

MEI Differential Equations

OCR Advanced GCE Unit 4758 Assessment Sheet B

Work Based On A Combination Of The Modelling And Experimental Cycles

Task: Candidates will model a real-life situation of their own choice which requires the use of differential equations.

Coursework Title		Date		
Candidate Name		Candidate Number		
Centre Name		Centre Number		
Domain	Mark	Description	Comment	Mark
Simplifying the situation and setting up the model.	1	There are clear statements of the assumptions made and awareness is shown of the relative importance of these assumptions.		
	1	The relevance of the assumptions to the initial equations of the model is explained clearly.		
	1	Differential equation(s) to model the situation are established and justified.		
Manipulating the model.	1	A correct method of solution is applied to the differential equation(s)		
	1	A solution to the differential equation(s) is obtained.		
	1	Values for the parameters of the equation(s) are chosen and justified.		
	1	A set of predictions is produced from the equation(s).		
Conducting the experiment.	1	The relevance of the assumptions to the design of the experiment is explained clearly.		
	1	The conduct of the experiment is designed clearly, including diagrams of the apparatus used. Any steps taken to reduce experimental error are also described.		
	1	Sufficient results are obtained, and these are presented clearly and concisely, in a form suitable for comparison with the predictions of the model.		
	1	There is a discussion of the variability in the measurements taken.		
Comparison between the experimental results and the predictions of the model.	1	A clear comparison is made, using diagrams and graphs where appropriate.		
	1	The effects of variation in the parameters and in the measurements are taken into account.		
Revision of the process.	1	In the light of the comparison, a decision is made, and justified, on whether further revision is needed to the modelling process, or to the conduct of the experiment, or both.		
	1	If revision is needed (or if the original assumptions led to a trivial piece of modelling), detailed proposals are made for amending the assumptions and/or the conduct of the experiment. If not, there is a serious discussion of how the work could be extended to related situations.		
Assessment of the improvement obtained.	1	There is an investigation into applying the effects of the proposed revision/extension. [Note: It is not necessary for the candidate to rework the model completely unless the initial differential equation(s) was (were) trivial.]		
Oral Communication	2	Presentation	Please tick at least one box and give a brief report	
		Interview		
		Discussion		
Half marks may be awarded but the overall total must be an integer.			TOTAL / 18	

Coursework must be available for moderation by OCR.