

0 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

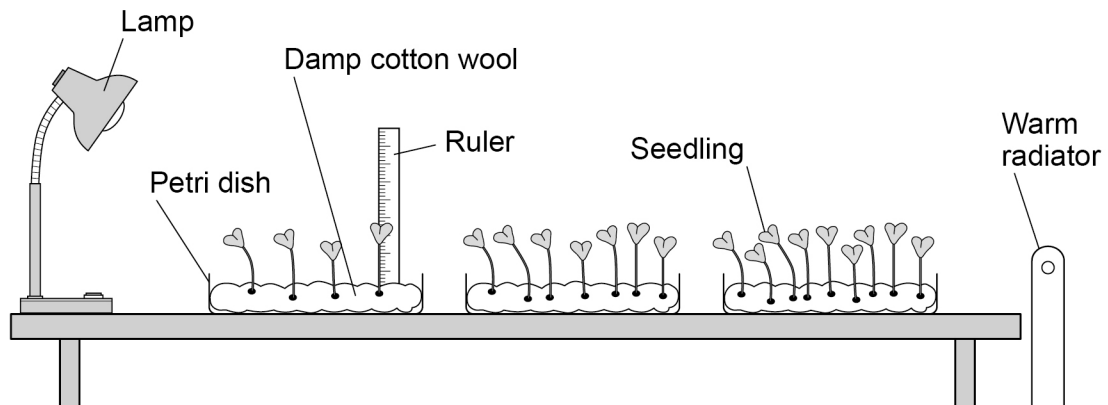
To promote flower production



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 _____
- _____

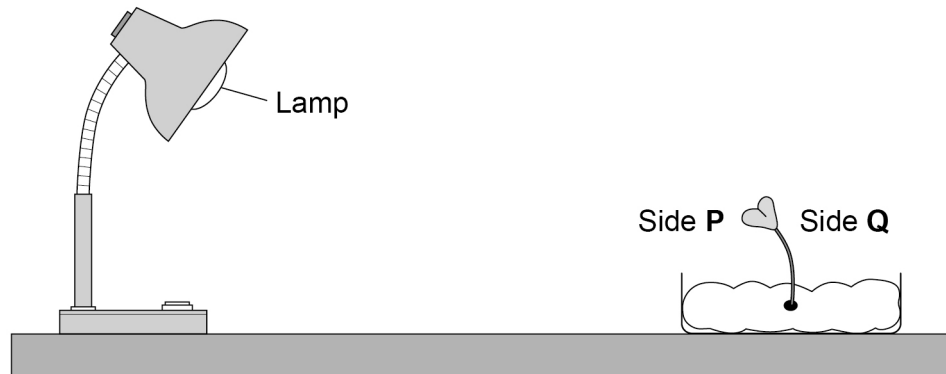
Question 3 continues on the next page

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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]

9

Turn over for the next question

Turn over ►



Question	Answers	Extra information	Mark	AO / Spec. Ref.
03.1	to increase fruit size to promote flower production		1 1	AO1 4.5.4.2
03.2	any two from: <ul style="list-style-type: none"> • keep temperature the same (for all dishes) • use equal numbers of seedlings (in each dish) • use seedlings of the same (initial) height • use more seedlings in each dish • give all dishes the same volume of water • use seed(ling)s of the same species • measure light intensity 	allow move equal distance or away from radiator or turn off radiator or use heat shield between lamp and seedlings allow use seedlings of the same (initial) size allow give all dishes the same amount of water allow use seed(ling)s of the same type allow measure distance from lamp allow put lamp above each dish and use different light intensity or power for each allow same concentration of mineral ions or named example ignore nutrients / food do not accept keep the same light intensity	2	AO3 4.5.4.1 RPA8
03.3	any one from: <ul style="list-style-type: none"> • use a piece(s) of thread / string and measure length of thread (with ruler) • straighten seedling / shoot and measure (with ruler) • measure with a flexible ruler or a tape measure 	allow use a piece of thread and (put the thread against) a ruler allow straighten seedling against a ruler allow use a flexible ruler or a tape measure	1	AO2 4.5.4.1 RPA8

03.4	(side nearest the lamp) receives more light (on side P)	reference to side only needed once allow side Q receives less light allow side Q is in the shade ignore side P is in the light	1	4.5.4.1 RPA8 AO2
	(therefore) unequal distribution of <u>auxin</u>	allow more <u>auxin</u> on side Q allow (so) more <u>auxin</u> present on side away from the lamp do not accept more auxin on light side or side P	1	AO1
	(auxin causes) more growth on side away from the lamp	allow more growth on side Q allow (auxin causes) cell elongation on side away from the light ignore mechanism of auxin action	1	AO2
03.5	ethene is released from bananas	allow ethylene is released from bananas allow the hormone is ethene / ethylene	1	AO2 4.5.4.1 4.5.4.2
Total			9	