

## Activity 8 – Extended writing question

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9 Mitosis in plant tissue is a form of cell division that is affected by a number of factors.

- (a) A student carried out an investigation into the effect of environmental stress on mitosis in one species of bean plant.

Sixty bean plants were divided into four groups of 15, labelled A, B, C and D. All the groups were grown in a complete mineral solution.

After 15 days, the bean plants from groups B, C and D were removed from this mineral solution for different lengths of time to stress them.

Cells from the root were then observed and the percentage of cells undergoing mitosis was found for each group.

The results are shown in the table.

Group	Time out of mineral solution / min	Percentage of root cells in mitosis (%)
A	0	18
B	50	6
C	100	6
D	150	4

- \*(b) The student suggested the hypothesis that mitosis rate increases as light intensity increases in bean plants.

Explain how this investigation could be modified to test this hypothesis in a safe, valid and reliable way.

(6)

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Look at the extended writing question (AS Paper 1, Q9).

Devise a levels-based mark scheme using the template provided.

### Indicative content

Answers will be credited according to candidate's deployment of knowledge and understanding of the material in relation to the qualities and skills outlined in the generic mark scheme.

The indicative content below is not prescriptive and candidates are not required to include all the material which is indicated as relevant. Additional content included in the response must be scientific and relevant.

0	No awardable content
1-2	

Mark	Descriptor
3-4	
5-6	