GCSE Biology required practical activity 8: Germination (biology only)

Student sheet

Required practical activity	Apparatus and techniques
Investigate the effect of light or gravity on the growth of germinating seeds. Record results as both length measurements and as careful, labelled biological drawings to show the effects.	AT 1, AT 3, AT 4, AT 7

Investigating the effect of light intensity on the growth of mustard seedlings

Germination is the start of growth in a seed. Water, oxygen and warmth are required for the seed to germinate. Once germinated, the shoots will only continue to grow if placed into the correct conditions.

Mustard seeds germinate easily and quickly when placed on damp cotton wool. The effect of light on the growth of the newly germinated shoots can be determined by measuring their height with a ruler.

Learning outcomes
1 **2** **Teachers to add these with particular reference to working scientifically**

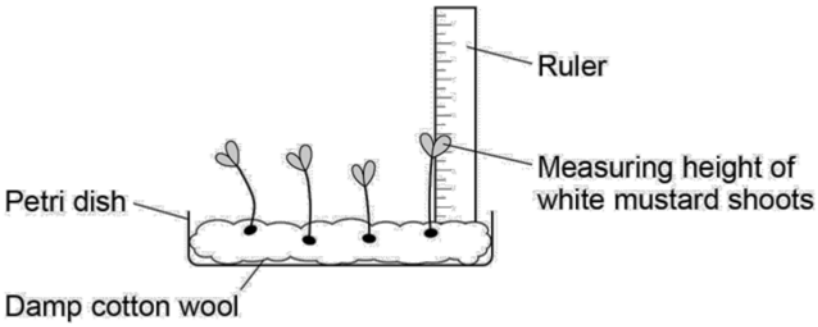
Method

You are provided with the following:

- white mustard seeds
- petri-dishes
- cotton wool
- a ruler
- water
- access to a light windowsill and a dark cupboard.

You should read these instructions carefully before you start work:

1. Set up three petri dishes with cotton wool soaked in equal amounts of water.
2. Place ten mustard seeds in each petri dish.
3. Place the petri dishes in a warm place where they will not be disturbed or moved.
4. Allow the mustard seeds to germinate, adding more water if the cotton wool gets dry (equal amounts to each dish).
5. Once the mustard seeds have germinated, make sure that the number of seedlings in each dish is the same. Remove excess seedlings from any dish that has too many. For example, one dish has eight seedlings which is the fewest compared to the other petri dishes. Therefore remove seedlings from the other dishes so that each dish has eight.
6. Move the petri dishes into position. One should be placed on a windowsill in full sunlight. One should be placed in a dark cupboard. The third should be placed in partial light.
7. Every day, for at least a week, measure the height of each seedling and record in a table such as the one here. You will need one table for full sunlight, one for partial light and one for darkness.



Day	Height of seedling in full sunlight in mm								
	1	2	3	4	5	6	7	8	Mean
1									
2									
3									
4									
5									
6									
7									

8. Calculate the mean height of the seedlings each day.

9. Compare the mean heights in full sunlight, partial light and darkness by drawing a graph of 'mean height' against 'time' for each.