

**0 6**

Hormones called auxins control plant growth.

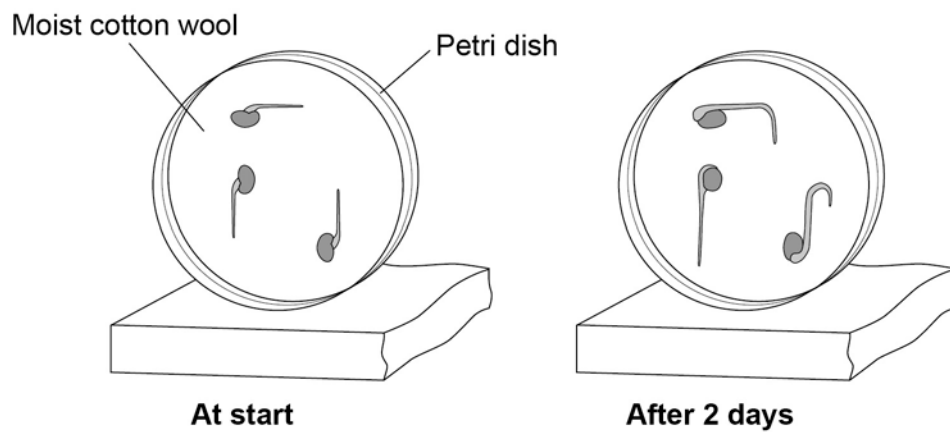
A student investigated plant growth responses in roots.

This is the method used.

1. Grow three bean seeds until their roots are 1 cm long.
2. Attach the three bean seeds to moist cotton wool in a Petri dish.  
Each bean seed root should point in a different direction.
3. Fix the Petri dish vertically for 2 days in the dark.

**Figure 7** shows the results.

**Figure 7**



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**0 6** . **1** Describe the direction of growth of the bean **roots** after 2 days.

Give **one** reason for this growth response.

**[2 marks]**

Direction of root growth \_\_\_\_\_

Reason \_\_\_\_\_

\_\_\_\_\_

**0 6** . **2** The student then noticed the shoots growing from the seeds.

He then:

1. put a light above the Petri dish but did not move the seeds
2. allowed the seeds to grow for 2 **more** days.

Predict the direction of growth of the bean **shoots** after 2 days.

Give **one** reason for your prediction.

**[2 marks]**

Direction of growth \_\_\_\_\_

Reason \_\_\_\_\_

**Question 6 continues on the next page**

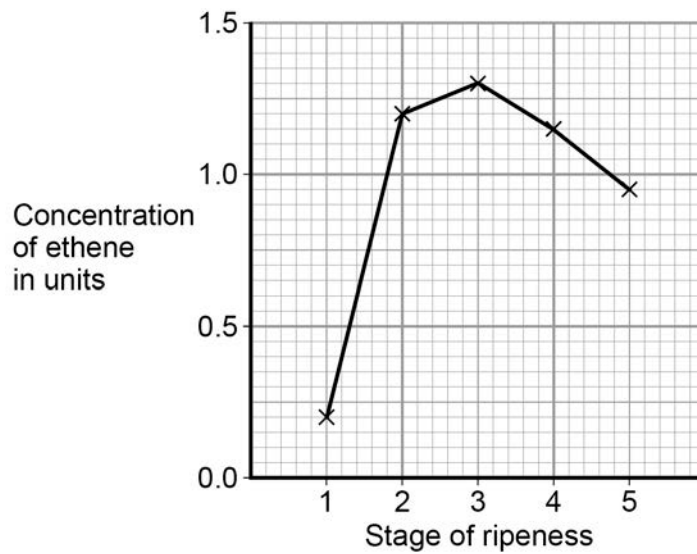
Ethene is a plant hormone.

Ethene causes fruit to ripen.

Scientists measured the concentration of ethene found in fruit at different stages of ripeness.

**Figure 8** shows the results.

**Figure 8**



**0 6** . **3** At which stage of ripeness is there most ethene?

**[1 mark]**

Tick **one** box.

Stage 1

Stage 2

Stage 3

Stage 4

Stage 5

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**0 6** . **4** Suggest how the scientists can find out if the result for Stage 1 was an anomaly. **[1 mark]**

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**0 6** . **5** Gibberellins are a different type of plant hormone.

Farmers growing cotton plants in cold climates sometimes soak their seeds in a solution of gibberellins before planting the seeds.

Suggest an advantage of soaking seeds in a gibberellin solution in cold climates. **[1 mark]**

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**Turn over for the next question**

**Question 6**

<b>Question</b>	<b>Answers</b>	<b>Extra information</b>	<b>Mark</b>	<b>AO / Spec. Ref.</b>
<b>06.1</b>	grown down	allow longer	1	AO2/1 4.5.4.1
	towards gravity / gravitropism	allow geotropism	1	AO2/1 4.5.4.1
<b>06.2</b>	grow up		1	AO2/1 4.5.4.1
	towards the light	allow phototropism	1	AO2/1 4.5.4.1
<b>06.3</b>	3		1	AO3/1a 4.5.4.1
<b>06.4</b>	repeat the experiment		1	AO2/2 4.5.4.1
<b>06.5</b>	seeds germinate sooner so growing season is longer		1	AO3/3a 4.5.4.2
<b>Total</b>			<b>7</b>	