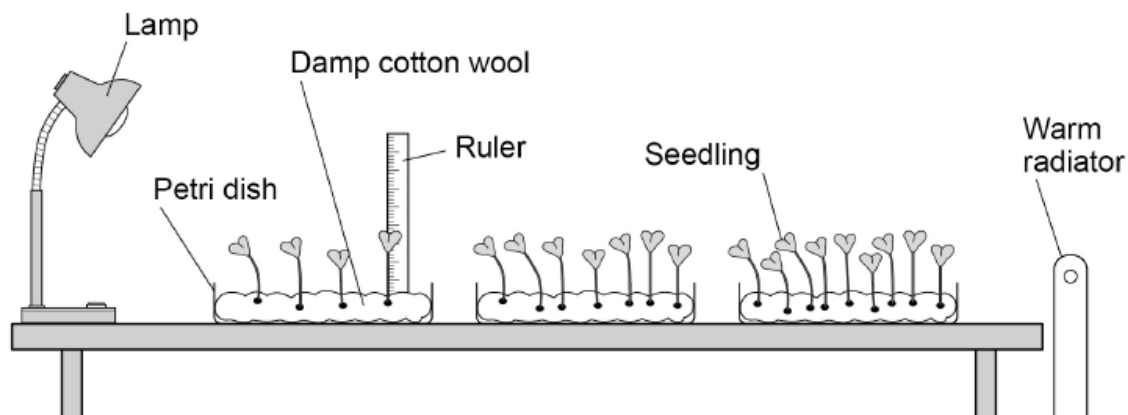


Plants hormones – GCSE Biology**1. No.2**

A student investigated the effect of light intensity on the growth of seedlings.

Figure 2 shows the equipment.

Figure 2

0	2	1
---	---	---

Which **two** improvements should the student make to the investigation?

[2 marks]

Tick (✓) **two** boxes.

Give more water to the seedlings nearest the lamp

☐

Leave some of the seedlings for a few more days

☐

Open a window to let more air in

☐

Put all the dishes the same distance from the radiator

☐

Use equal numbers of seedlings in each dish

☐

0 2 . 2 What is the dependent variable in the investigation?

[1 mark]

Tick (✓) **one** box.

The height of the seedlings

☐

The mass of cotton wool

☐

The temperature of the room

☐

0 2 . 3 In each dish the seedlings compete with each other.

Give **two** factors the seedlings compete for.

[2 marks]

1 _____

2 _____

Figure 3 shows a seedling growing towards a lamp.

Figure 3



0 2 . 4

What happened to the growth of the seedling on side **P** compared with the growth on side **Q**?

[1 mark]

Tick (✓) **one** box.

Side **P** has grown less than side **Q**

☐

Side **P** has grown more than side **Q**

☐

Side **P** has grown the same as side **Q**

☐

0 2 . 5 Plant responses are called tropisms.

Which tropism causes the seedling to grow towards light?

[1 mark]

Tick (✓) **one** box.

Geotropism

☐

Gravitropism

☐

Phototropism

☐

0 2 . 6 Which hormone causes the seedling to grow towards the light?

[1 mark]

Tick (✓) **one** box.

Auxin

☐

Insulin

☐

Testosterone

☐

2. No.3

This question is about plant hormones.

0 3 . 1 Farmers can spray seeds with gibberellins to start germination.

What are **two** other uses of gibberellins?

[2 marks]

Tick (✓) **two** boxes.

To help in tissue culture

☐

To help roots form

☐

To increase fruit size

☐

To kill weeds

☐

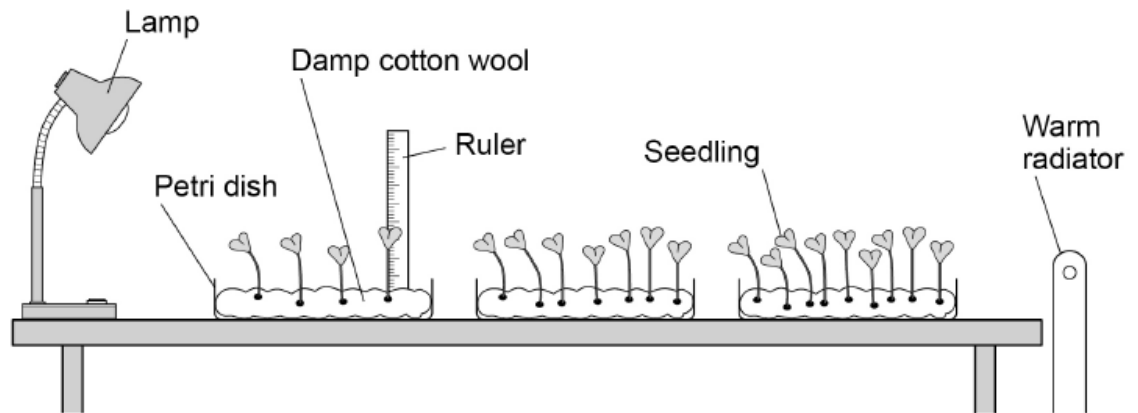
To promote flower production

☐

Students investigated the effect of light intensity on the height of seedlings.

Figure 3 shows the equipment.

Figure 3



0 3 . 2

Describe **two** improvements the students should make to their investigation.

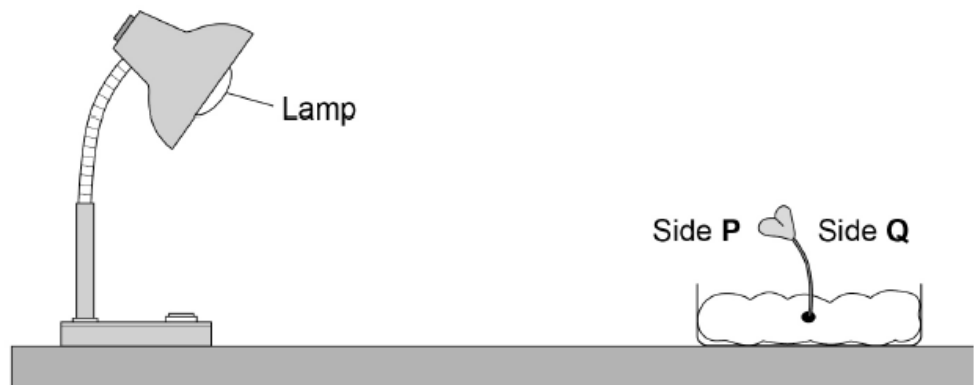
[2 marks]

- 1 _____

- 2 _____

Figure 4 shows a seedling growing towards a lamp.

Figure 4



0 3 . 3 Suggest how the students measured the length of the curved seedling in **Figure 4**.
[1 mark]

0 3 . 4

Explain what happened to the growth of the seedling on side **Q** compared with the growth on side **P**.

[3 marks]

0 3 . 5

Bananas are often stored separately from other fruits because bananas release a plant hormone.

Why does storing bananas with other fruits cause the other fruits to ripen faster?

[1 mark]

3. No.2

The shape of a person's earlobes is controlled by a gene.

Figure 3 shows two types of earlobe.

Figure 3



Free earlobe



Attached earlobe

A dominant allele codes for free earlobes.

0 2 . 1 What is a dominant allele?

[1 mark]

Tick (✓) **one** box.

An allele expressed even if a person only has one copy of the allele

☐

An allele expressed only if a person has two copies of the allele

☐

An allele expressed only if a person has no recessive allele

☐

An allele expressed only if it is inherited from the male parent

☐

0 2 . 2 A man with free earlobes and a woman with attached earlobes have children together.

Complete **Figure 4** to show the possible genotypes of the children.

Use the symbols:

E = allele for free earlobes

e = allele for attached earlobes

[2 marks]

Figure 4

		Woman	
		e	e
Man	E	Ee	
	e		

0 2 . 3 What is the probability that one of the children would have attached earlobes?

Use **Figure 4**.

[1 mark]

Tick (✓) **one** box.

0.125 ☐

0.25 ☐

0.5 ☐

0.75 ☐

0 2 . 4 Figure 5 shows the inheritance of the sex chromosomes, X and Y.

Complete Figure 5 to show the sex chromosomes in the gametes of the man and the woman.

[2 marks]

Figure 5

		Woman	
Man		XX	XX
		XY	XY

0 2 . 5 Calculate the probability that the man and the woman's next child will be a girl with attached earlobes.

[2 marks]

Use the equation:

probability of a girl with attached earlobes

= probability of attached earlobes $\times$ probability of being a girl

Probability of a girl with attached earlobes = _____

4. No.3

Phototropism is a growth response by part of a plant to light.

0 3 . 1 Name **one** other tropism.

Give the stimulus the plant responds to in the tropism you have named.

[2 marks]

Tropism _____

Stimulus _____

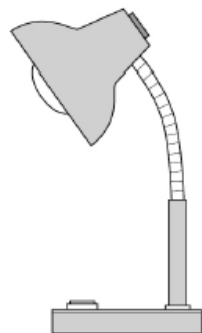
0 3 . 2 Plan an investigation to show the effect of light from one direction on the growth of plant seedlings.

Include details of any controls needed.

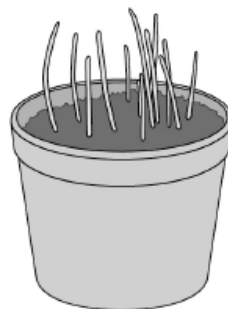
You may use some of the equipment shown in **Figure 4** and any other laboratory apparatus.

[6 marks]

Figure 4



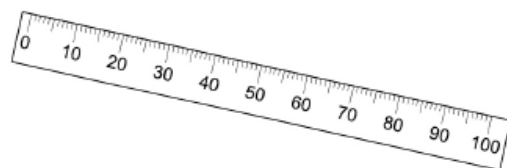
Lamp



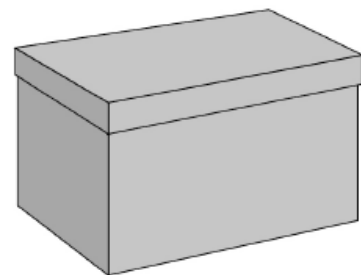
Several pots of seedlings



Scissors



Ruler



Cardboard boxes with lids

[illegible]

Explain how phototropism in a plant shoot helps the plant to survive.

[3 marks]
