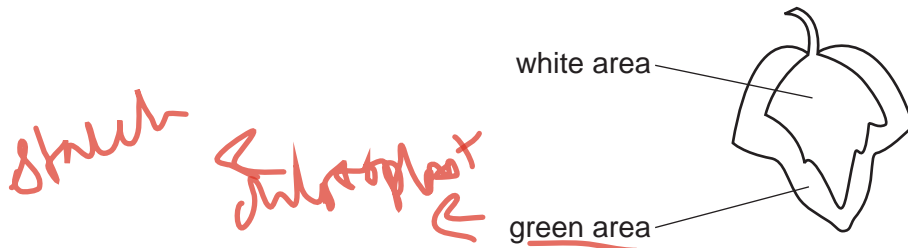
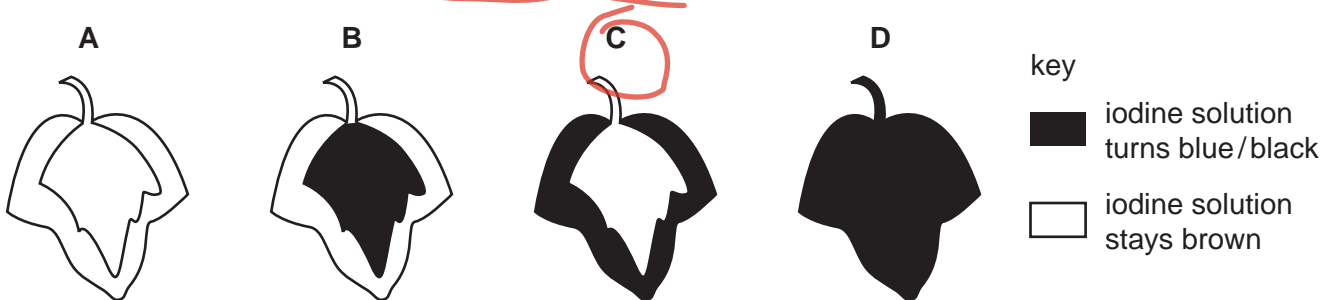


1 In a photosynthesis experiment, a plant is left in bright sunlight for several hours. A leaf is then removed from the plant and tested for starch, using iodine solution.

The diagram shows the leaf from the plant that was used in the experiment.



Which diagram shows the result of the experiment?



2 Which substance, needed for protein synthesis, is carried into a leaf from the stem?

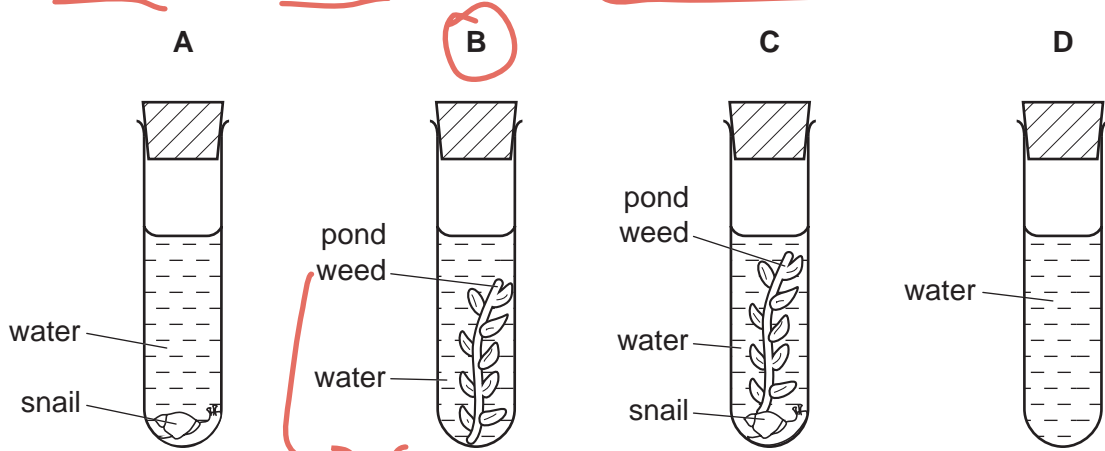
- A carbon dioxide
- B nitrate**
- C oxygen
- D starch

3 Which two substances are the products of photosynthesis?

- A carbon dioxide and glucose
- B carbon dioxide and water
- C oxygen and carbon dioxide
- D oxygen and glucose**

4 Four test-tubes are set up as shown in the diagram and left in full sunlight.

After several hours, which test-tube contains the most dissolved oxygen?



Glucose + O₂ (no snail)

5 Plants manufacture their own supplies of carbohydrate.

What are the raw materials and the waste product of this process?

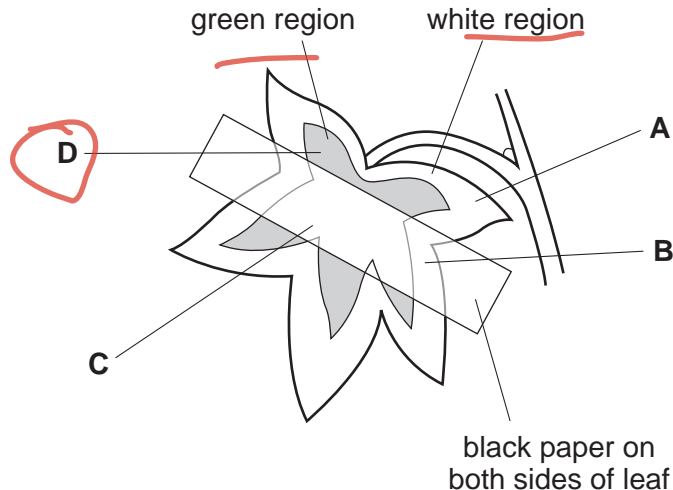
	raw materials	waste product
A	carbon dioxide and chlorophyll	oxygen
B	<u>carbon dioxide and water</u>	<u>oxygen</u>
C	oxygen and chlorophyll	carbon dioxide
D	oxygen and water	carbon dioxide

plant with more than 1 colour

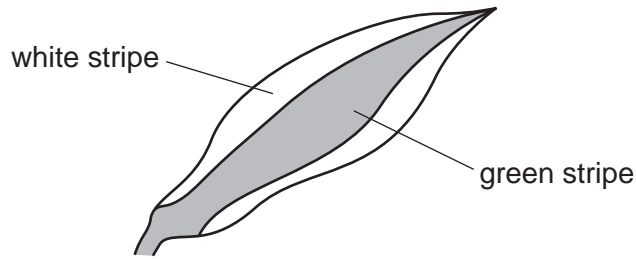
6 A plant with variegated leaves has the starch removed from its leaves by placing it in a dark cupboard for 48 hours.

Black paper is then fixed on one leaf as shown and the plant is exposed to light.

After 24 hours, which part of the leaf contains starch?

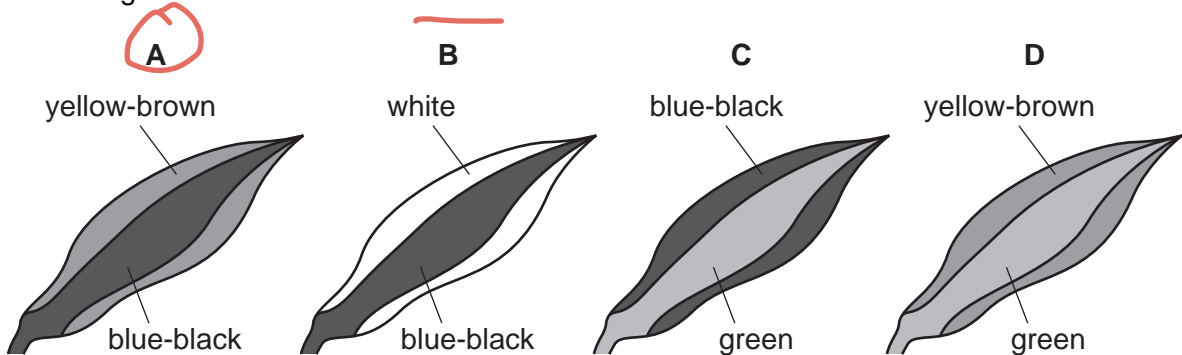


7 A plant with striped leaves similar to the one below was kept in bright light for six hours.

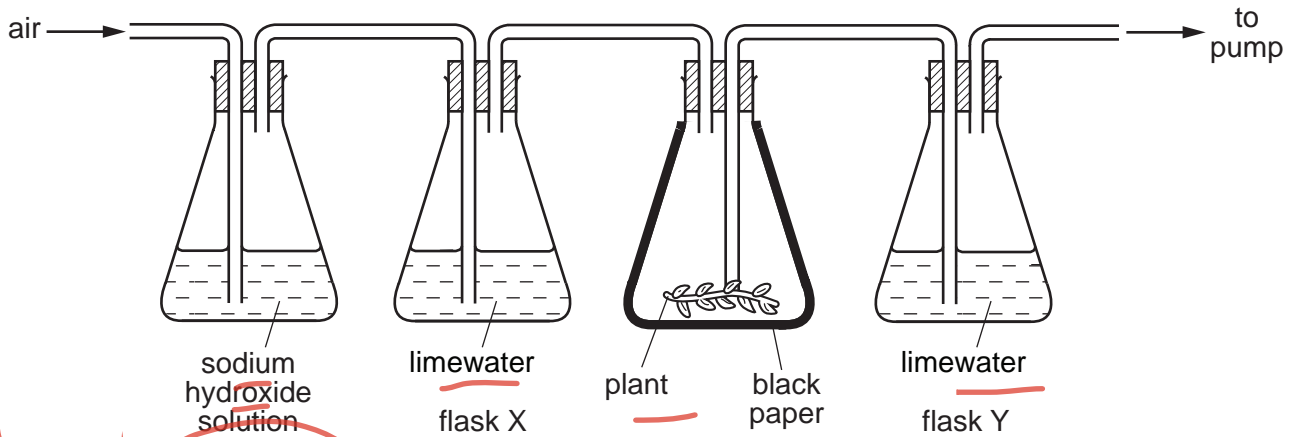


A leaf was taken from the plant and the chlorophyll removed. It was then tested for starch using iodine solution.

Which diagram shows the result of the test?



8 Apparatus was set up as shown.



Sodium hydroxide removes carbon dioxide from the air. Limewater goes cloudy if carbon dioxide is bubbled through it.

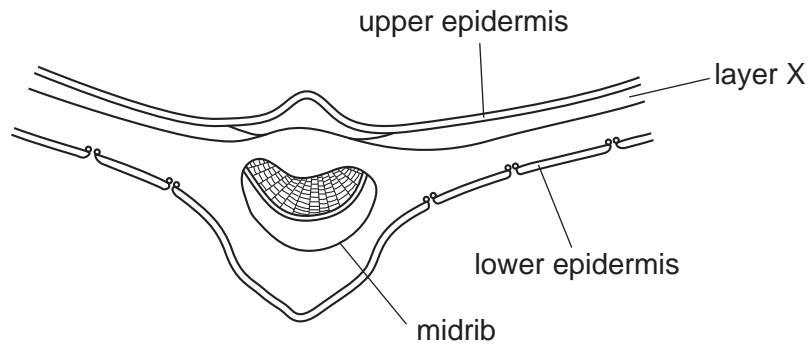
What happens to the limewater in flasks X and Y when the pump is switched on?

	flask X	flask Y
A	goes cloudy	goes cloudy
B	goes cloudy	stays clear
C	stays clear	goes cloudy
D	stays clear	stays clear

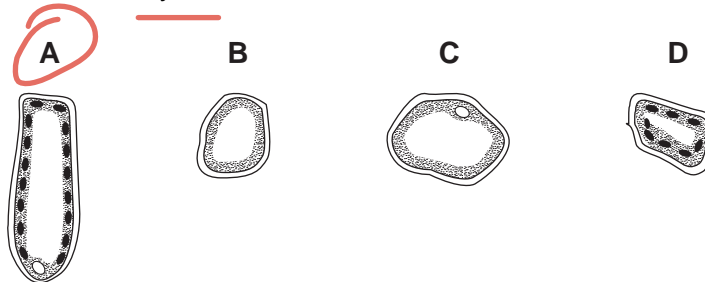
NaOH removed from

→ due to plant respiration

9 The diagram shows a cross-section of part of a leaf.



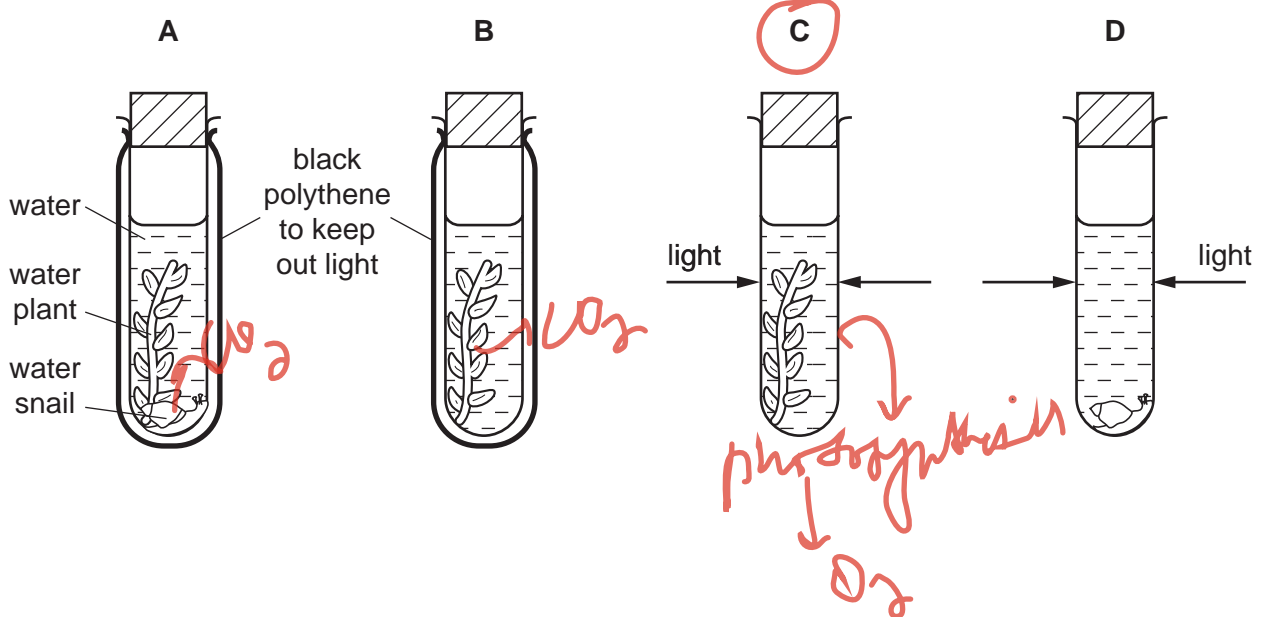
Which type of cell is found in layer X?



10 An experiment was done using the apparatus shown in the diagram.

The carbon dioxide content of the water in each tube was measured at the start and again three hours later.

In which tube would there be a decrease in carbon dioxide content?

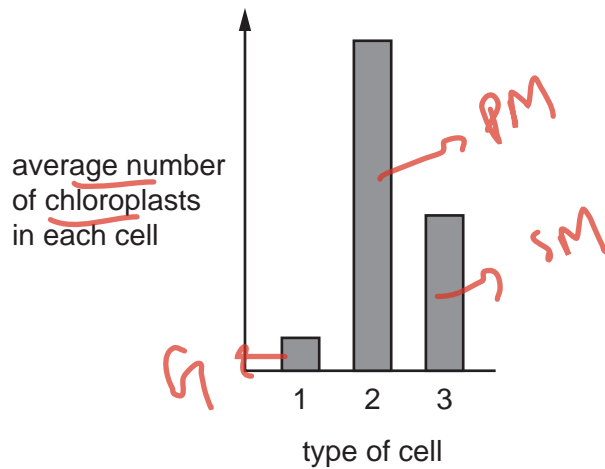


- 11 What is formed first in a leaf as a result of photosynthesis?
- A chlorophyll
 - B glucose**
 - C starch
 - D water
- 12 From which part of a leaf does most water evaporate during transpiration?
- A the cuticle
 - B the guard cells
 - C the spongy mesophyll cells**
 - D the xylem vessels
- 13 Which substances are transported in the phloem?
- A amino acids and starch
 - B amino acids and sucrose**
 - C protein and starch
 - D starch and sucrose
- 14 Which product of photosynthesis moves out of a green leaf through its stomata?
- A carbon dioxide
 - B glucose
 - C oxygen**
 - D water
- 15 What is carried by the xylem?
- A chlorophyll
 - B mineral ions + H₂O**
 - C starch
 - D sugars
- 16 Which two substances are needed for photosynthesis?
- A carbon dioxide and glucose
 - B carbon dioxide and water**
 - C oxygen and glucose
 - D oxygen and water

17 Which process does **not** release water?

- A excretion → *urine → H₂O*
- B** photosynthesis
- C respiration → *H₂O*
- D transpiration → *H₂O*

18 The bar chart shows the average number of chloroplasts in each of three different types of leaf cell.

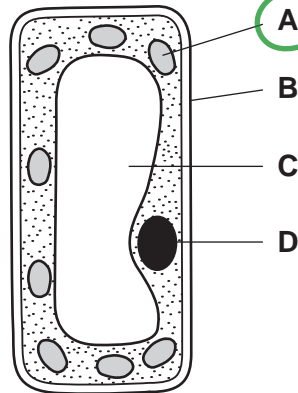


What are the three types of cell?

	1	2	3
A	<u>guard cell</u>	<u>palisade mesophyll cell</u>	spongy mesophyll cell
B	palisade mesophyll cell	spongy mesophyll cell	guard cell
C	spongy mesophyll cell	guard cell	palisade mesophyll cell
D	spongy mesophyll cell	palisade mesophyll cell	guard cell

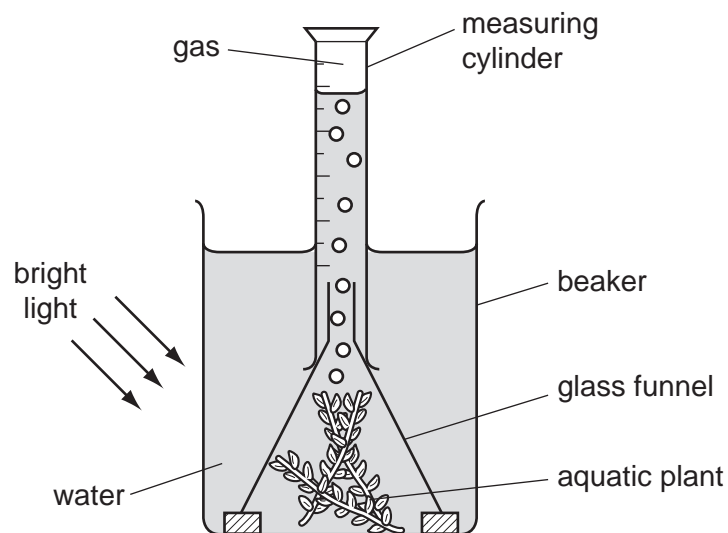
19 The diagram shows a palisade cell.

In which region is starch stored?



chloroplast

20 The diagram shows the apparatus used in an investigation to measure the rate of oxygen production during photosynthesis.



The investigation was repeated several times and the average amount of gas collected was calculated.

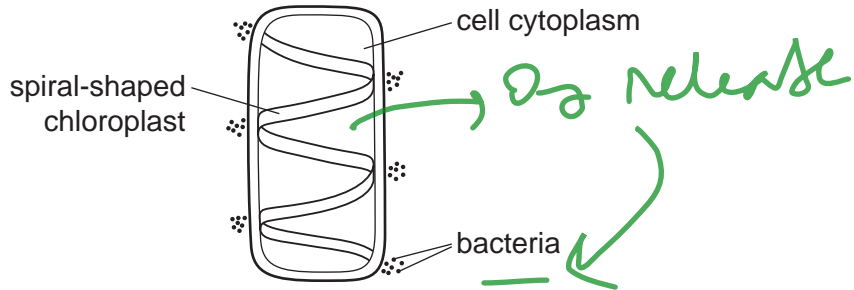
Which **two** factors must be kept constant during this investigation?

- A the amount of water in the beaker and the height of the measuring cylinder
- B the size of aquatic plant and the amount of gas in the measuring cylinder
- C the size of aquatic plant and the duration of exposure to light
- D the size of the beaker and the funnel

21 Which form of energy is stored within glucose molecules made during photosynthesis?

- A chemical
- B heat
- C light
- D mechanical

22 The diagram shows a cell with groups of bacteria around its edge.

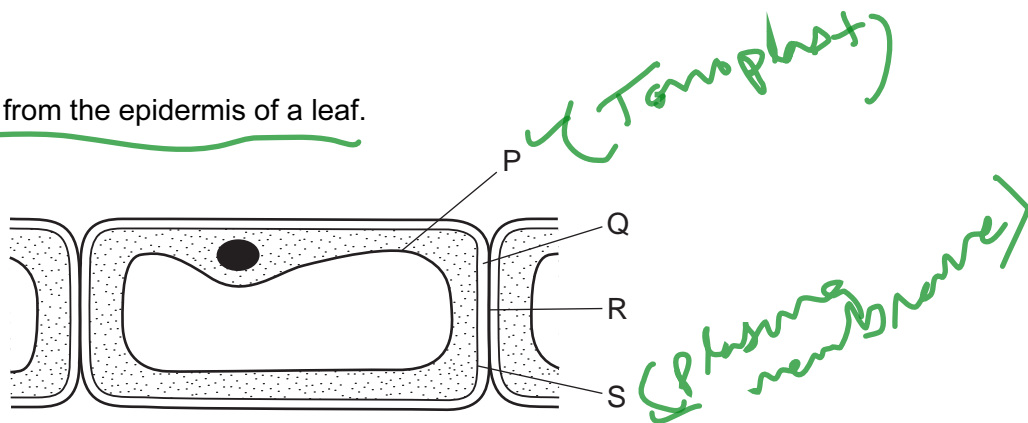


The bacteria move to areas of high oxygen concentration.

Which process in the cell causes the bacteria to form these groups?

- A digestion
- B photosynthesis
- C reproduction
- D respiration

23 The diagram shows cells from the epidermis of a leaf.



Which parts are partially permeable?

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

24 The roots of plants take up nitrates from the soil.

What are the nitrates used to make?

- A fat
- B glucose
- C protein
- D starch

25 Which process does not release carbon dioxide to the atmosphere?

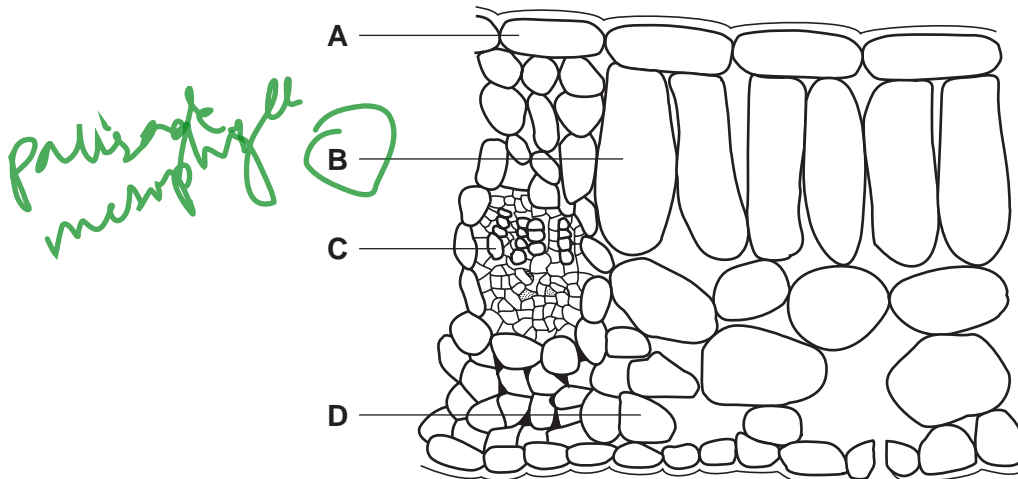
- A decomposition of animals
- B photosynthesis of plants (fix CO_2)
- C respiration of animals
- D respiration of plants

26 What does photosynthesis form in a leaf first?

- A cellulose
- B protein
- C starch
- D sugar

27 The diagram shows a section through a leaf.

Which cell type absorbs the most carbon dioxide during the day?



28 Which element is found in a molecule of chlorophyll?

A calcium

B iron

C lead

D magnesium

29 Which substances do root hairs take from the soil?

A water and carbon dioxide

B water and mineral ions

C carbon dioxide and oxygen and mineral ions

D carbon dioxide and oxygen and water

30 Which cell type contains the **most** chloroplasts?

A palisade mesophyll

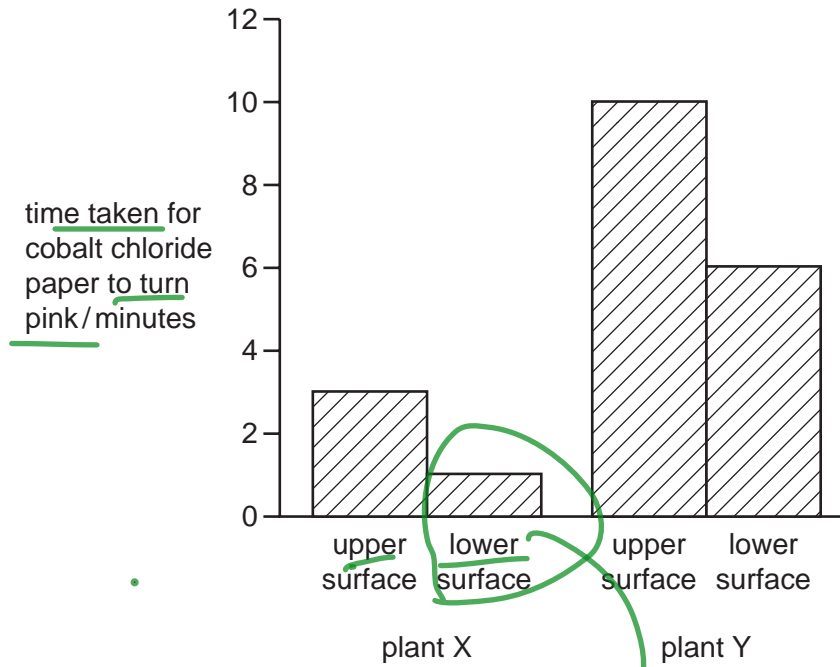
B phloem

C spongy mesophyll

D xylem

31 Cobalt chloride paper is blue when dry but turns pink when wet. Some blue cobalt chloride paper was fastened to the upper and lower surfaces of a leaf on a plant X and a leaf on plant Y.

The diagram shows the results of the experiment.



Through which leaf surface was water lost most quickly?

- A plant X, upper surface
- B plant X, lower surface**
- C plant Y, upper surface
- D plant Y, lower surface

32 What does a plant make with the nitrates it absorbs?

- A carbohydrates
- B fats
- C mineral salts
- D proteins**