

<p style="text-align: center;"><b>GRADE 10</b></p> <p style="text-align: center;"><b>LIFE SCIENCES</b></p> <p style="text-align: center;"><b>THE LEAF AS AN ORGAN</b></p>
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**QUESTIONS**

**QUESTION 1**

1. Define the term “organ” in a biological context and explain why the leaf is classified as an organ.
2. Describe the external structure of a typical dicot leaf.
3. Draw and label a cross-section of a dicot leaf, including at least 8 structures.
4. Explain the function of each of the following tissues in the leaf:
  - a) Epidermis
  - b) Palisade mesophyll
  - c) Spongy mesophyll
  - d) Vascular bundle
5. Discuss how the internal structure of the leaf is adapted for efficient photosynthesis.
6. Describe how gases are exchanged in the leaf during the day and at night.
7. Explain the structure and role of guard cells in controlling transpiration.
8. Describe the role of xylem and phloem in the leaf and how they are arranged in vascular bundles.
9. Discuss how the structure of the leaf allows it to balance water loss with the need for gas exchange.
10. How does the structure of a monocot leaf differ from that of a dicot leaf?

**QUESTION 2**

1. State four main functions of the leaf.
2. Explain how the leaf is adapted structurally for each of the following functions:
  - a) Photosynthesis
  - b) Gas exchange
  - c) Transpiration
3. Describe what happens during transpiration and explain its significance for the plant.
4. How does light intensity affect the rate of transpiration?
5. Explain how leaf structure helps minimize water loss in hot, dry environments.
6. Describe the process of water movement from the roots to the leaf and out into the air.
7. Discuss the role of the vascular system in integrating leaf function with the whole plant.
8. Draw a labelled diagram showing the route of water from the xylem to the air via stomata.

9. What would happen to a plant if all its stomata remained closed for an extended period?  
Explain.
10. Suggest and explain one structural adaptation in the leaves of desert plants.