

The Botanical Wonders of Bea's Garden

Learning objective: To understand the life cycle and reproduction of flowering plants.

Read the text carefully and answer the questions below. Ensure you use evidence from the text to justify your answers.

Bea the honeybee spends her days buzzing between vibrant petals, playing a vital role in the life cycle of flowering plants. When Bea lands on a flower, she brushes against the stamen, collecting sticky pollen on her fuzzy coat. As she travels to the next bloom, she inadvertently transfers this pollen to the stigma, a process known as pollination. This is the crucial first step for the plant to produce seeds. Once pollinated, the plant's ovary begins to swell, eventually developing into a fruit or a seed pod. Inside these pods, the next generation of plants waits patiently. For growth to begin, these seeds require specific conditions: water, warmth, and oxygen. This process, called germination, allows the embryo inside the seed to sprout into a seedling. While some plants rely on insects like Bea for cross-pollination, others use the wind or even water to spread their seeds. Every plant has a unique strategy to ensure its survival, from the bright colours designed to attract pollinators to the clever mechanisms used for seed dispersal across the landscape.

Word bank: pollination · stamen · germination · ovary · sepal · asexual

1. Identify the two main components of a flower that Bea touches to facilitate the process of pollination. (2 marks)

2. List the three essential environmental factors a seed needs to begin the process of germination. (2 marks)

3. Explain why a plant might evolve to have brightly coloured petals rather than dull ones. (3 marks)

4. In what way does the relationship between a honeybee and a flowering plant demonstrate a mutually beneficial survival strategy? (3 marks)

5. Justify your answer: If all the bees in a garden disappeared, would the plants be able to survive indefinitely? Explain your reasoning. (4 marks)

Draw: Create a detailed, labelled diagram showing the life cycle of a flowering plant, including the stages of pollination and seed dispersal.



Extension challenge: Compare and contrast the strategies used by wind-pollinated plants versus insect-pollinated plants. What might happen to the variety of plant life in a meadow if the wind suddenly stopped blowing for an entire season? Justify your hypothesis.