

Botanical Brilliance: The Life Cycle of Plants

Learning objective: To identify and describe the functions of different parts of flowering plants and understand the process of the life cycle including pollination, fertilisation, and seed dispersal.

Use your scientific knowledge to answer the following questions. Provide detailed explanations where required to demonstrate your understanding of plant biology.

Nova the owl has been observing the wildflower meadow all spring. She has noticed that for a plant to reproduce, it must undergo a series of complex biological stages. From the initial arrival of pollen on the stigma to the dispersal of mature seeds, each part of the plant plays a vital role in ensuring the survival of the next generation.

Word bank: stamen · carpel · pollination · fertilisation · germination · stigma · sepal · anther

1. Explain the difference between pollination and fertilisation. Why is it essential for these two processes to occur in the correct order for a seed to develop? (3 marks)

2. Max the monkey is looking at a flower. He identifies the stamen and the carpel. Describe the specific function of each of these parts in the plant's reproductive system. (4 marks)

3. Compare and contrast two different methods of seed dispersal (e.g., wind dispersal versus animal dispersal). Justify why a plant might rely on one method over the other depending on its environment. (4 marks)

4. What might happen to the population of a specific plant species if all the local pollinator insects were to disappear? Explain the potential consequences for the surrounding ecosystem. (3 marks)

5. If a farmer is selling packets of sunflower seeds for £1.50 each, and they contain 20 seeds, calculate the cost per individual seed. If only 75% of those seeds successfully germinate, how many new plants will the farmer have in total? (3 marks)

Draw: Draw a cross-section of a flowering plant. Carefully label the stamen, anther, stigma, ovary, and sepal. Add arrows to show the path of a pollen grain.



Extension challenge: Design a 'Future Plant' that is perfectly adapted to survive in a desert environment. Write a short paragraph justifying your design choices, focusing on how your plant manages water retention and how its unique seed dispersal method would be successful in a landscape with very few animals.