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| Centre Number       |  |  |  |  |  | Candidate Number |  |  |  |  |
| Surname             |  |  |  |  |  |                  |  |  |  |  |
| Other Names         |  |  |  |  |  |                  |  |  |  |  |
| Candidate Signature |  |  |  |  |  |                  |  |  |  |  |

|                                    |
|------------------------------------|
| For Examiner's Use<br>Total Task 1 |
|                                    |



General Certificate of Education  
Advanced Level Examination  
June 2012

## Biology

## BIO6X/PM1

Unit 6X A2 Externally Marked Practical Assignment  
Task Sheet 1

To be completed before Task Sheet 2.

For submission by 15 May 2012

**For this paper you must have:**

- a ruler with millimetre measurements
- a calculator.

## Task 1

### Introduction

Hogweed is a common plant found on roadsides. It grows between 0.5 and 2 metres high and produces large flat seeds at the top of the plant.

In this task you will investigate variation in hogweed seeds.

### Materials

On page 3 you are provided with

- a photograph showing hogweed seeds. The photograph also shows a scale with millimetre measurements.

You may ask your teacher for any other apparatus you need.

### Method

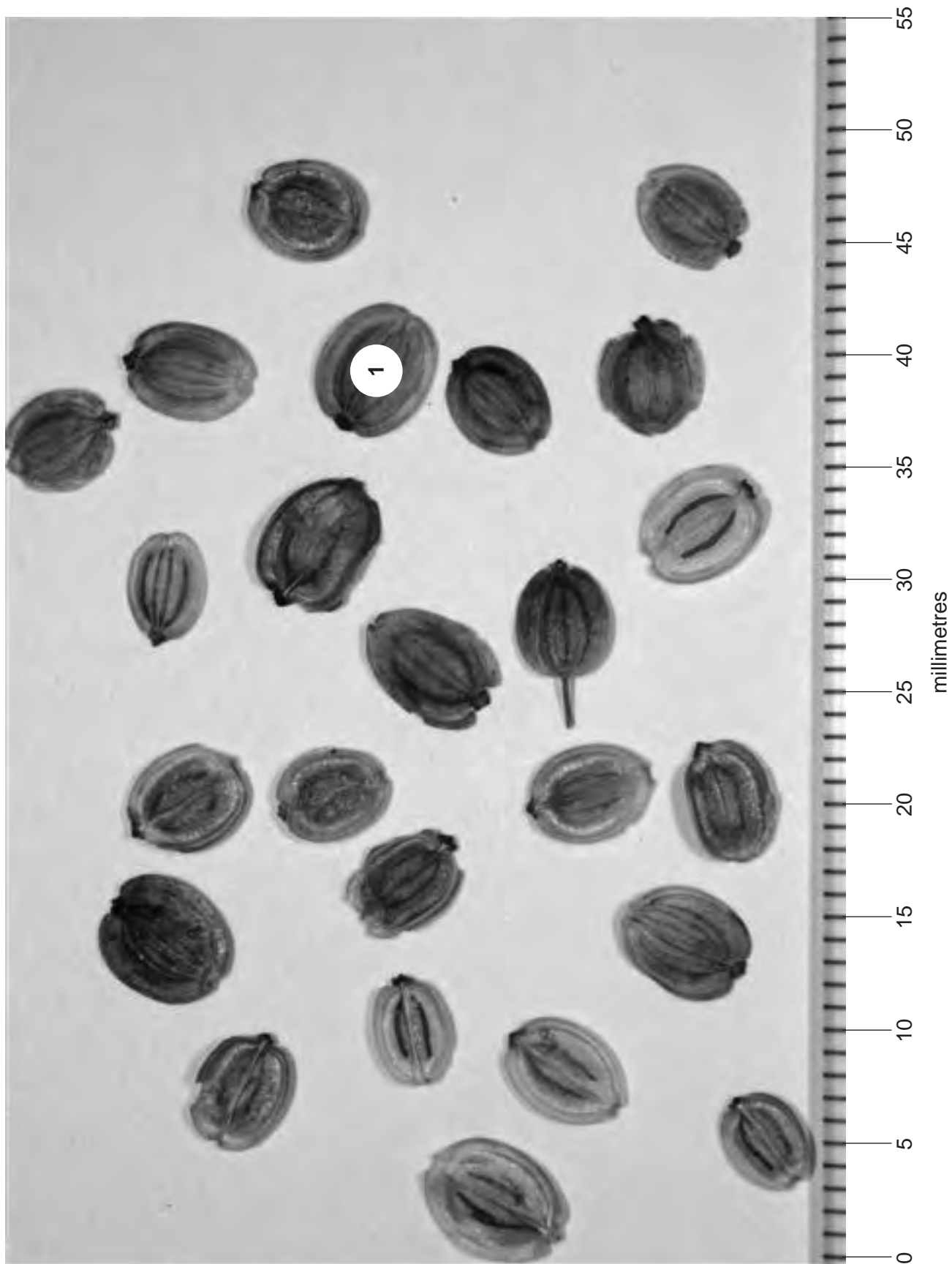
**Read the following instructions carefully before you start your investigation.**

1. On the photograph, select ten of the hogweed seeds at random.
2. Measure the length of each seed with your ruler.
3. Record your measurements in the table.

| Seed number | Length of seed measured from the photograph / mm |
|-------------|--|
| 1           |  |
| 2           |  |
| 3           |  |
| 4           |  |
| 5           |  |
| 6           |  |
| 7           |  |
| 8           |  |
| 9           |  |
| 10          |  |

**You must decide for yourself**

- how to select the seeds at random.



Turn over ►

**Questions on Task 1**

Answer **all** questions in the spaces provided.

**1 (a)** Describe how you selected the seeds at random.

.....  
.....  
.....

(1 mark)

**1 (b)** Selecting the seeds at random prevents bias. Explain what is meant by bias in selecting seeds.

.....  
.....  
.....

(1 mark)

**2 (a)** Use your ruler and the scale on the photograph to find the magnification of the seeds in the photograph. Explain how you arrived at your answer.

Magnification .....

Explanation .....

.....  
.....

(2 marks)

**2 (b)** Calculate the actual length of seed 1. Explain how you arrived at your answer.

Answer .....

Explanation .....

.....  
.....

(2 marks)

**3 (a)** You could have calculated the standard deviation from your results.  
Explain why it would be more useful to know the standard deviation than the lengths  
of the smallest and largest seeds.

.....  
.....  
.....

(1 mark)

**3 (b)** Hogweed seeds are normally shaken from the plant by gusts of wind. Explain how a  
large standard deviation in seed length affects the distances that the seeds land from  
the parent plant.

.....  
.....  
.....  
.....  
.....

(3 marks)

(Extra space) .....

.....  
.....

**END OF TASK 1**

|    |
|----|
| 10 |
|----|

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