

Respiration and photosynthesis

Task 1

Aerobic respiration

1 Use these key words to fill in the grey boxes and complete the word equation for aerobic respiration.

carbon dioxide	water	oxygen	glucose	(energy)
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reactants			→	products			
	+			+		+	
Clue: you get this from food		Clue: you inhale this gas		Clue: you exhale this waste gas			

2 Use the information in the word equation, together with the clues, to write a description of what happens during aerobic respiration.

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3 State where, in the cell, respiration takes place.

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Task 2

Anaerobic respiration

1 Write a word equation for anaerobic respiration in animals.

Hints: Anaerobic respiration happens when there is no oxygen available. Lactic acid is a waste product of anaerobic respiration.

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2 Describe one situation when animals would use anaerobic respiration.

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3 State two reasons why animals normally respire aerobically.

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4 Complete the word equation to describe what happens when plants and microorganisms respire anaerobically. This is known as fermentation.

glucose → + (+ energy)

5 Describe a situation where a plant may have to switch to respiring anaerobically.

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Task 3

Photosynthesis

1 Use these key words to fill in the grey boxes and complete the word equation for photosynthesis.

oxygen	water	carbon dioxide	glucose	light
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reactants			products	
	+	→		+
Clue: enters leaf through stomata			Clue: molecule the plant needs for energy	Clue: gas released into the atmosphere

2 Use the information in the word equation, together with the clues, to write a description of what happens during aerobic photosynthesis.

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3 State where, in the cell, photosynthesis takes place.

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4 Plants and algae are producers. They make their own food by photosynthesis. Explain why all organisms are dependent on photosynthesis to survive.

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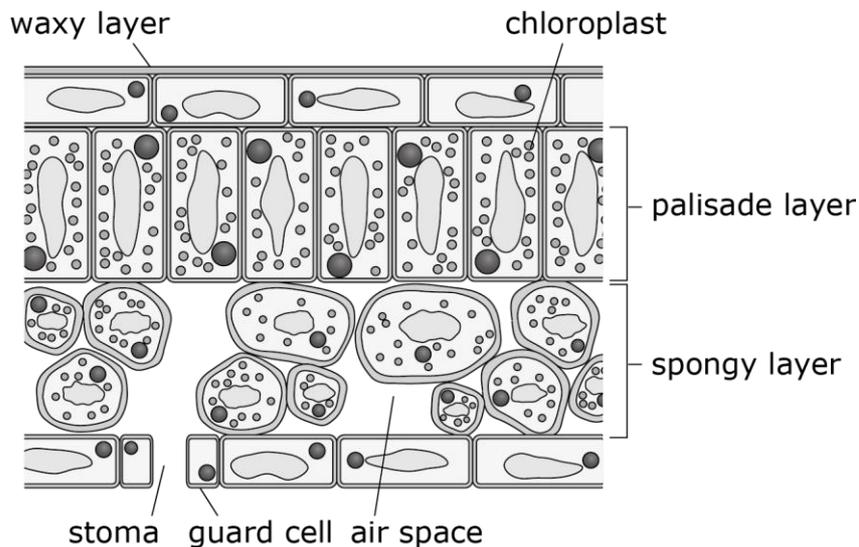
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Task 4

Leaves

1 Look at this diagram of a plant leaf.



The structure of each part can give you a clue about its function. Complete the structure column of this table, by choosing the correct label from the diagram.

Function	Structure
contains cells packed with chloroplasts; where most photosynthesis occurs	
contains air spaces, allowing carbon dioxide to diffuse throughout the leaf; oxygen diffuses out of the leaf	
carbon dioxide diffuses in; oxygen and water vapour diffuse out	
open the stomata through the day and close the stomata at night	

2 Draw lines to match the resource needed for photosynthesis with how it enters the plant.

Resource
light energy
carbon dioxide
water

How it enters plant
enters through stomata
absorbed from soil by roots
absorbed by chlorophyll in chloroplasts

3 State and explain how roots are adapted to their function.

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4 State and explain two ways leaves are adapted to their function.

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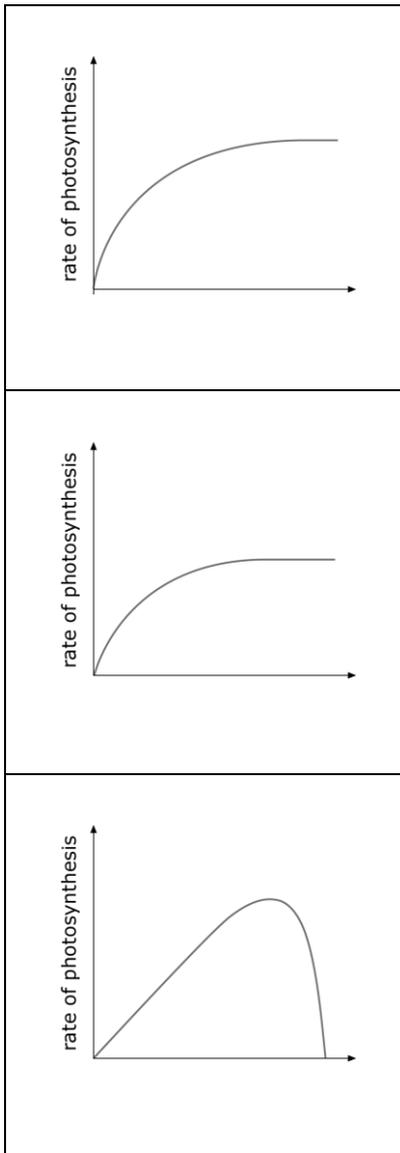
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Task 5

Factors that affect the rate of photosynthesis

- 1 These three graphs each show how a different factor affects the rate of photosynthesis.
 - a Label each x-axis, depending on which effect is shown in the graph. Choose from *carbon dioxide concentration (%)*, *temperature (°C)*, and *light intensity*.
 - b Describe the trend shown in each graph.



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- 2 Explain why, if the temperature gets too high, photosynthesis stops.

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