

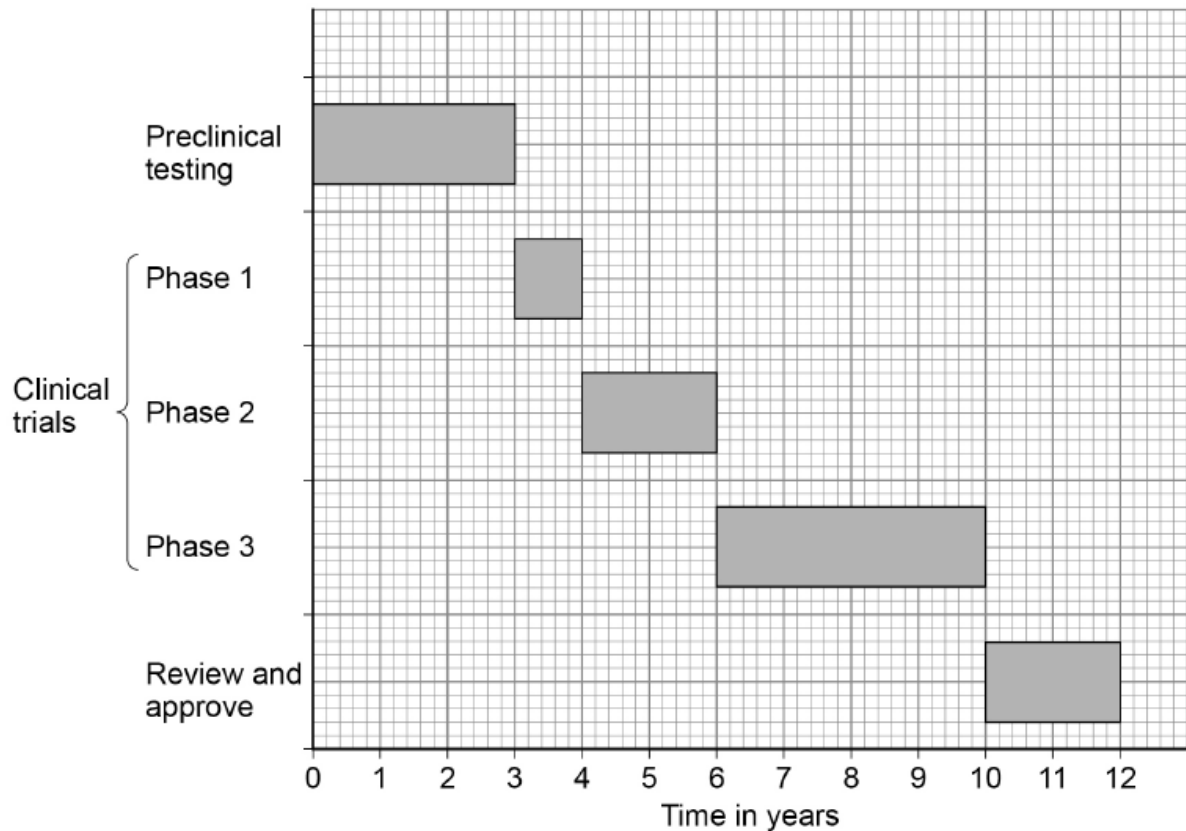
Communicable diseases – GCSE Combine Science Biology

1. No.2

0 2

New drugs are tested before they can be licensed for use with patients.

Figure 2 shows how much time the different stages of testing took for one new drug.

Figure 2

0 2 . 1

Preclinical testing is done in a laboratory.

What is the drug tested on in a laboratory?

Give one example.

[1 mark]

0 2 . 2 How many years did the clinical trials take for the drug in **Figure 2**?

[1 mark]

Time for clinical trials = _____ years

0 2 . 3 During Phase 1 clinical trials, the drug is tested on **healthy** volunteers using **low** doses.

What is the main purpose of Phase 1 testing?

[1 mark]

Tick (✓) **one** box.

To find the best dose to use.

☐

To see if the drug is safe to use.

☐

To see if the drug works.

☐

During clinical trials, half of the patients are given a placebo in a double blind trial.

0 2 . 4 What is a placebo?

[1 mark]

0 2 . 5

Who knows which patients are given the placebo and which patients are given the drug in a double blind trial?

[1 mark]

Tick (✓) **one** box.

Not the patients or the doctors

☐

The patients and the doctors

☐

The patients but not the doctors

☐

Paracetamol and ibuprofen are two medicines used to reduce a high body temperature.

Doctors investigated which medicine was more effective at reducing high body temperature in 200 children who were ill.

The children were put into two groups, which were matched for:

- age
- gender
- body mass.

Each group had 100 children.

This is the method used.

1. Measure the body temperature of each child before any medicine is given.
2. Give children in Group 1 paracetamol.
3. Give children in Group 2 ibuprofen.
4. Measure the body temperature of each child every hour after the medicine is given.

0 2 . 6

Give **two** control variables in this investigation.**[2 marks]**

1 _____

2 _____

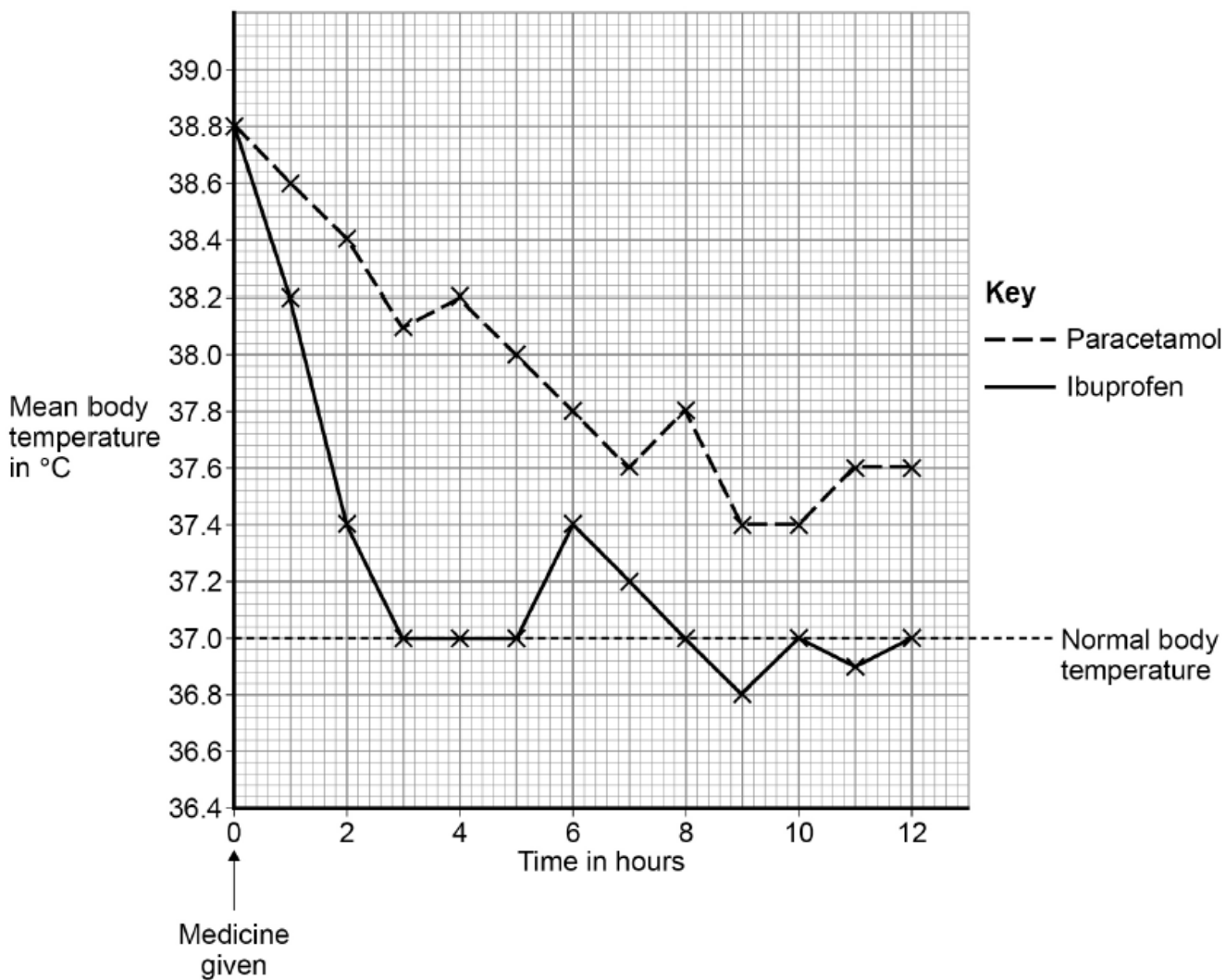
0 2 . 7

None of the children was given a placebo.

Suggest **one** reason why.**[1 mark]**

Figure 3 shows the results.

Figure 3



0 2 . 8

What was the mean body temperature after 6 hours for the children given ibuprofen?

[1 mark]

Mean body temperature = _____ °C

0	2	.	9
---	---	---	---

The doctors concluded that children with a high body temperature should be given ibuprofen and not paracetamol.

Give **two** reasons for the doctors' conclusion.

Use **Figure 3**.

[2 marks]

1 _____

2 _____

2. No.4

0	4
---	---

 Pathogens cause infectious diseases.

0	4	.	1
---	---	---	---

 Draw **one** line from each disease to the type of pathogen that causes the disease. **[2 marks]**

Disease	Type of pathogen
	Bacterium
Gonorrhoea	Fungus
Measles	Protist
	Virus

The body defends itself against pathogens in different ways.

0	4	.	2
---	---	---	---

 Give **two** ways that the body prevents pathogens entering the body. **[2 marks]**

- 1 _____
- _____
- 2 _____
- _____

If pathogens do enter the body the immune system tries to destroy the pathogens.

[6 marks]

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

0 4 . 4 Give **one** reason why antibiotics cannot be used to treat HIV infections.

[1 mark]

0 4 . 5 Give **two** ways to prevent the spread of HIV.

[2 marks]

1

2

0 4 . 6 Some people with a HIV infection develop AIDS.

Some people with AIDS may die from a different type of infection, such as a chest infection.

Why do people with AIDS die from a different type of infection?

[1 mark]

Tick (✓) **one** box.

HIV damages the immune system.

☐

Pathogens enter the body more easily.

☐

People with AIDS are immune to HIV.

☐

3. No.4

0 4

Water is lost from the leaves of a plant through stomata.

0 4 . 1

What is the process by which water is lost from the leaves of a plant?

[1 mark]

Tick (✓) **one** box.

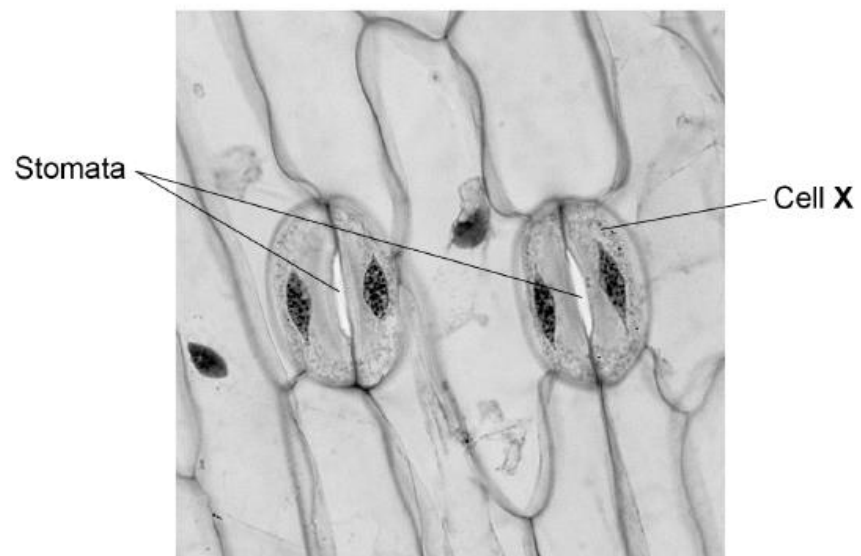
Osmosis

☐

Photosynthesis

☐

Transpiration

☐**Figure 7** shows stomata on the lower surface of a leaf.**Figure 7**

0 4 . 2 What is the name of cell X?

[1 mark]

Tick (✓) **one** box.

Epidermal cell

☐

Guard cell

☐

Palisade cell

☐

Xylem cell

☐

0 4 . 3 The length of cell X is 25 mm when viewed at a magnification of $\times 800$

Calculate the real length of cell X.

Give your answer in micrometres (μm).

1 mm = 1000 μm

Use the equation:

$$\text{real length of cell} = \frac{\text{size of image}}{\text{magnification}}$$

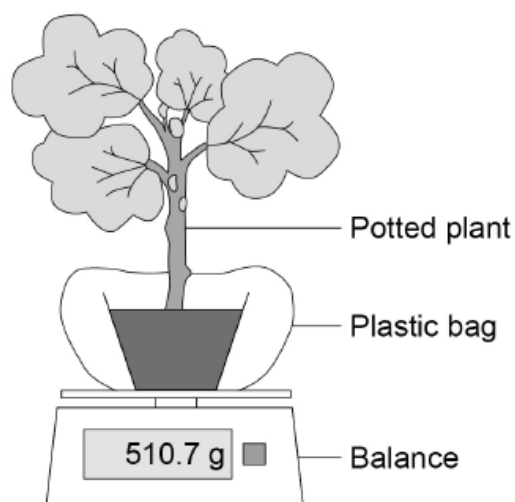
[3 marks]

Real length of cell X = _____ μm

A student measured the mass of water lost from some similar plants. The plants were at different temperatures.

Figure 8 shows the apparatus used.

Figure 8



This is the method used.

1. Seal a plastic bag around the pot of a potted plant.
2. Place the potted plant with the bag on a balance in a room at 20 °C
3. Record the mass.
4. After 3 hours record the mass again.
5. Calculate the mass of water lost from the plant.
6. Repeat steps 1–5 at 25 °C and at 30 °C with other similar plants.

0 4 . 4

What was the independent variable in this investigation?

[1 mark]

Tick (✓) **one** box.

Initial mass of the plant

☐

Length of time the plant was left

☐

Mass of water lost

☐

Temperature of the room

☐

04.5

Suggest why the student sealed a plastic bag around the pot.

[1 mark]

Table 1 shows the student's results.

Table 1

Temperature in °C	Mass at the start in g	Mass after 3 hours in g	Mass of water lost in 3 hours in g
20	510.7	508.6	2.1
25	510.4	507.1	3.3
30	X	506.3	4.9

0 4 . 6

What is the resolution of the balance used in this investigation?

[1 mark]

Tick **one** box.

0.1 g ☐

1.0 g ☐

100 g ☐

500 g ☐

0 4 . 7

Calculate value X in Table 1.

[1 mark]

X = _____ g

0 4 . 8

Give **one** conclusion that can be made from the results in Table 1.

[1 mark]

0 4 . 9

Give **two** factors that might affect the rate of water loss from the leaves.

Do **not** refer to temperature in your answer.

[2 marks]

1 _____

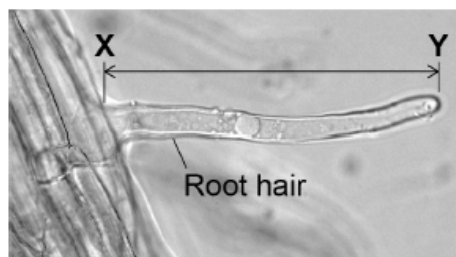
2 _____

4. No.5

0	5
---	---

Figure 8 shows a root hair viewed using a microscope.

Figure 8



0	5	.	1
---	---	---	---

The root hair was viewed at a magnification of $\times 50$

The image length of the root hair X–Y is 43 mm

Calculate the real length of the root hair in micrometres (μm).

[4 marks]

Real length = _____ μm

A microscope has a $\times 5$ eyepiece lens.

[4 marks]

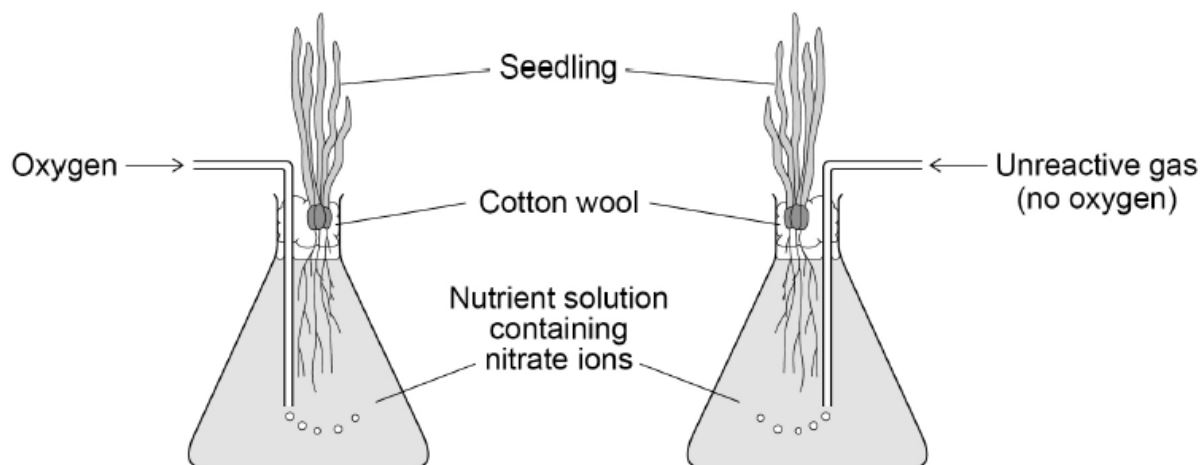
[illegible]

Root hair cells absorb water and mineral ions from the soil.

A scientist investigated the rate of nitrate ion uptake by two seedlings.

Figure 9 shows how the investigation was set up.

Figure 9



The scientist determined the mass of nitrate ions absorbed by each seedling every 30 minutes for 4 hours.

Table 5 shows the results.

Table 5

Time in hours	Total mass of nitrate ions absorbed by seedling in arbitrary units	
	With oxygen added	With no oxygen added
0	0	0
0.5	100	60
1.0	145	95
1.5	170	105
2.0	195	115
2.5	215	120
3.0	235	125
3.5	250	130
4.0	265	130

0 5 . 3

Describe the changes in the rate of absorption of nitrate ions for the seedling with **no** oxygen added.

Use information from **Table 5**.

[3 marks]

0 5 . 4

Explain what the results in **Table 5** show about how nitrate ions are absorbed.

[4 marks]

0 5 . 5

Nitrate ions are essential for plants to grow.

Describe how nitrate ions are used in a plant to help the plant grow.

[3 marks]
