Nova’s Geological Journal: Investigating Rocks

Learning objective: To identify and describe the physical properties of igneous, sedimentary, and metamorphic rocks, and explain how they are formed.

Use this scaffold to document your rock investigation. Ensure you use scientific vocabulary to describe your findings and justify your conclusions based on your observations.

As I stared at the jagged surface of the specimen under my magnifying lens, I noticed small, sparkling crystals embedded deep within the dark, dense material.

Word bank: permeable · impermeable · sediment · magma · fossiliferous · crystalline · consequently · furthermore · in contrast · eroded · compressed · texture

1. Classification: Based on your observation of the rock's texture and appearance, which of the three main types of rock do you believe this is? Explain your reasoning using evidence. (3 marks)

2. Formation Process: Describe the journey this rock might have taken from its origin to your classroom desk. How does the cooling of magma or the compression of layers create these features? (3 marks)

3. Property Analysis: Compare the hardness and permeability of your rock sample to a different type of rock. Why might some rocks be more resistant to weathering than others? (4 marks)

4. Justification: If you found a fossil inside your rock sample, what would this tell you about the environment in which it was formed? Justify your answer. (3 marks)

5. Scientific Prediction: What might happen to this rock if it were exposed to extreme heat and pressure deep underground for millions of years? (2 marks)

6. Critical Thinking: Compare and contrast the uses of different rocks in our daily lives, such as in building materials or decorative stone. Why are specific properties required for specific jobs? (4 marks)

Extension challenge: Imagine you are a geologist from the future. Write a brief report explaining how you would identify a 'mystery rock' that has never been seen before. What specific tests would you conduct, and why would those tests be the most effective?