

Nova's Springtime Science Investigation

Learning objective: To identify and describe the life cycles of flowering plants and understand the role of environmental changes during spring.

Nova the barn owl is observing how the garden changes as the days get longer. Use the word bank to fill in the missing scientific terms in the life cycle process below. Then, use your knowledge of plant biology to answer the higher-order thinking questions.

Word bank: germination · pollination · photosynthesis · fertilisation · dispersal · stamen · carpel

1. 1. The process of a seed beginning to grow when it finds the right conditions is called _____. Describe the three main conditions a seed requires to begin this process. (3 marks)

2. 2. In spring, insects move pollen from the _____ (male part) to the _____ (female part). Explain why this process is vital for the survival of the plant species. (3 marks)

3. 3. Once the seed is formed, it must travel away from the parent plant through _____. Justify why it is an evolutionary advantage for a plant to spread its seeds far away from the parent. (3 marks)

4. 4. Compare and contrast: How do the changing daylight hours in spring trigger different biological responses in plants compared to the shorter days of winter? (3 marks)

5. 5. What might happen to the local ecosystem if the peak of insect activity (pollination) no longer coincided with the blooming of spring flowers due to rising global temperatures? (3 marks)

6. 6. A gardener spends £12.50 on a tray of seedlings and £4.75 on organic fertiliser. If they sell 10 fully-grown plants for £3.00 each, calculate the total profit. Show your working out. (3 marks)

Draw: Draw and label a cross-section of a spring flower, clearly identifying the stamen, carpel, petals, and the location where the seed will develop.



Extension challenge: Design an experiment to test which light intensity results in the fastest germination for a bean seed. Write a hypothesis, identify your independent and dependent variables, and explain how you will ensure the test is fair.