

WJEC EDUQAS LEVEL 3
CERTIFICATE IN
MATHEMATICS FOR WORK
AND LIFE

MODEL CONTROLLED
ASSESSMENT

Title: [INSERT ASSIGNMENT TITLE HERE]

LEARNER ASSIGNMENT BRIEF

SCENARIO

[Insert relevant background information. Also details of the situation/problem/purpose.] This can include images and sample documentation or other stimulus material.

TASKS

Task 1

Plan a mathematical or statistical investigation.

Task 2

Collect relevant information or data to solve the problem(s).

Evaluate the suitability of information or data.

Task 3

Process the information or data using appropriate mathematical or statistical methods to solve the problem(s).

Task 4

Communicate the results of the investigation.

Evaluate the effectiveness of the problem-solving method used.

DATA

[Insert data or information for task 2] (where appropriate).

The information or data provided may form part of your investigation or you may wish to collect information or data of your own.

You may carry out data collection, unsupervised and outside of time controls.

SUMMARY

Task Number	Evidence	Learning Outcome	Controls
<p>Task 1 Plan a mathematical or statistical investigation.</p>	<p>Written explanation of the problem(s) to be solved.</p> <p>Written plan containing explanations of the methods that are to be used to solve the problem(s).</p> <p>Written justifications of the appropriateness of the methods that are to be used. Any assumptions are stated.</p>	<p>LO1 Be able to plan a mathematical or statistical investigation</p>	<p>Time 2 hours</p> <p>Resources The model Learner Assessment brief. Computer facilities and appropriate IT software. Research notes. Internet access.</p> <p>Supervision You will be supervised throughout.</p> <p>Collaboration Individual task.</p> <p>Feedback You cannot be given feedback on the work you produce until it has been marked.</p>
<p>Task 2 Collect relevant information or data to solve the problem(s). Evaluate the suitability of information or data.</p>	<p>Written description of the information or data collected including reference to its source and how it was obtained/collected. Annotated printout/copy embedded in the report or included as an appendix (with appropriate references).</p> <p>Written evaluation on the suitability of the information or data.</p>	<p>LO2 Understand the data collection process</p>	<p>Time 2 hours</p> <p>Resources The model Learner Assessment brief Computer facilities and appropriate IT software. Internet access. Evidence/research from task 1. Variety of information or data in hardcopy /electronic form.</p> <p>Supervision You will be supervised throughout. Information or data can be collected out of the set controlled task time unsupervised.</p> <p>Collaboration Group work is permitted when collecting data/information.</p> <p>Feedback You cannot be given feedback on the work you produce until it has been marked.</p>

Task Number	Evidence	Learning Outcome	Controls
<p>Task 3 Process the information or data using appropriate mathematical or statistical methods to solve the problem(s).</p>	<p>Appropriate mathematical/statistical methods used to solve the problem(s). Correct notation used and any formulae correctly stated. Results embedded in the report or included as an appendix (with appropriate references). Written interpretation of the mathematical/statistical output.</p>	<p>LO3 Be able to process information or data</p>	<p>Time 3 hours Resources The model Learner Assessment brief Computer facilities and appropriate IT software. No class notes. Statistical tables if appropriate. No Internet access. Evidence/research from task 1 and 2. Supervision You will be supervised throughout. Collaboration Individual task. Feedback You cannot be given feedback on the work you produce until it has been marked.</p>

Task Number	Evidence	Learning Outcome	Controls
<p>Task 4 Communicate the results of the investigation. Evaluate the effectiveness of the problem-solving method used.</p>	<p>Written conclusions and relating them to the original problem(s).</p> <p>Written evaluation of the problem-solving method used referring to the problem-solving cycle and recommendations for further research where appropriate.</p> <p>Either a: Written report Approximately 1000 words excluding annotated printouts of graphical/mathematical/statistical output embedded in the report or included as an appendix.</p> <p>OR</p> <p>Electronic presentation Minimum 8 minutes. Slide handouts and <u>speech notes</u> containing annotated printouts of graphical/mathematical/statistical output must be included. Observation record for performance of presentation.</p> <p>OR</p> <p>Oral presentation Minimum 8 minutes. Speech notes containing of graphical/mathematical/statistical output must be included. Observation record for performance of presentation.</p>	<p>LO4 Understand requirements of communicating the results of a mathematical or statistical investigation</p>	<p>Time 3 hours</p> <p>Resources The model Learner Assessment brief Computer facilities and appropriate IT software. No class notes. No Internet access. Evidence/research from task 1, 2 and 3.</p> <p>Supervision You will be supervised throughout.</p> <p>Collaboration Individual task.</p> <p>Feedback You cannot be given feedback on the work you produce until it has been marked.</p>

LEVEL 3 CERTIFICATE IN MATHEMATICS FOR WORK AND LIFE

OBSERVATION RECORD

Learner Name		
Context Communicate the results of the investigation.		
Commentary of learner performance		
Assessment summary		
Mark Awarded		
Assessor	Signature	Date

ASSESSOR INFORMATION

WJEC Approach to Assessment

The following principles apply to the assessment of the internally assessed component of the Level 3 Certificate in Mathematics for Work and Life:

- The component is assessed through summative controlled assessment. Details of controls for this component are provided in this model assignment.
- All learning outcomes must be met under controlled conditions, as specified in this model assignment.

The Level 3 Certificate in Mathematics for Work and Life qualification has adopted the principles of controlled assessment as set out in the Joint Council for Qualifications document 'GCSE, GCE, ELC, Functional skills, Principal learning in the Diploma and Project Qualifications – instructions for conducting coursework'. This document can be accessed through the JCQ website (www.jcq.org.uk). Each centre must ensure that controlled assessment is conducted in accordance with these controls.

There are three stages of assessment that will be controlled:

- Task setting
- Task taking
- Task marking.

Task setting

WJEC has produced this model assignment for the assessment of this component. Centres are, however, allowed to modify the assignment, as outlined in the 'Accepted changes to assignments' section of this model assignment. This will allow centres to tailor the assessment to local needs. This model assignment has been written to ensure the following controls are in place:

- The component is assessed through one assignment.
- The assignment must have a brief that sets out an applied purpose. An applied purpose is a reason for completing the tasks that would benefit a mathematical, statistical, business or scientific investigation.
- The assignment can specify a number of tasks but tasks must be coherent i.e. show how the assessment requirements all contribute to the achievement of the applied purpose of the assignment.
- The assignment must provide each learner with the opportunity to address all learning outcomes and all performance band requirements.
- The assignment must indicate the acceptable forms of evidence.
- WJEC has produced a bank of model assignments briefs for the component. Centres may use a model WJEC assignment, contextualise a WJEC model assignment or create their own. The 4 tasks set out must not be changed. If centres are creating their own scenarios, there must be evidence of quality assuring its fitness for purpose. All assignment briefs should be submitted, along with a Quality Assurance form, to WJEC to be approved at least a month before the learners begin the tasks. All forms and assignments can be submitted at any time of the year, however, all documentation and assignments should be submitted to WJEC by the 21 February before the summer series when candidates are entered e.g. (if candidates are entered for the summer 2016 series, then their assignment briefs and Quality Assurance forms should be submitted to WJEC by 21 February 2016). The Quality Assurance form can be found in Appendix 4 of the specification and on the WJEC website.

How the learner assignment brief meets these controls

This is a single assignment that addresses all learning outcomes for the component. There is a clear applied purpose: the controlled assessment will allow learners to solve a real life mathematical or statistical problem by identifying and collecting appropriate information/data, processing this and reporting the results. Crucially, learners will be allowed to decide which problem to solve, which could be related to their current studies or career ambitions, allowing a high degree of flexibility and relevance to the individual learner.

Task taking

There are five areas of task taking that are controlled: time, resources, supervision, collaboration and resubmission.

Time

'Time' has limited control. There are **10** hours available for assessment of this component. The learner assignment brief suggests how this time can be allocated.

If the learner presents an electronic or oral presentation, the learner has a total of **10** hours to prepare and deliver the information.

Resources

'Resources' has medium control. The assignment makes clear the type of resources that learners must have access to.

A computer capable of running software should be made available to each learner to enable them to meet the requirements of the controlled assessment. The equipment must be fit for purpose and must be checked by a competent person before use.

Each learner should start the assessment with a 'new' user area or removable, recordable storage device (e.g. usb data key, CDRW, etc.)

Learners may require data files to use in the assessment and these should be placed in each candidate's user area before the start of the controlled assessment.

If removable media are used, these should be given to learners at the start of the session and returned to the supervising teacher at the end of the session.

The user area or removable media cannot be accessed outside the timetabled session.

Learners may access the Internet during Task 1 and Task 2, but for tasks Task 3 and Task 4, learners' desktops should be 'locked down' to ensure that they cannot access email or the Internet.

Learners may require statistical tables.

Supervision

'Supervision' has medium control. Candidates must complete all work, with the exception of research, under informal supervision in the classroom. Although the teacher will not see every keystroke of every candidate, sufficient work must be seen by the teacher to verify it as the candidates' own. Research may be completed under limited supervision e.g. they can work unsupervised when collecting information or data as part of task 2. Learners will be allowed to bring these research notes to the controlled assessment with them; however the assessor responsible for the supervision of the candidates' work will be required to certify that the marks submitted were

awarded in accordance with the learning outcomes and that she/he is satisfied that the work submitted is that of the candidate concerned.

Centres are responsible for providing sufficient supervision to be able to give an assurance that the assessments submitted are based on the work of the candidates concerned.

As a part of the controlled assessment is computer based, every effort should be made to ensure that learners' desktops are arranged to prevent learners viewing each other's work.

Centres should familiarise themselves with *Appendix 1: Instructions for conducting on-screen tests* in the JCQ booklet *Instructions for the Conduct of Examinations* regarding invigilation arrangements for the controlled assessment. This document can be accessed through the JCQ website (www.jcq.org.uk).

Authentication

Supervision is in place to ensure the authenticity of evidence produced for summative assessment.

Assessors are not expected to provide input or guidance to learners during the controlled assessment time. This includes providing formative feedback on the evidence being produced.

Assessors can provide guidance on the requirements of the task and remind learners of the performance bands and how they can be interpreted. Assessors must intervene where there is a health and safety hazard observed.

Learners can review and redraft evidence independently within the time controls for the assessment. Learners cannot redraft based on feedback from an assessor.

Learners must sign the declaration in this model assignment to confirm that all evidence submitted for moderation is their own work and that any sources used have been acknowledged.

Assessors must sign the declaration in this model assignment to confirm that evidence submitted for moderation was completed under the controlled conditions set out in the model assignments.

Collaboration

'Collaboration' refers to group work and has limited control. For this model assignment group work is forbidden, although unsupervised group work is permitted when collecting data/information out of the controlled task time.

Task marking

All marking of evidence must be made against the performance band statements given in the specification. Evidence marked must comply with the controlled requirements set out in this model assignment.

Written evidence must be annotated to show how it relates to the learning outcomes and performance band requirements.

If the learner presents an electronic or oral presentation then an observation record should be completed as part of the evidence of LO4.

Observation records will include a description of learner performance as well as a summative statement on the quality of that performance. Where performance is observed by someone other than an assessor, the 'witness' must complete a witness statement. Assessors will need to authenticate the statement either through scrutiny of supporting evidence and/or questioning of the learner and/or witness. If the statement is authenticated, it can be allowed to contribute to the evidence for assessment. Evidence of authentication will also need to be included.

Marking should only be undertaken by a designated assessor. An assessor should have appropriate expertise in the subject and level for the specified task. The assessor is responsible for ensuring that:

- Assessment is conducted under specified controlled conditions
- They are clear of the requirements of the learning outcomes and performance band statements prior to commencing controlled assessment
- Evidence presented for assessment is authentic
- Assessment decisions are accurately recorded
- Evidence is appropriately annotated
- Observation records contain sufficient detail for objective corroboration of decisions
- Judgements are only made against the performance band statements
- Assessment decisions are accurately recorded
- Evidence is appropriately annotated
- Observation records contain sufficient detail for objective corroboration of decisions
- Judgements are only made against the performance band statements

ACCEPTED CHANGES TO THIS MODEL ASSIGNMENT

Assignment Brief (Task setting)

Type of evidence

Learners can present their reports using ICT software or by hand. They can include their mathematical or statistical output embedded in their written report or as a separate appendix. All output included should be appropriate and should be referenced and annotated.

Learners can also present their findings electronically and orally. Observation records will be needed as evidence, together with any notes produced and support materials used (e.g. slide handouts and speech notes, statistical output). Observation records will include a description of learner performance as well as a summative statement on the quality of that performance. Where performance is observed by someone other than an assessor, the 'witness' must complete a witness statement. Assessors will need to authenticate the statement either through scrutiny of supporting evidence and/or questioning of the learner and/or witness. If the statement is authenticated, it can be allowed to contribute to the evidence for assessment. Evidence of authentication will also need to be included. A standard pro-forma should be developed and used for all learners. Learners should receive a copy of the pro-forma in advance.

Tasks

No changes allowed.

Purpose

No changes allowed.

Context

The brief may be changed or contextualised. Centres may use a model WJEC assignment, contextualise a WJEC model assignment or create their own. If centres are creating their own scenarios, they should be submitted to WJEC to be approved **before** the learners begin the tasks. A Quality Assurance form also needs to be submitted (the form can be found on the website).

The context chosen must be realistic and credible but can be fictitious. The problem could be related to another subject or a job in which the learner is interested in. Information or data could be provided for learners to use in their investigation or they could collect their own. Learners can carry out information or data collection, unsupervised and outside of time controls. The brief should allow learners opportunity to collect suitable information or data.

How Assessment is Managed (Task taking)

Time

There can be no changes to the total time available for controlled assessment (**10 hours**) as set out in this model assignment. The time suggested for each task, as set out in the learner assignment brief, takes account of the contribution of the task to the overall assessment requirements. Centres can, however, amend the suggested time available for each task.

Resources

Learners must have access to an assessment grid. Details of essential resources are provided in the Summary table of the Learner Assignment Brief and the Task taking: resource section of this Assessor Guidance. There can be no changes to these.

Collaboration

Group work is not allowed for this component, although unsupervised group work is permitted when collecting data/information out of the controlled task time.

Supervision

No changes allowed.

Feedback

No changes allowed.

**LEVEL 3 CERTIFICATE IN MATHEMATICS FOR WORK AND LIFE
MARK RECORD SHEET**

CONTROLLED ASSESSMENT TITLE:

Learner Name:

I confirm that the evidence submitted for assessment has been produced by me without any assistance beyond that allowed.

Signature:

Date:

Assessor Name:

The assignment brief used for summative assessment is attached, together with evidence of quality assurance.

I confirm that the evidence submitted by the learner has been produced under the controlled conditions set out in the qualification specification and model assignment.

The overall mark awarded for this component is _____

Signature:

Date:

Lead Assessor Name:

I confirm that the evidence submitted by this learner for summative assessment has been quality assured and the grade awarded is confirmed as accurate.

Signature:

Date:

Learning outcomes	Performance bands			Mark awarded
	Band 1 1 – 3	Band 2 4 – 6	Band 3 7 – 9	
<p>LO1 Be able to plan a mathematical or statistical investigation</p>	<p>Identify a problem(s) for investigation <i>Limited clarity</i></p> <p>Limited rationale for investigating the problem(s)</p> <p>A plan that explains the method(s) that are to be used <i>Low level explanations</i> <i>Some parts of the plan may be omitted</i></p> <p>Superficial justification of the appropriateness of the method(s) that are to be used <i>Low level justifications</i> <i>Some justifications may be omitted</i></p> <p>Limited reference to any assumptions made <i>Some assumptions may be omitted</i></p>	<p>Identify an appropriate problem(s) for investigation</p> <p>Logical rationale for investigating the problem(s) <i>Some parts of the rationale may be detailed</i></p> <p>Structured plan explaining the method(s) that are to be used <i>Some parts of the plan are detailed</i></p> <p>Logical justification of the appropriateness of the method(s) that are to be used <i>Some justifications are detailed</i></p> <p>Any assumptions made are stated <i>Some assumptions are detailed</i></p>	<p>Identify an appropriate problem(s) for investigation</p> <p>Detailed and logical rationale for investigating the problem(s)</p> <p>Detailed and structured plan explaining the method(s) that are to be used</p> <p>Detailed and logical justification of the appropriateness of the method(s) that are to be used</p> <p>Any assumptions made are clearly explained</p>	

Learning outcomes	Performance bands			Mark awarded
	Band 1 1 – 3	Band 2 4 – 6	Band 3 7 – 9	
LO2 Understand the data collection process	Simple description of the information or data collected Reference to the source(s) of the information or data collected <i>Limited clarity</i> Brief explanation how the information or data was collected <i>Low level explanations</i> Superficial evaluation of the suitability of the information or data collected <i>Low level evaluations</i> Simple reference to any practical considerations of the information or data collected <i>Limited clarity</i> Superficial conclusions on validity and reliability of the information or data collected <i>Low level conclusions</i> <i>Some conclusions may be omitted</i>	Structured description of the information or data collected Structured reference to the source(s) of the information or data collected Structured explanation how the information or data was collected <i>Some explanations are detailed</i> Logical evaluation of the suitability of the information or data collected <i>Some evaluations are detailed</i> Structured reference to any practical considerations of the information or data collected Logical conclusions on validity and reliability of the information or data collected <i>Some conclusions are detailed</i>	Detailed and structured description of the information or data collected Detailed and structured reference to the source(s) of the information or data collected Detailed and structured explanation how the information or data was collected Detailed and logical evaluation of the suitability of the information or data collected Detailed and structured reference to any practical considerations of the information or data collected Detailed and logical conclusions on validity and reliability of the information or data collected	

Learning outcomes	Performance bands			Mark awarded
	Band 1 1 – 3	Band 2 4 – 6	Band 3 7 – 9	
LO3 Be able to process information or data	<p>Mathematical/statistical techniques used to solve the problem <i>Basic techniques used</i></p> <p>Calculations/graphical representations/statistical methods included in the investigation <i>Some errors in the calculations/graphical representations or methods used</i></p> <p>Appropriate Limited use of symbols, notation and formulae used <i>Some inconsistent use of symbols and notation</i></p> <p>Superficial interpretations of the results generated during the investigation <i>Low level interpretations</i> <i>Some interpretations may be omitted</i> <i>Some inaccuracies in the interpretations</i></p>	<p>Appropriate mathematical/statistical techniques used to solve the problem <i>Some advanced techniques are used</i></p> <p>Accurate calculations/ graphical representations/statistical methods included in the investigation</p> <p>Appropriate and accurate use of symbols, notation and formulae used</p> <p>Accurate interpretations of the results generated during the investigation <i>Some interpretations are detailed</i></p>	<p>More advanced mathematical/statistical techniques used to solve the problem</p> <p>Appropriate and accurate calculations/graphical representations/statistical methods included in the investigation.</p> <p>Appropriate, clearly defined and accurate use of symbols, notation and formulae used</p> <p>Detailed and accurate interpretations of the results generated during the investigation</p>	

Learning outcomes	Performance bands			Mark awarded
	Band 11– 3	Band 2 4 – 6	Band 3 7 – 9	
<p>LO4 Understand requirements of communicating the results of a mathematical or statistical investigation</p>	<p>Limited conclusions from their results <i>Low level conclusions</i> <i>Conclusions may be correct but the relationship to the original problem(s) is not explained</i></p> <p>Superficial evaluation of the effectiveness of each stage of the problem-solving method used, making some appropriate conclusions on validity and reliability <i>Evaluations may be straightforward with limited reasoning</i> <i>Some evaluations may be omitted</i></p> <p>Communicate the results of a mathematical or statistical investigation with clarity <i>Limited clarity</i> <i>Limited formatting</i> <i>Some factors may be omitted</i></p>	<p>Draws accurate conclusions from their results relating back to the original problem(s) <i>Some conclusions are detailed</i></p> <p>Logical evaluation of the effectiveness of each stage of the problem-solving method used, making appropriate conclusions on validity and reliability stating some weaknesses of the problem solving method used with some recommendations for improvements to the investigation <i>Some evaluations are detailed</i></p> <p>Communicate the results of a mathematical or statistical investigation with clarity and effectiveness <i>More emphasis on formatting text than on formatting the results/output</i> <i>Some factors may be omitted</i></p>	<p>Draws correct and reasoned conclusions from their results relating back to the original problem(s)</p> <p>Detailed and logical evaluation of the effectiveness of each stage of the problem-solving method used, making reasoned conclusions on validity and reliability stating the weaknesses of the problem solving method used with recommendations for improvement and further research</p> <p>Communicate the results of a well-presented and formatted mathematical or statistical investigation with clarity and effectiveness</p>	

Presentation should include the following:

Formatting (margins, fonts, tables etc)

Clear headings

Appropriate calculations, summaries and graphs included in text or appendices

Raw software output labelled in appendices where appropriate

Relevant diagrams/graphs labelled and referred to in the text

Clear written language

Clear referencing of papers/books/websites where appropriate

Speech notes included if electronic or oral presentation produced