

# Mathematical Applications

## Hypothesis Testing

### Right and Left-Handed

Carry out tests to compare the speed and/or accuracy displayed by right and left-handed people  
eg record the time taken to write the numbers 1 to 100, or accuracy when throwing something at a target.



### Male and Female

Carry out tests to compare the performance of males and females  
eg reaction times, accuracy of estimates, marks in tests, time taken to complete tasks.

### Subject differences

Investigate differences in the performance of candidates at your school or college in different subjects.

### Music accompaniment

Carry out tests to find out whether listening to music affects the accuracy and/or time taken by people to carry out a variety of tasks  
eg doing calculations, copying text, making a model.



### Telepathy

Carry out tests to investigate telepathy.

### Note

To obtain a good mark for a portfolio task you must:

- show initiative, structure your work logically and report it fluently;
- use appropriate, efficient and concise methods (most being beyond Higher level GCSE) and include ICT where appropriate;
- consider how your initial data, and assumptions where appropriate, affect your findings.



# Mathematical Applications

## Hypothesis Testing

### Journey Times

Investigate differences in the times taken for different routes and/or the same route at different times of day.

Alternatively test whether a bus or train company's punctuality data is justified.



### Bias

Test whether coins and/or dice are biased.



### Food Tests

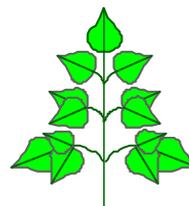
Investigate whether people can tell the difference between foods eg similar foods produced by different manufacturers or low-fat and standard varieties of products.

### Contents

Carry out tests to compare the amounts of goods in packets or bottles supplied by different manufacturers with the stated contents.

### Growing conditions

Investigate the effect different growing conditions (eg amount of sunshine/water) have on the size of leaves/plants or the germination of seeds.



### Note

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- use appropriate, efficient and concise methods (most being beyond Higher level GCSE) and include ICT where appropriate;
- consider how your initial data, and assumptions where appropriate, affect your findings.



**Teacher Notes**

**Unit**    Advanced Level, Mathematical Applications

**Notes on Activity**

The suggested tasks are based on the content of the Hypothesis Testing FSMQ and could provide one of the two tasks required for a candidate's Mathematical Applications Coursework Portfolio.

The two tasks included in a portfolio must be marked separately and the two marks totalled to produce one final mark for the unit. For each of the two tasks, the candidate will be given a mark, from 0 to 7, for each of three themes:

- Structuring and presenting work
- Using appropriate mathematics (and technology) and working accurately
- Interpreting mathematics

The marking grid below gives a description under each of these themes for work at various marks.

	<i>Structuring and presenting work</i>	<i>Using appropriate mathematics (and technology) and working accurately</i>	<i>Interpreting mathematics</i>
<b>0</b>	The portfolio task has substantial omissions and is poorly presented.	There is little evidence of using mathematics accurately at the appropriate level.	There is little evidence of relating mathematics to the situation(s) investigated or there are substantial errors in interpretation.
<b>1</b>			
<b>2</b>	The portfolio task has been completed with only a little advice and is well presented so that it is easy to follow.	A significant proportion of the work is beyond GCSE and is substantially correct.	The candidate has interpreted the main mathematical findings in terms of the situation(s) investigated.
<b>3</b>			
<b>4</b>	The candidate has worked independently <i>and</i> produced a portfolio task that is well-structured and reported with clarity.	A significant proportion of the work is beyond Higher Level GCSE and is substantially correct, using relevant mathematical techniques <i>and</i> ICT where appropriate	The candidate has used mathematics to correctly summarise and draw conclusions about the situation(s) investigated.
<b>5</b>			
<b>6</b>	The candidate has shown initiative in developing their portfolio task <i>and</i> has structured it logically and has reported their work fluently.	The candidate has used appropriate, efficient and concise methods of working.	The candidate has considered, how their initial data, and assumptions where appropriate, affect their findings.
<b>7</b>			

