised answer about Solubility, Polarity & Drug Delivery 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 Solubility, Polarity & Drug Delivery?

☐ 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 Solubility, Polarity & Drug Delivery?

☐ 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: How polarity and hydrogen bonding affect drug solubility

BAND 3 2 MARKS

SUCCESS CRITERION 2

Prove that you can: The meaning of first-pass metabolism, prodrug and controlled-release formulation

BAND 4 3 MARKS

SUCCESS CRITERION 3

Prove that you can: The main drug delivery systems named in the course

BAND 5 4 MARKS

One thing I still need help with: