

Leaf Structure

Question Paper

Level	O Level
Subject	Biology
Exam Board	Cambridge International Examinations
Topic	Plant Nutrition
Sub Topic	Leaf Structure
Booklet	Question Paper

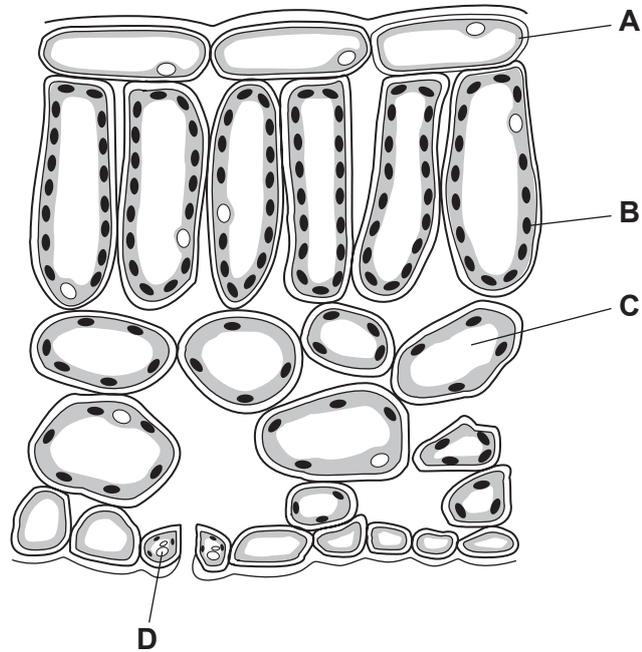
Time Allowed: 35 minutes

Score: /29

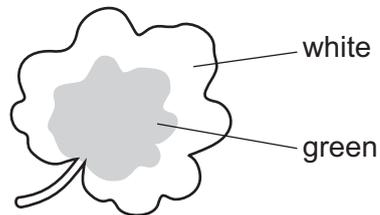
Percentage: /100

1 The diagram shows a magnified cross-section of part of a leaf.

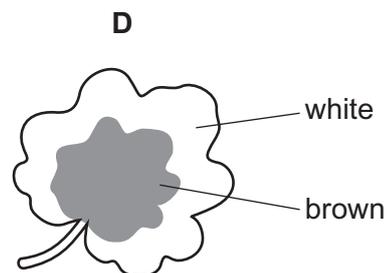
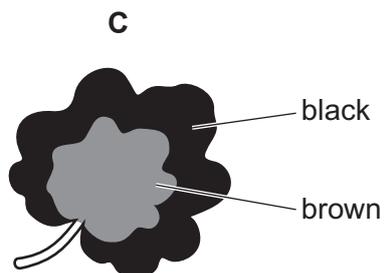
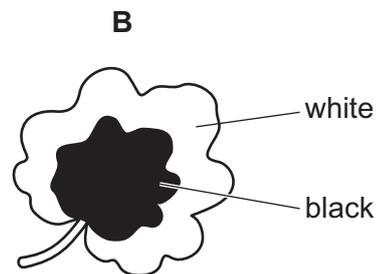
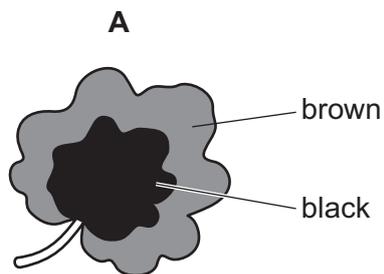
Where does photosynthesis take place?



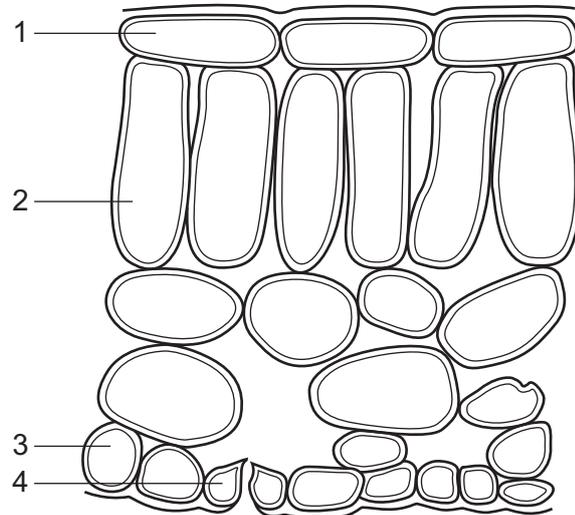
- 2 A leaf was picked from a plant that had been in sunlight for eight hours.



What does this leaf look like after it is tested with iodine solution?



- 3 The diagram shows cells in a section through a leaf of a typical green plant. (No cell contents are shown.)

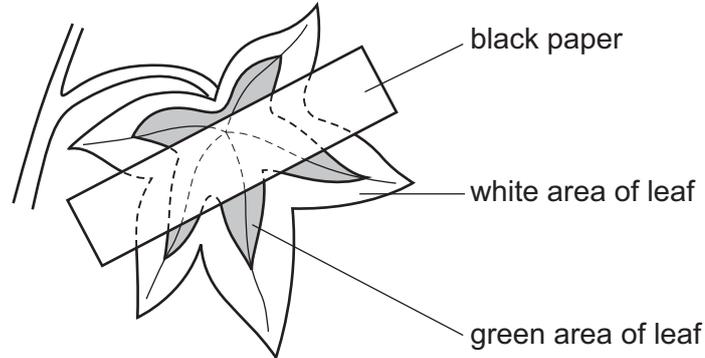


Which cells usually contain chloroplasts?

- A** 1 and 2 **B** 1 and 4 **C** 2 and 3 **D** 2 and 4

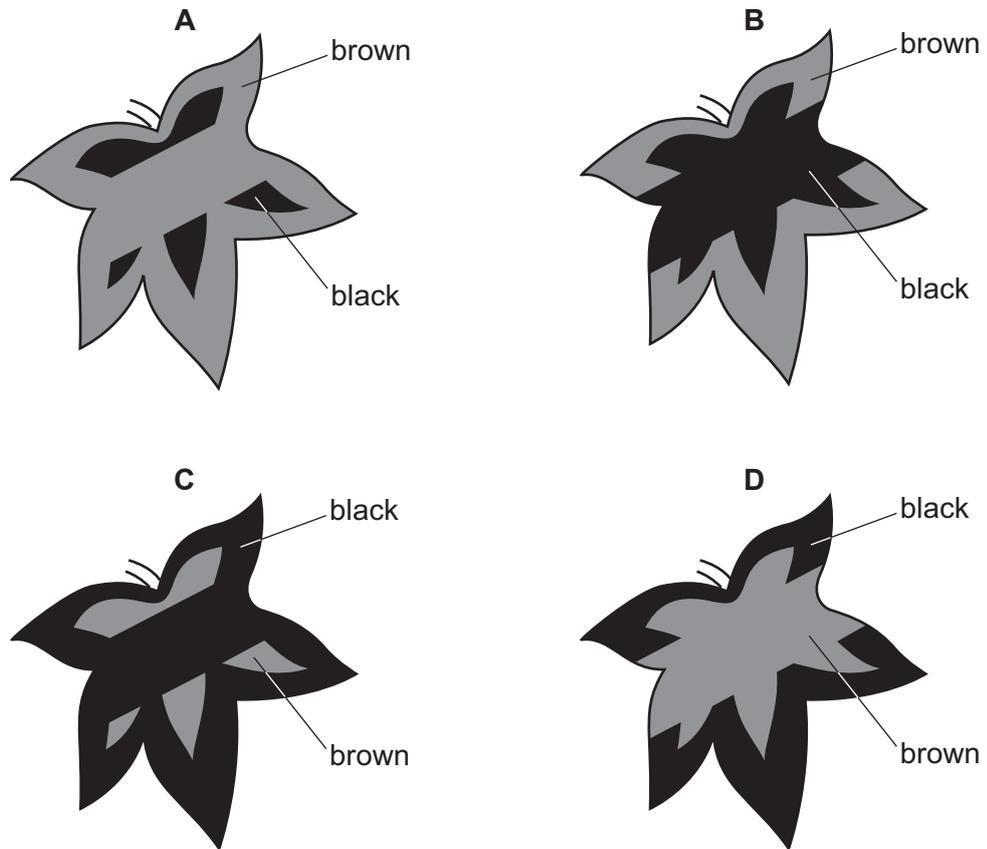
- 4 A plant has leaves that are green in the centre but white around the edges.

The plant is destarched and then has one of its leaves partly covered with black paper on both sides of the leaf, as shown.



The plant is placed in bright light for 48 hours. The leaf is then tested for starch.

Which diagram shows the colours that are obtained?

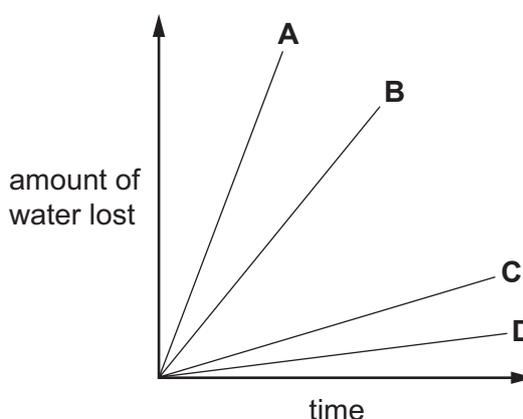


5 In an experiment to investigate transpiration, the leaves of four identical shoots are treated as follows.

- 1 upper surfaces covered with waterproof jelly
- 2 lower surfaces covered with waterproof jelly
- 3 upper and lower surfaces covered with waterproof jelly
- 4 untreated

The graph shows the water lost by the four shoots.

Which line shows the result for shoot 4?



6 Which part of a leaf contains cells, but with the fewest chloroplasts?

- A** cuticle
- B** epidermis
- C** spongy mesophyll
- D** stomata

7 Which features of the mesophyll layer in a leaf aid rapid diffusion of carbon dioxide into the cells?

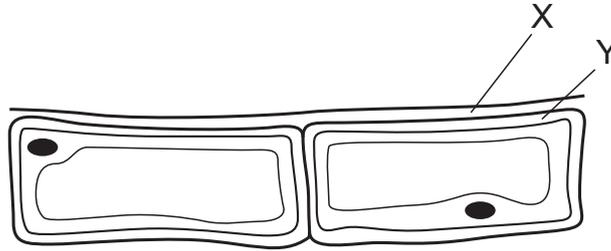
	air spaces	layer of moisture on the outside of the cell walls
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

key

✓ = aids diffusion

✗ = does not aid diffusion

8 The diagram shows the upper layers of a leaf.

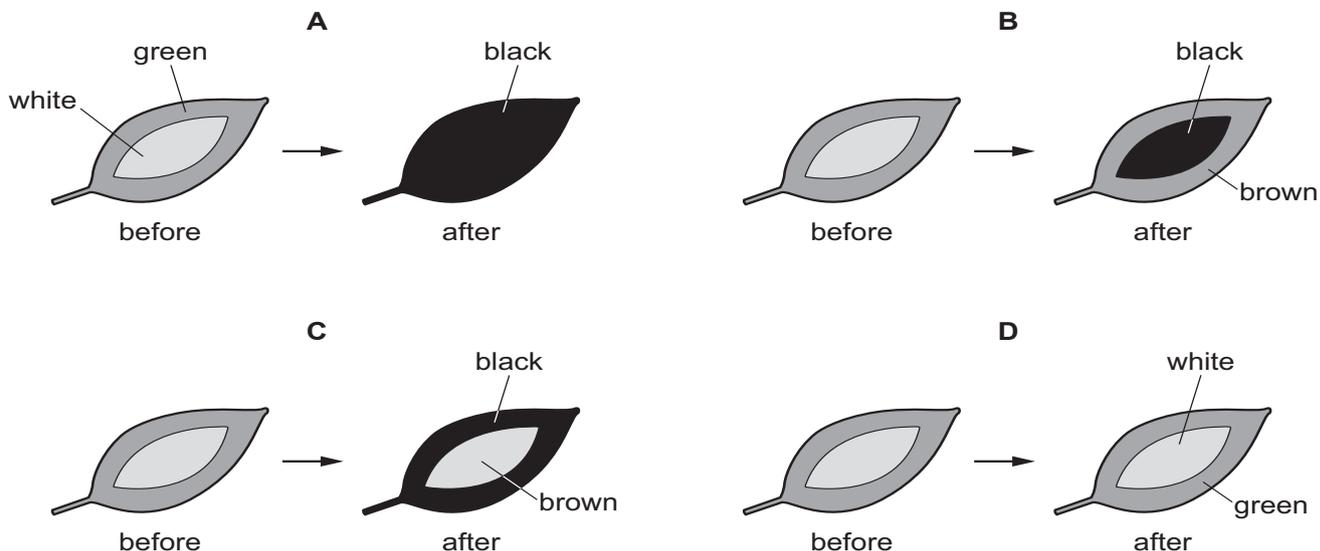


What are the structures labelled X and Y?

	X	Y
A	cell membrane	cell wall
B	cell wall	cell membrane
C	cell wall	cuticle
D	cuticle	cell wall

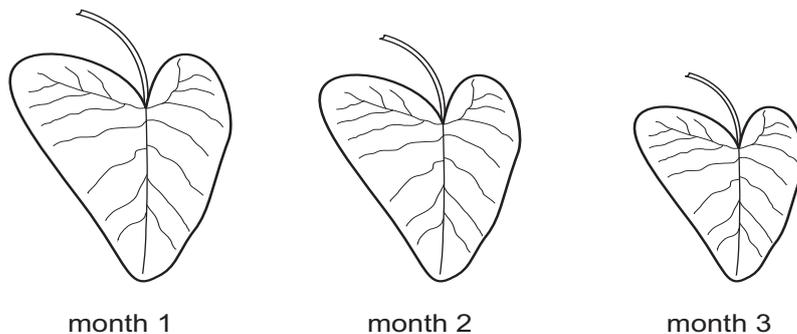
- 9 A variegated plant is destarched and then placed in the sunlight for several hours. A leaf is then taken and tested for starch using iodine solution.

Which diagram shows the correct results?



- 10 A container is filled with water from a lake and placed on an outside table in the sunlight. Healthy plant seedlings are placed in the container and left for 3 months. Distilled water is added to the container as required. At the end of each month a typical mature leaf grown during the previous 30 days is removed and drawn to the same scale.

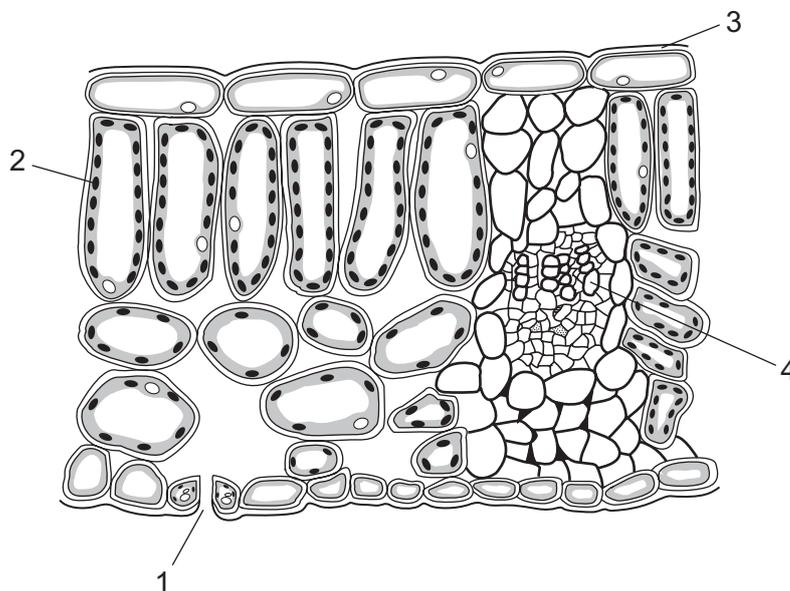
The diagram shows the three drawings that are made.



Why is the leaf from month 3 the smallest?

- A insufficient light for photosynthesis
- B nitrates from the water had all been absorbed
- C phloem vessels unable to transport water
- D plants cannot grow without soil

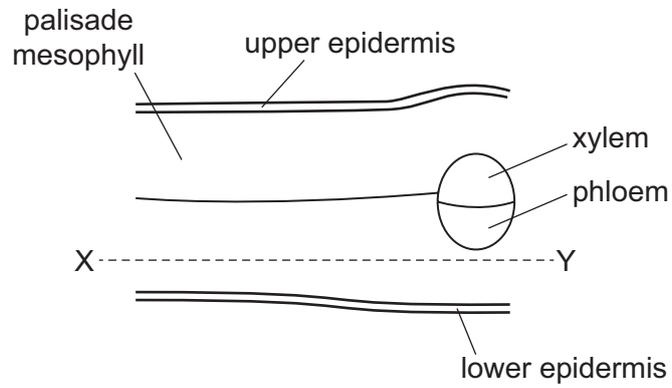
11 The diagram shows the structure of a leaf of a dicotyledonous plant.



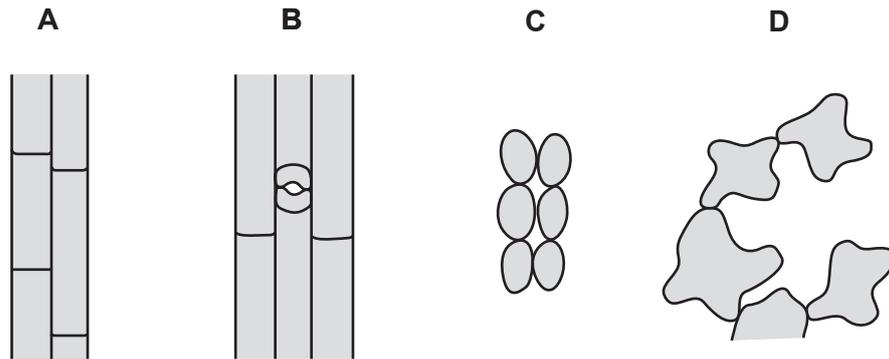
What are the functions of the parts labelled on the diagram?

	1		3	4
A	gaseous exchange	photosynthesis	reducing evaporation	transport
B	photosynthesis	gaseous exchange	transport	reducing evaporation
C	photosynthesis	reducing evaporation	gaseous exchange	transport
D	transport	reducing evaporation	gaseous exchange	photosynthesis

- 12 The diagram shows the arrangement of the tissues of a leaf as seen in cross-section under the microscope.

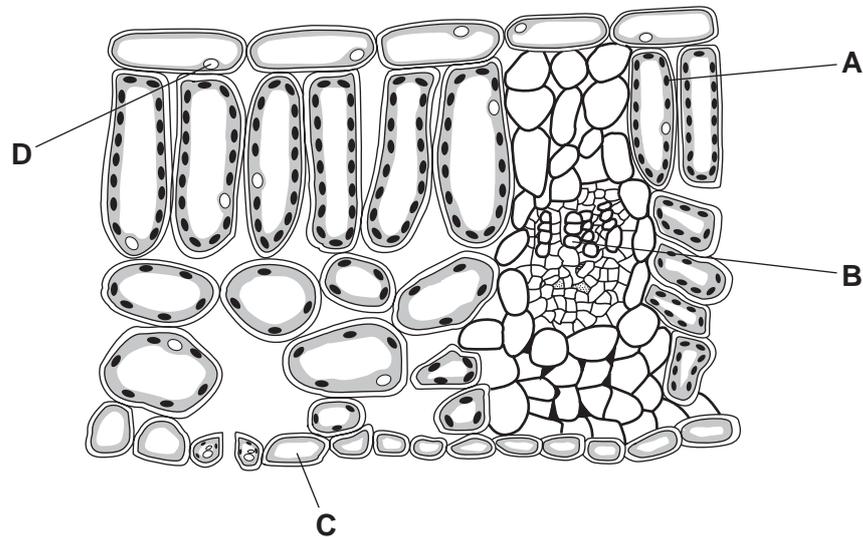


What is the arrangement of the cells in the section X-Y?



13 The diagram represents a cross section of a leaf under the microscope.

Where is light energy converted into chemical energy?

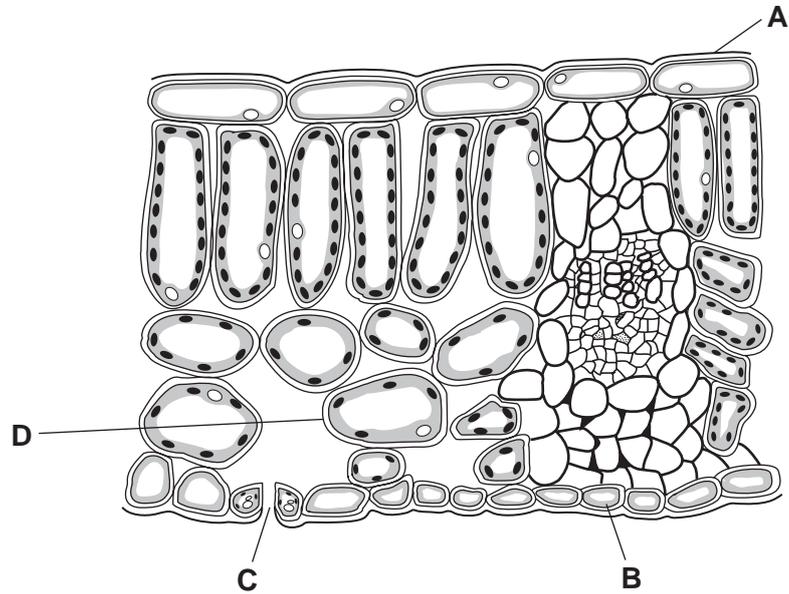


14 What describes the upper cuticle of a leaf?

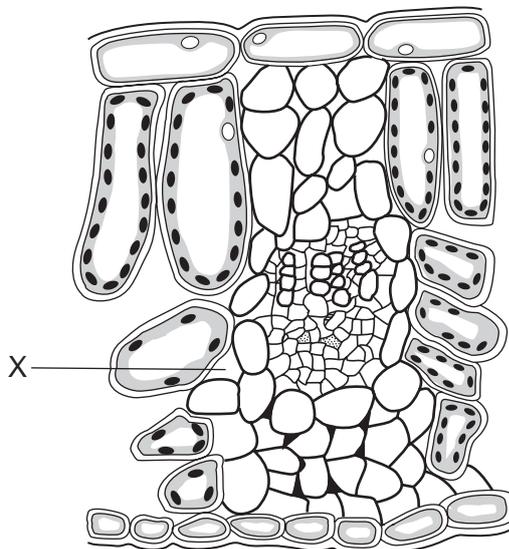
- A a single layer of cells containing many chloroplasts
- B a single layer of transparent cells allowing light to enter the leaf
- C a thin non-cellular layer preventing water loss from the leaf
- D a permeable layer allowing water to enter the leaf

15 The diagram shows a cross-section of a leaf.

From which part does most of the water evaporate during transpiration?



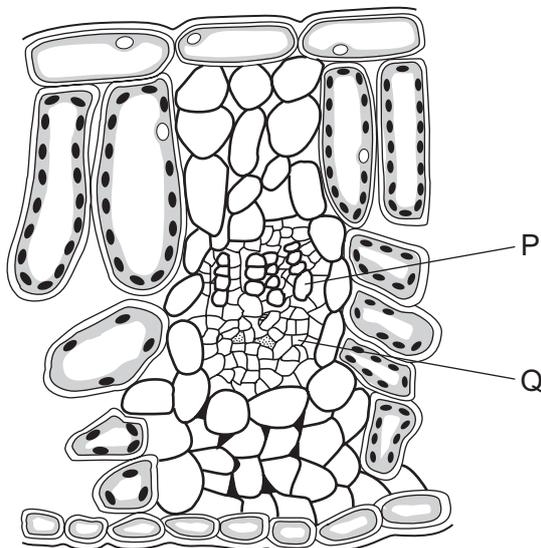
16 The diagram represents a cross section of part of a leaf.



How does the oxygen content of the air at X compare to normal atmospheric air, when the leaf is in the light and when it is in the dark?

	in the light	in the dark
A	lower	the same
B	lower	higher
C	higher	the same
D	higher	lower

17 The diagram represents a section through part of a leaf.



How do carbon dioxide and water enter the leaf?

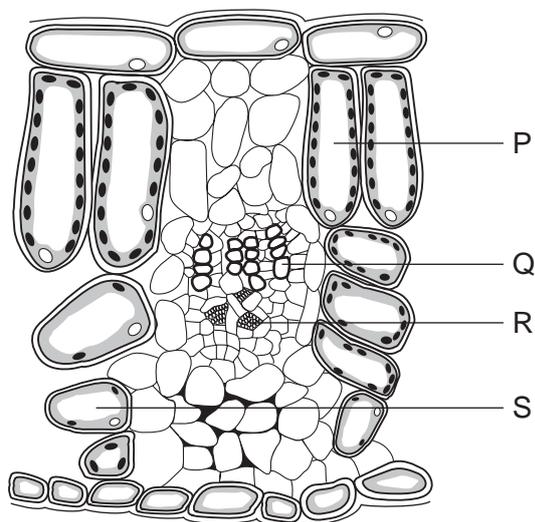
	carbon dioxide	water
A	active transport	through tissue P
B	active transport	through tissue Q
C	diffusion	through tissue P
D	diffusion	tissue Q

18 The photomicrograph shows a transverse section of a leaf.

Where does carbon dioxide enter the leaf?



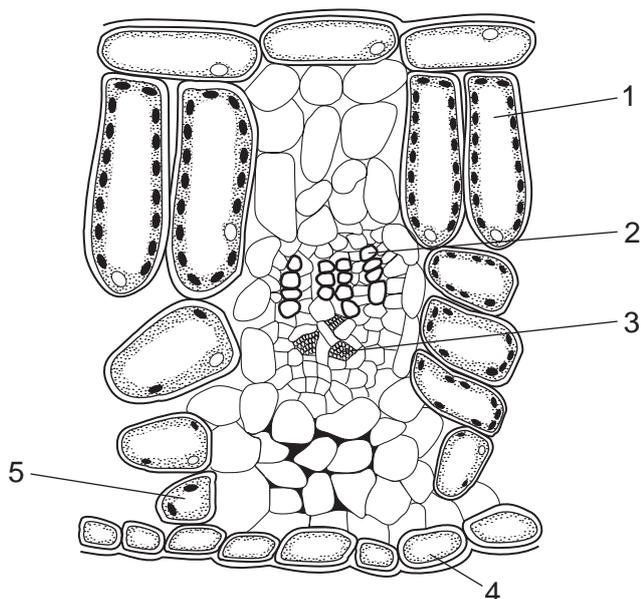
19 The diagram shows part of a transverse section of a leaf.



Which cells conduct water into the leaf and which cells conduct sugars out of the leaf?

	conduct water	conduct sugars
A	P	Q
B	Q	P
C	Q	R
D	R	Q

20 The diagram shows a section through a leaf.



Which cells have the functions shown?

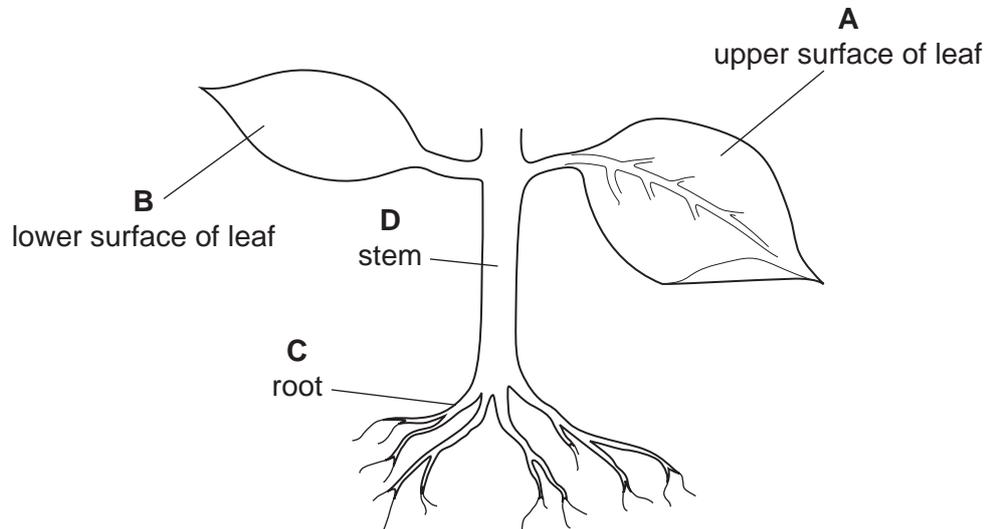
	photosynthesis	transport
A	1 and 5	2 and 3
B	2 and 4	1 and 4
C	3 and 4	2 and 5
D	4 and 5	3 and 4

21 Which terms describe the parts of a plant?

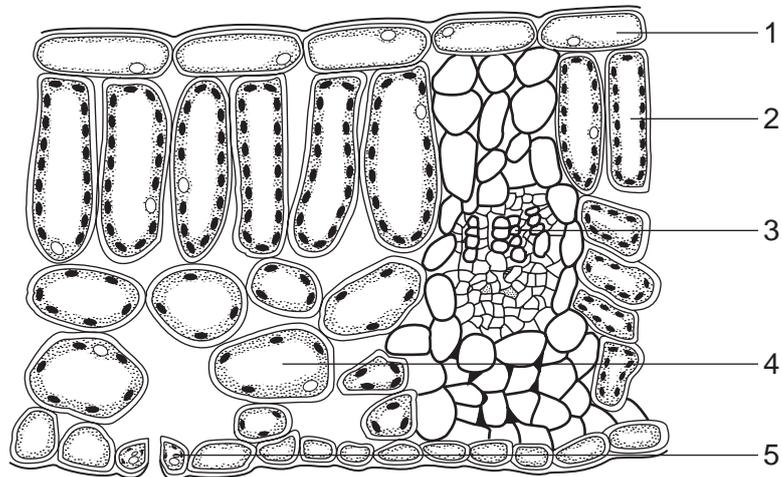
	leaf	leaf mesophyll	leaf epidermis
A	organ	cell	tissue
B	organ	tissue	tissue
C	organ system	tissue	cell
D	tissue	cell	cell

22 The diagram shows part of a flowering plant.

Where does most transpiration take place?



23 The diagram shows a transverse section of a leaf.

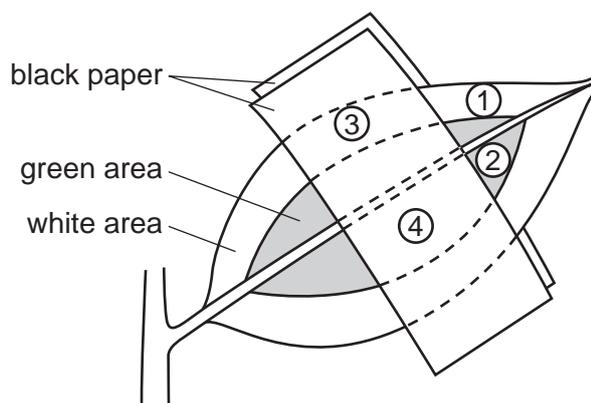


Which cells absorb carbon dioxide?

- A** 1, 2 and 3 **B** 2, 3 and 4 **C** 2, 4 and 5 **D** 1, 3 and 5

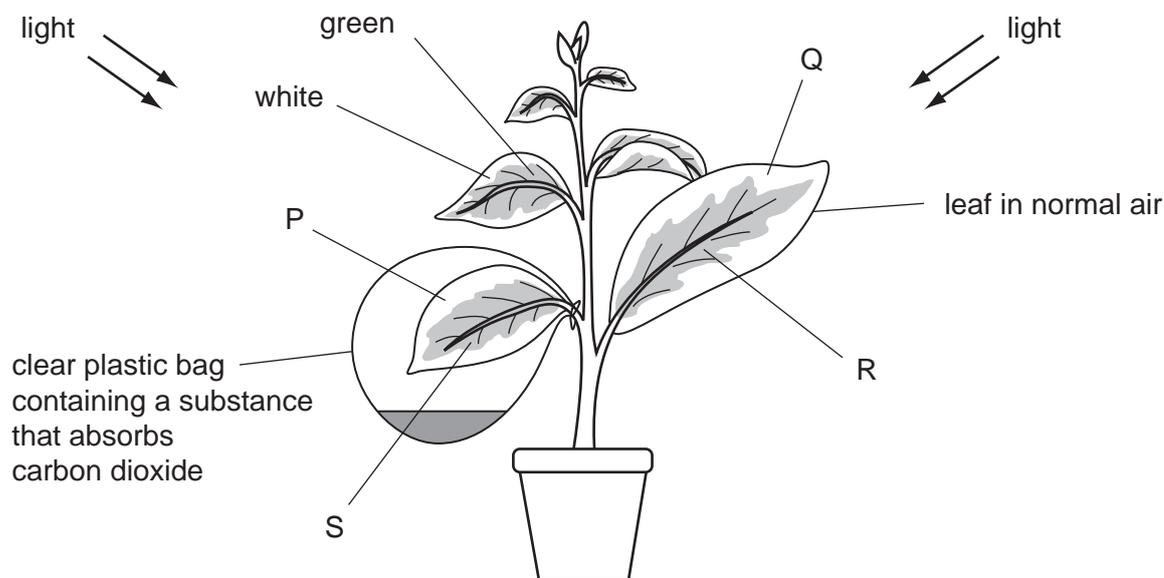
- 24 A plant has leaves that are partly green and partly white. The plant is destarched and a leaf is partly covered by black paper.

The plant is placed in bright light for several hours. Four discs are then cut from the leaf in the positions shown and are tested for starch.



Which discs contain starch?

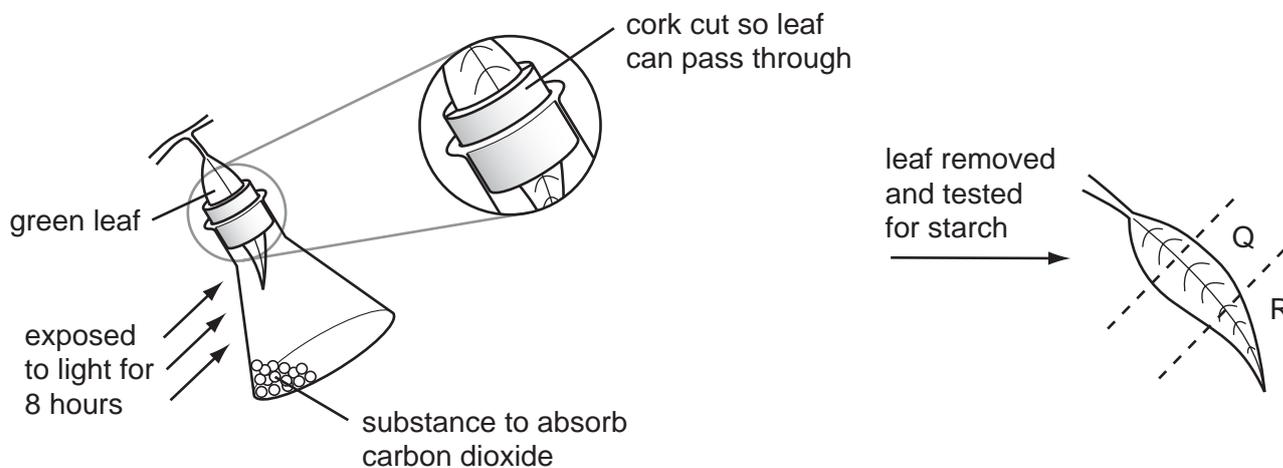
- A 1 only B 1 and 2 C 2 only D 3 and 4
- 25 The diagram shows a photosynthesis investigation. The plant has leaves that are green in the middle and white round the edges.



Which leaf areas lack only **one** factor needed for photosynthesis?

- A P and Q
B P and R
C Q and S
D R and S

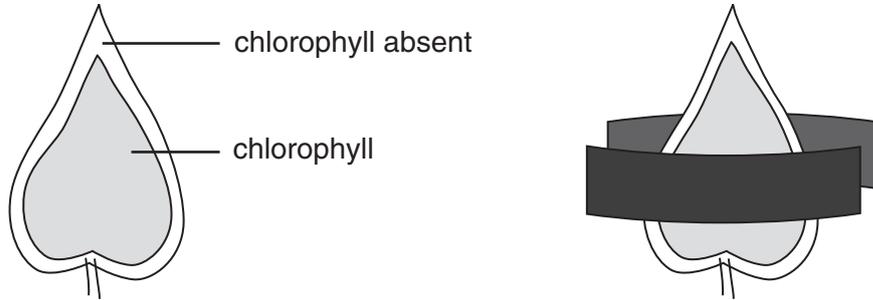
- 28 A plant is kept in the dark for two days. A leaf is used in an experiment to investigate the effect of two factors on photosynthesis, as shown in the diagram.



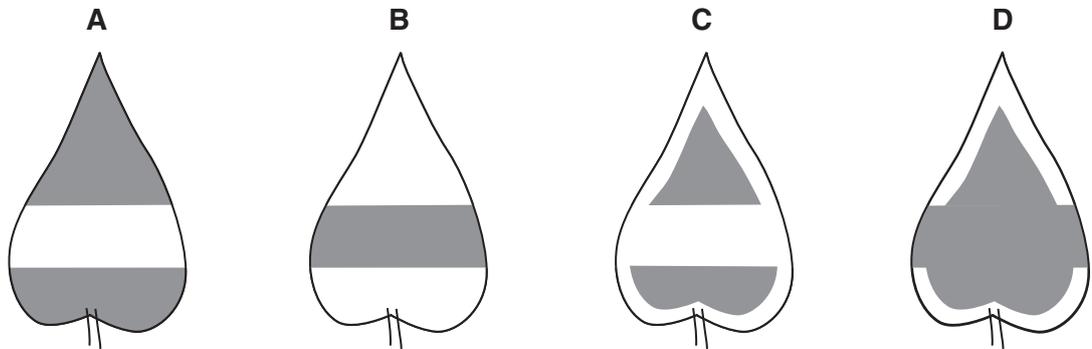
What are the colours of Q and R, when the leaf is tested for starch, using iodine solution?

	Q	R
A	blue/black	brown
B	brown	brown
C	blue/black	blue/black
D	brown	blue/black

29 A variegated plant is destarched. One leaf is then partly covered with a black paper strip on both sides and exposed to light for several hours.



The leaf is then tested for starch. What is the result?



Key

 starch present