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Mary Jones , Diane Fellowes-Freeman , Michael Smyth
Excerpt
More Information

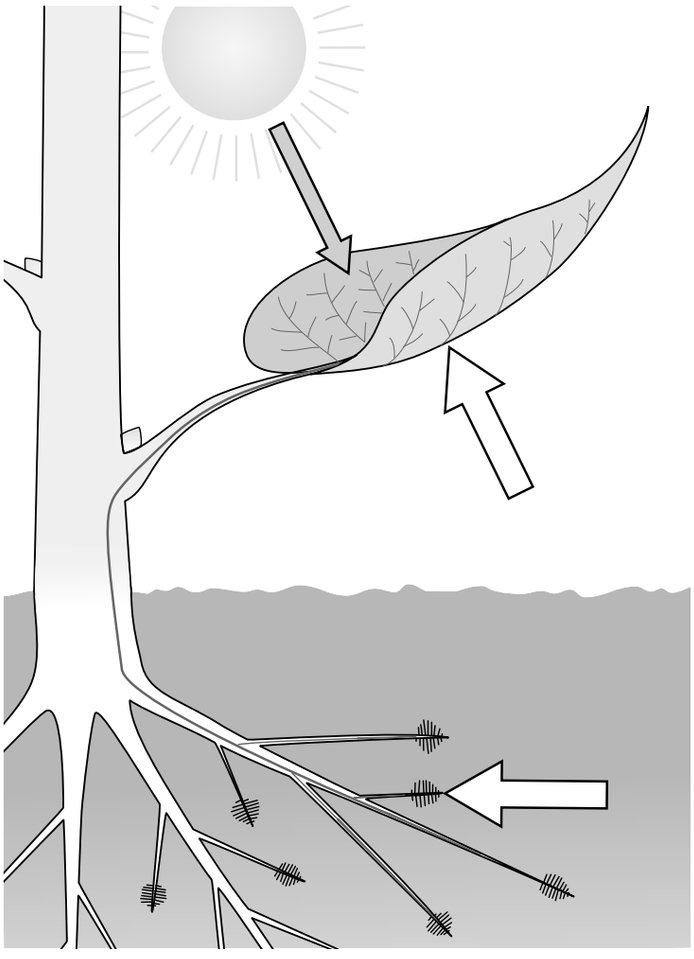
Unit 1 Plants

1.1 Photosynthesis

This exercise relates to **1.2 Leaves** from the Coursebook.

In this exercise, you think about what plants need, and what they make, when they photosynthesise.

The diagram shows a plant.



1 On the diagram, draw a label line to the part of the plant where photosynthesis happens.

Colour this part green.

Label this part with its name.

Remember

Draw your label line with a ruler.

The label line can be at any angle, but the writing should be horizontal.

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2 What do plants need for photosynthesis?
Tick **three** boxes.

- biomass ☐
- carbon dioxide ☐
- energy from light ☐
- oxygen ☐
- water ☐

3 What do plants make in photosynthesis?
Tick **two** boxes.

- biomass ☐
- carbon dioxide ☐
- energy from light ☐
- oxygen ☐
- water ☐

4 Decide which arrow on the diagram shows how water enters the plant.

Colour this arrow blue.

Label the arrow.

5 Decide which arrow on the diagram shows how carbon dioxide enters the plant.

Colour this arrow brown.

Label the arrow.

6 Complete this sentence, using your own words.

Photosynthesis is .....

.....

.....

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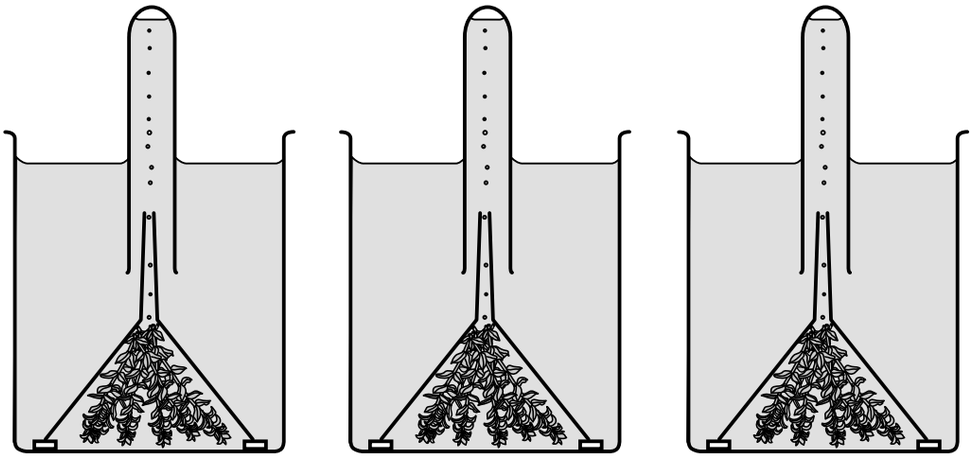
1.2 How light level affects photosynthesis

This exercise relates to **1.3 Investigating photosynthesis** from the Coursebook.

In this exercise, you decide which variables to control in an experiment. You put results into a table and make a conclusion.

Amal does an experiment to investigate whether plants photosynthesise faster when they have more light.

The diagram shows the apparatus he uses.



Apparatus **A** Apparatus **B** Apparatus **C**

Amal puts Apparatus **A** next to a window.

He puts Apparatus **B** in a shady corner of the same room.

He puts Apparatus **C** in a dark cupboard.

1 What should Amal keep the same for all three sets of apparatus?
Tick **three** boxes.

- the amount of light ☐
- the type of plant ☐
- the mass of the plant ☐
- the number of bubbles ☐
- the temperature ☐

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Amal leaves his three sets of apparatus for two days. Then he measures the volume of gas collected in each test tube.

This is what he writes down.

A $18.3\,cm^3$

B $7.2\,cm^3$

C $0.5\,cm^3$

2 Complete Amal's results table.

Apparatus	Amount of light	
A		
B		
C		

3 What **conclusion** can Amal make from his results?
Tick **one** box.

Plants need chlorophyll for photosynthesis. ☐

Plants that live in water photosynthesise more slowly than plants that live on land. ☐

Plants photosynthesise faster when they have more light. ☐

Plants use water for photosynthesis. ☐

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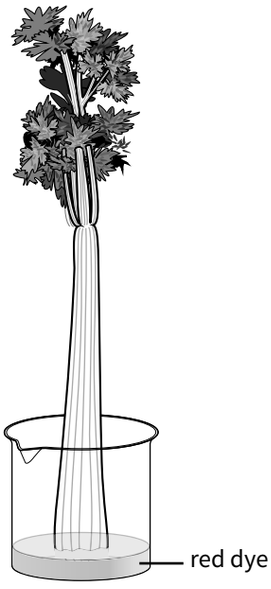
1.3 Water movement and temperature

This exercise relates to **1.5 Transporting water and minerals** from the Coursebook.

In this exercise, you use a set of results to construct a line graph. You use your graph to make a conclusion.

Anna is investigating the rate of water movement up a celery stalk. She wants to find out how the temperature of the water affects this.



She takes eight celery stalks.

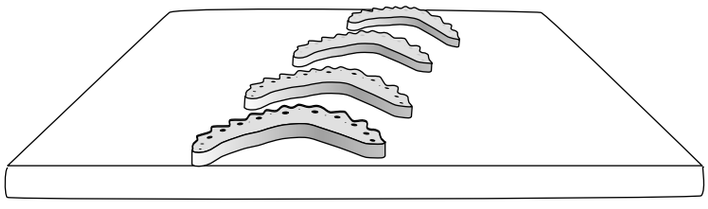
She stands each stalk in a beaker containing a red dye.

She puts each beaker into a water bath. Each water bath is kept at a different temperature.

After ten minutes, she takes out all of the celery stalks.

She cuts each stalk across, every 0.5 cm along.

She looks for the red dye in the slices of the stalk.



Anna records how far the dye has travelled up each stalk. She writes her results in a table.

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Anna's results table:

Temperature in °C	Distance the dye travels in cm
0	1.0
10	1.9
20	3.1
30	4.0
40	4.8
50	3.2
60	7.0
70	8.1

1 Which one of Anna's results does not fit the pattern?

Draw a circle around it in the table.

2 Use Anna's results to construct a line graph on the grid on the next page.

Put **temperature in °C** on the *x*-axis.

Put **distance the dye travels in cm** on the *y*-axis.

Draw a **line of best fit**.

3 What **conclusion** can Anna make from her experiment?
Tick **one** box.

Plants need more water when the temperature is higher. ☐

As temperature increases, the rate of transport of water in celery stalks increases. ☐

Celery leaves use water for photosynthesis. ☐

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Remember

Make sure that your scale goes up in equal steps.

Plot each point with a small, neat cross.

When you draw the line of best fit, ignore the result that you drew a circle around in the table.