

Factors Affecting Reaction Rate

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

The catalytic converter in a car uses platinum and palladium to convert toxic exhaust gases into harmless ones — without a catalyst, those reactions would require temperatures so high the car would melt.

- Key facts and terms for Factors Affecting Reaction Rate
- How the main ideas in Factors Affecting Reaction Rate connect

2. Success Criteria

By the end, you should be able to:

- Key facts and terms for Factors Affecting Reaction Rate
- Where this lesson fits in Module 3
- How the main ideas in Factors Affecting Reaction Rate connect

3. Key Terms

Concentration effect

The amount of solute present in a given quantity of solution or solvent.

Synthesis reaction

A reaction where two or more reactants combine to form a single product.

Decomposition reaction

A reaction where a single compound breaks down into simpler substances.

Precipitation reaction

A reaction in which an insoluble solid forms when two solutions are mixed.

Combustion reaction

A rapid reaction with oxygen producing heat, light and oxides.

Redox reaction

A reaction involving electron transfer between chemical species.

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. Q8. A reaction vessel contains a gaseous reaction at temperature T_1 . Explain, using a Maxwell-Boltzmann energy distribution diagram, how increasing the temperature to T_2 increases the rate of the reaction. In your answer, describe: (a) the change in the distribution curve; (b) the change in the proportion of particles that can react; (c) the resulting change in effective collision frequency. (5 marks)

BAND 3

5 MARKS

2. Q9. Compare homogeneous and heterogeneous catalysts. In your response: (a) define each type with a named example; (b) explain the mechanism by which a heterogeneous catalyst operates; (c) explain why a heterogeneous catalyst is generally preferred in large-scale industrial processes. (5 marks)

BAND 4

5 MARKS

3. Q10. A car's catalytic converter is in perfect working order. (a) Write a balanced equation for the catalytic oxidation of carbon monoxide in the converter. (b) Explain, using your knowledge of heterogeneous catalysis, why the converter does not reduce CO emissions in the first 30 seconds after the car is started. (c) Predict and explain the effect on CO emissions if the catalytic converter is damaged and its platinum surface is coated with lead compounds. (5 marks)

BAND 5

5 MARKS

6. Extend: Apply the Idea

BAND 5/6

5 MARKS

A student gives a memorised answer about Factors Affecting Reaction Rate 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 Factors Affecting Reaction Rate?

- 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 Factors Affecting Reaction Rate?

- 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: Key facts and terms for Factors Affecting Reaction Rate

BAND 3

2 MARKS

SUCCESS CRITERION 2

Prove that you can: Where this lesson fits in Module 3

BAND 4

3 MARKS

SUCCESS CRITERION 3

Prove that you can: How the main ideas in Factors Affecting Reaction Rate connect

BAND 5

4 MARKS

One thing I still need help with:
