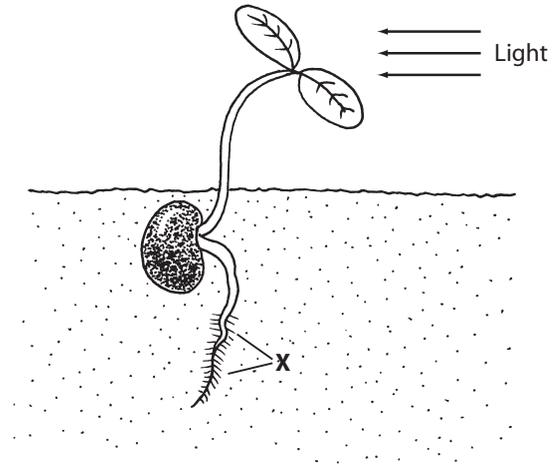


1 The drawing shows a seedling.

a Plant roots absorb water.

Tick the boxes by two other functions of roots.

- They absorb carbon dioxide from the air.
- They absorb glucose from soil.
- They make food for the plant.
- They absorb mineral salts from the soil.
- They hold the plant in the soil.
- They make seeds for new plants to grow.



[2 marks]

b Give the name of the parts marked **X** in the drawing. _____

[1 mark]

c Explain how the parts labelled **X** are adapted for absorbing water from the soil.

[1 mark]

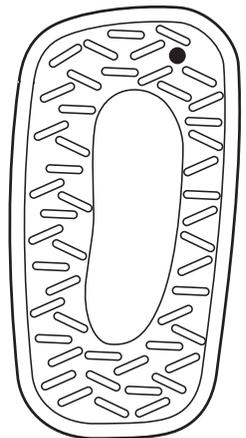
2 The diagram below shows a palisade cell.

a Give the name of the part of a palisade cell where photosynthesis takes place.

[1 mark]

b Palisade cells form a layer near the upper surface of a leaf. Explain how this allows the cells to function well.

[1 mark]

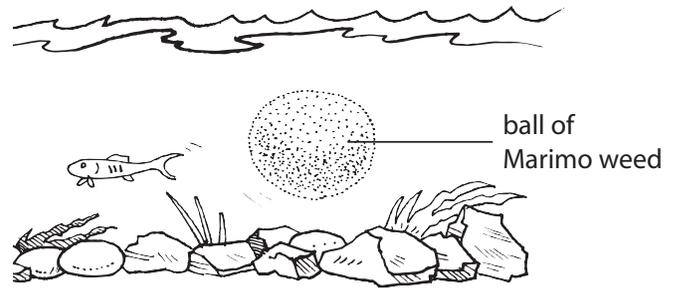


3 Complete the word equation for photosynthesis:

_____ + water \longrightarrow glucose + _____

[1 mark]

- 4 The drawing below shows a plant called Marimo weed. This organism consists of a balls of cells. The gas produced during photosynthesis collects during the day and the ball of cells floats higher in the water.



Explain why the ball of cells floats higher on a sunny day than on a dull day.

H S W

[2 marks]

- 5 Farmers spray herbicides on to crops to kill weeds.

a Why does killing weeds help crops to grow well?

[1 mark]

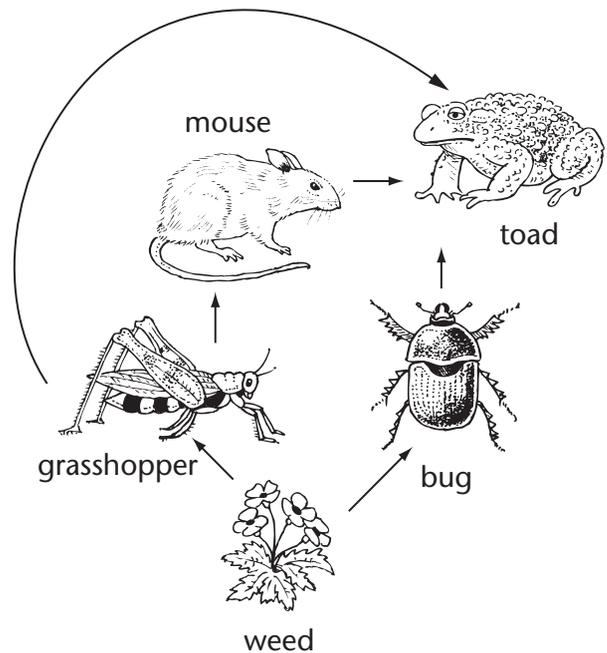
b Look at the food web.

- i What will happen to the number of herbivores if herbicides are used?

[1 mark]

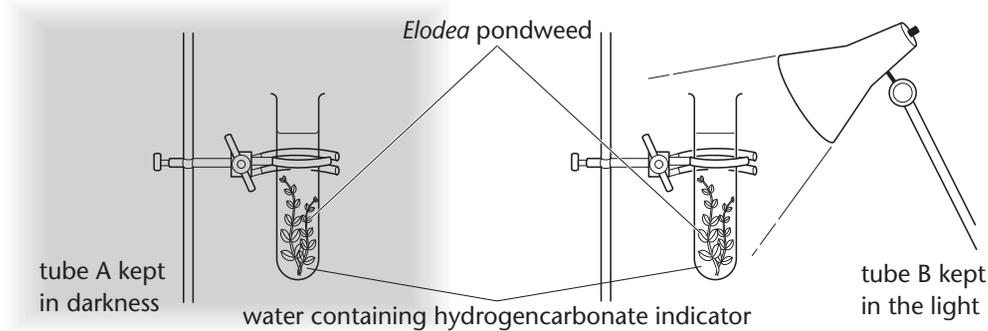
- ii Explain why this would happen.

[1 mark]



- 6 Hydrogencarbonate indicator can be used to detect changes in the concentration of carbon dioxide in a solution. H S W

It is red in distilled water. It becomes purple if the water loses carbon dioxide. It becomes yellow if the water gains more carbon dioxide. This experiment was set up and left for two days.



- a The concentration of carbon dioxide increases in tube A during the two days. What colour would you expect the indicator to be in tube A after two days? _____

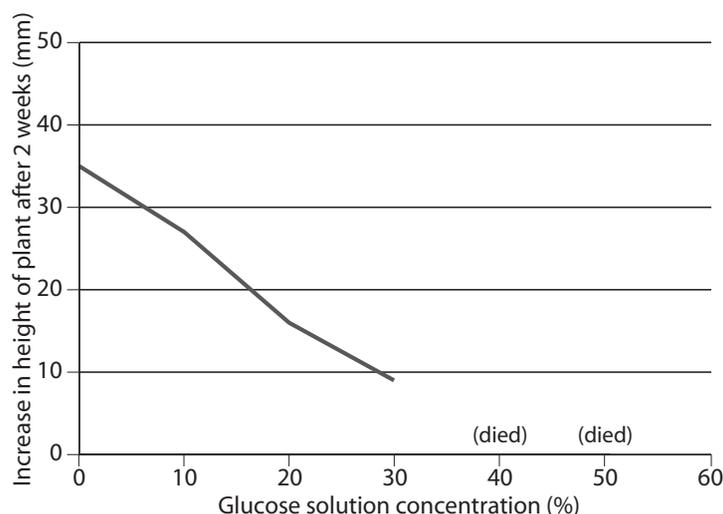
[1 mark]

- b Explain why carbon dioxide levels increase in tube A.

[2 marks]

- 7 Gareth knew that plants use a sugar called glucose to release energy. So he decided to see if watering plants with a glucose solution would help them to grow. He selected six plants and watered each with a different strength of glucose solution. The graph shows his results.

Graph to show the effect of glucose solution on the growth of plants.



a What relationship is shown in the graph?

H S W

[1 mark]

b Gareth's data is not very reliable. Explain why not.

H S W

[1 mark]

c Complete the word equation to show the process that releases energy in plants.

glucose + _____ → _____ + water

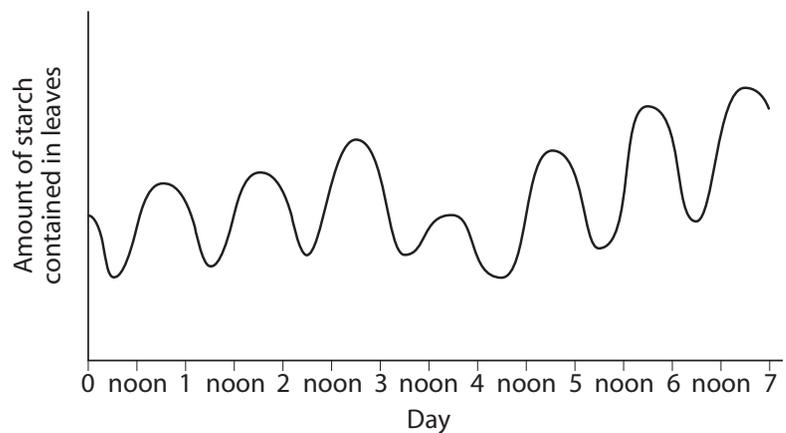
[1 mark]

d In which cells, in a plant, does this process occur?

[1 mark]

8 In plant leaves, glucose molecules can be built up into starch and stored. The starch can be broken into glucose again when it is needed in different parts of a plant.

The graph shows how the amount of starch in a leaf changes over one week.



a Explain why the amount of starch in the leaves increases and then decreases, every 24 hours.

[2 marks]

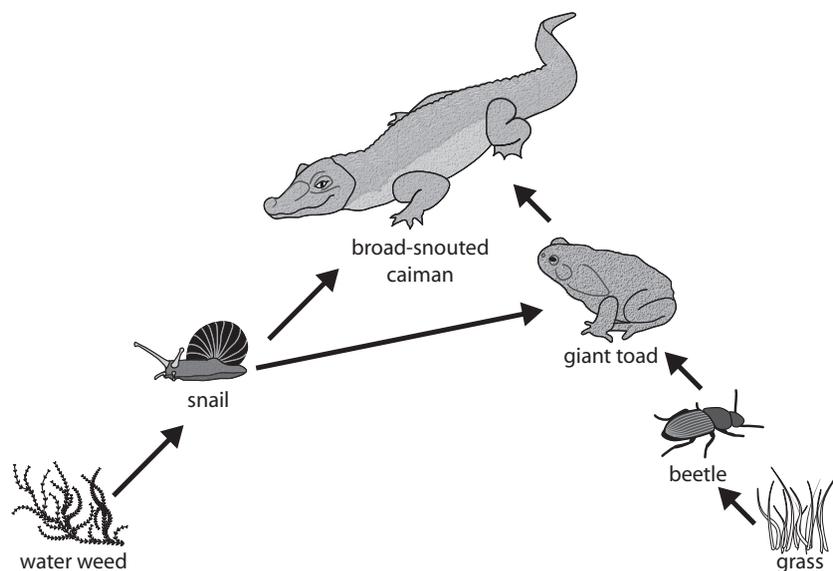
- b** Glucose can be used to make proteins. Which other substance is needed to make all proteins? Tick the correct box.

- potassium salts phosphates
 calcium salts nitrates

[1 mark]

- 9** In Australia, the cane beetle is a pest of sugar cane plants. It feeds on the leaves and reduces the crop of sugar cane. There are no natural predators of cane beetles in Australia.

Look at the South American food web below.



- a** In 1935, Australian farmers imported a biological control agent from South America. Suggest which organism in the food web they chose.

[1 mark]

- b** There are no broad-snouted caimans in Australia. Suggest one problem that using the organism you suggested in part **a** might have caused.

H S W

Explain your answer.

[2 marks]