

IGCSE Biology

YR10

Leaf Structure and

Photosynthesis

NAME \_\_\_\_\_

# LEAF STRUCTURE

1. What are the design features of a leaf?

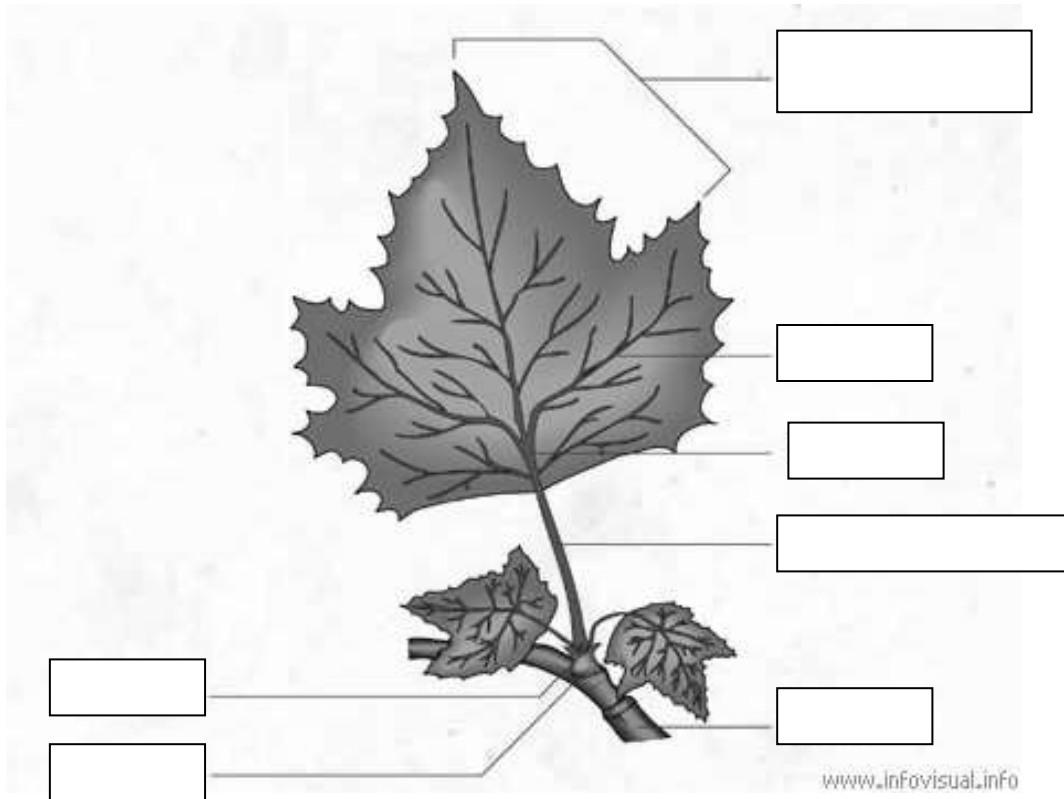
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2. Label the parts of the leaf?



3. Broad expanded parts of the leaf frequently have

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4. Describe the anatomic features of the leaf blade

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5. The epidermis is the outmost layers of cells in the leaf.

Epi \_\_\_\_\_ dermis \_\_\_\_\_

6. Epidermal cells lack \_\_\_\_\_ and are covered with \_\_\_\_\_ which is \_\_\_\_\_ to water.

7. Two specialised cells found in the epidermal layers.

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8. When guard cells are turgid, stomata are \_\_\_\_\_. When guard cells are relaxed, stomata are \_\_\_\_\_. Guard cells regulate \_\_\_\_\_ and \_\_\_\_\_ from the leaf. Guard cells \_\_\_\_\_ and \_\_\_\_\_ depending on \_\_\_\_\_ and \_\_\_\_\_ signals

9. How are the guard cells in plants like cactus different?

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10. Mesophyll tissue occupies most of the internal tissue of the leaf. They are comprised of \_\_\_\_\_

11. Describe the palisade cells

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12. Describe the spongy cells

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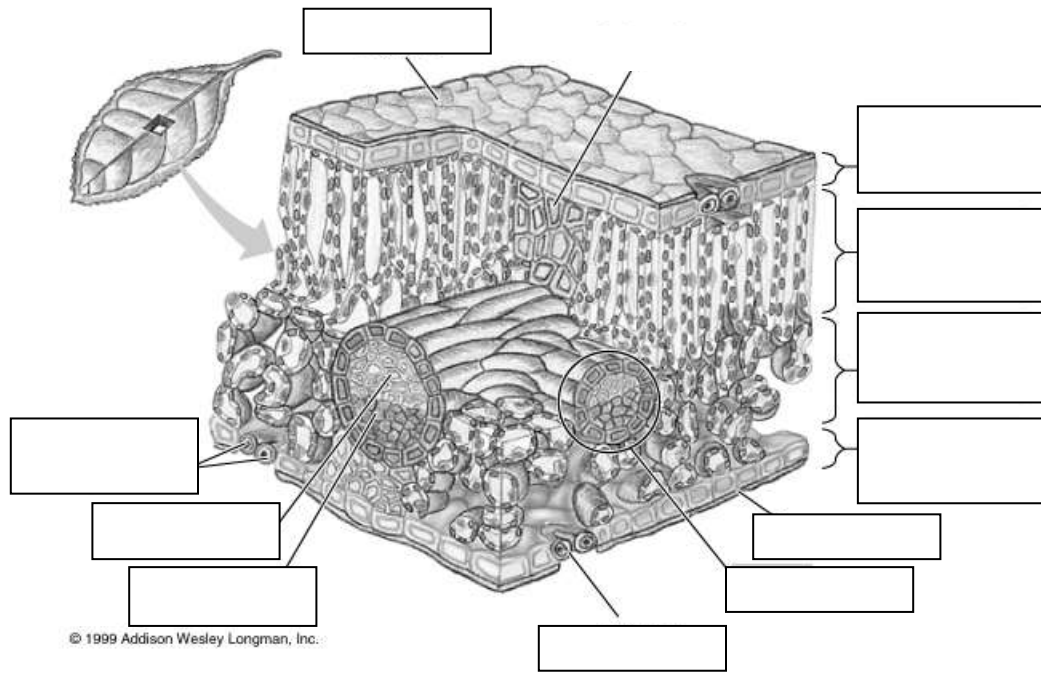
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13. Visible veins are distributed throughout the leaf. This is known as \_\_\_\_\_ tissue. They are required for the \_\_\_\_\_ of material \_\_\_\_ and \_\_\_\_ from the leaf.

14. The organised bundles of vascular tissue contain the \_\_\_\_\_ and the \_\_\_\_\_.

15. Describes the functions of the two vascular tissues

16. Label the diagram



17. Complete the flow chart of the leaf, tissue and cells.

## Photosynthesis: Using Light To Make Food

18. Write out the word and chemical equation for photosynthesis

19. Define the following terms

Autotrophs

Photoautotrophs

Heterotrophs

20. Photosynthesis occurs in the \_\_\_\_\_. In plants, photosynthesis occurs primarily in the \_\_\_\_\_ tissue where \_\_\_\_\_ enters and \_\_\_\_\_ exits. The highest concentration of chloroplasts can be found in the \_\_\_\_\_ of the \_\_\_\_\_. A protein molecules with the element \_\_\_\_\_ is very important (know it)

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21. Identify the parts and functions of the structures in the chloroplast

22. How do plants produce Oxygen?

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23. Photosynthesis is described in what two series of coupled reactions

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24. Briefly describe what occurs in the light reaction

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25. Briefly describe what occurs in the Calvin cycle

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26. Describe the structures in the chloroplast that adsorb light photons.

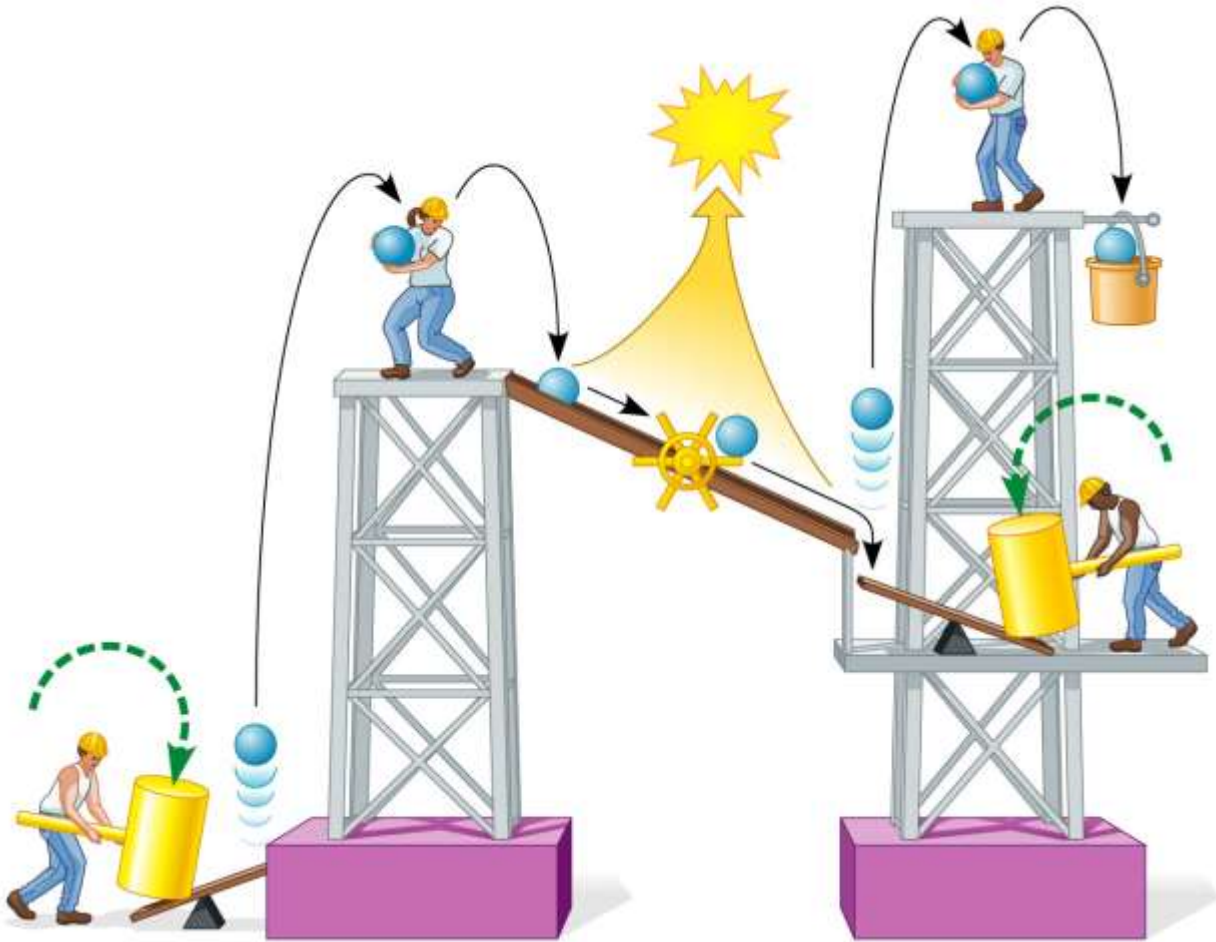
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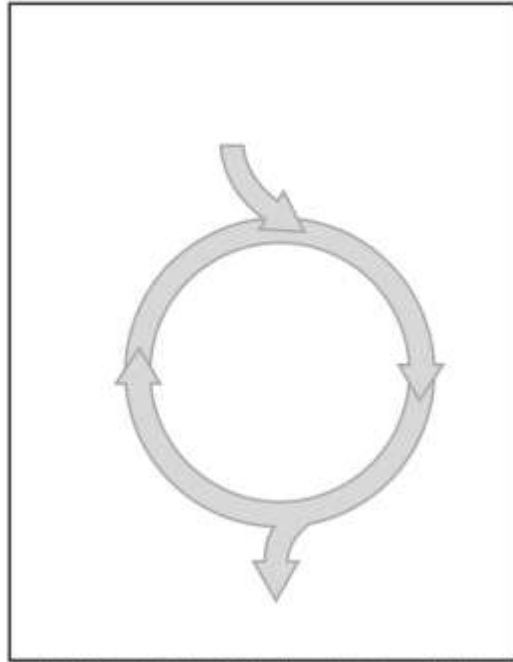
27. Using the diagram, describe the process of photosynthesis



28. \_\_\_\_\_ and \_\_\_\_\_ power sugar synthesis in the Calvin cycle



29. List the inputs and outputs need to produce sugar in the Calvin cycle



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30. Photosynthesis uses light energy to make food molecules. What occurs in the light reaction?

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31. Photosynthesis uses light energy to make food molecules. What occurs in the Calvin cycle?

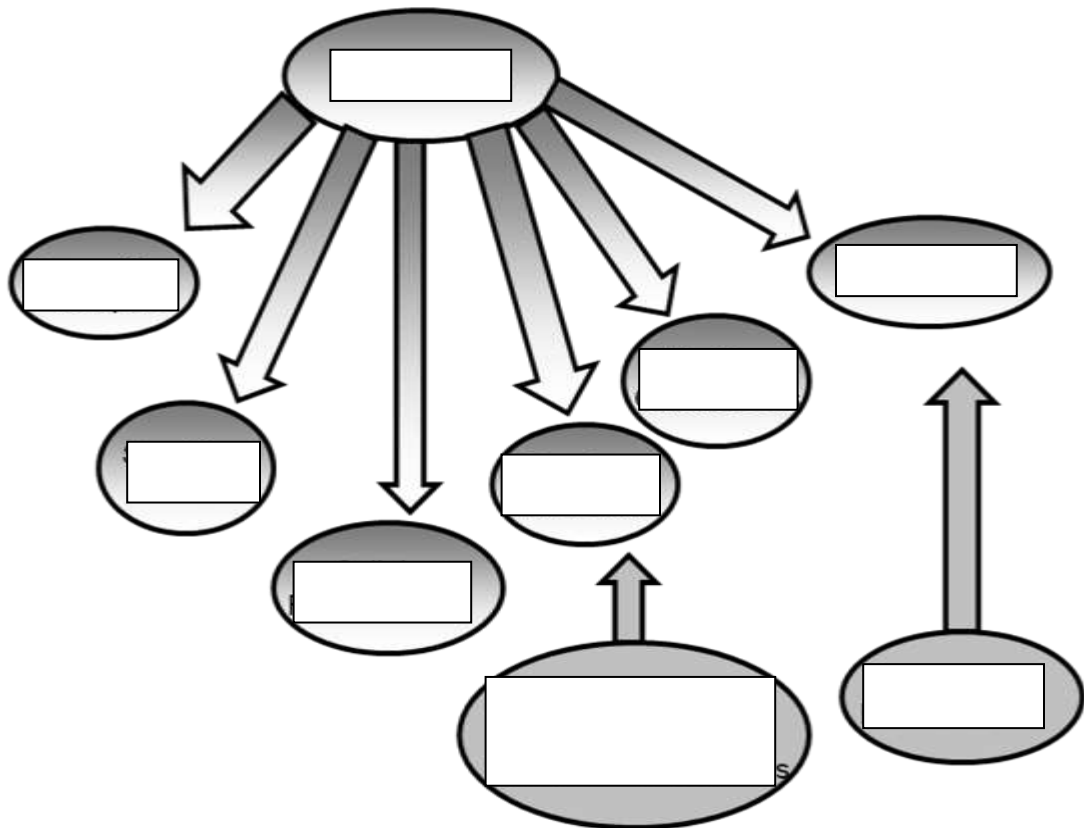
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32. Glucose is a major component of all life. The plant requires glucose for its growth and development.



33. Define translocation

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34. List the factors that affect photosynthesis

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35. Explain why deciduous trees lose their leaves during the cooler months.

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Starch is insoluble and so can't be transported around the plant. The phloem carries only soluble-substances such as glucose. These are converted into other compounds when they reach their destination

36. It is important that plants take in mineral ions as well as water for growth.

'Complete the table

Mineral ion	Use	Deficiency symptoms
Nitrate		
Phosphate		
Potassium		
Magnesium		

37. Sometimes plants can be grown without soil, in culture solution. This process is known as \_\_\_\_\_ (hint pg 119)

38. What are the advantages of this practice?