

# MEI Differential Equations

OCR Advanced GCE Unit 4758 Assessment Sheet A  
Work Based on the Modelling Cycle

**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 an awareness is shown of the relative importance of these assumptions. The relevance of the assumptions to the initial equations of the model is explained clearly. Differential equation(s) to model the situation are established and justified.		
	1			
	1			
Manipulating the model.	1	A correct method of solution is applied to the differential equation(s). A solution to the differential equation(s) is obtained. Values for the parameters of the equation(s) are chosen and justified. There is a quantitative consideration of the effects of possible variation in the values of the parameters. A set of predictions is produced from the equation(s).		
	1			
	1			
	1			
The collection of data to verify the model	1	The source and means of collecting the data are clearly described and their relevance to the model is demonstrated. The data is presented in a form suitable for comparison with the predictions of the model.		
	1			
Comparison between the data collected and the predictions of the model.	1	A clear comparison is made, using diagrams and graphs where appropriate. The effects of variation in the parameters are taken into account.		
	1			
Revision of the model.	1	In the light of the comparison, proposals are made for amending the initial assumptions to improve the quality of the model. New equations are established as a result of the amended assumptions.		
	1			
Assessment of the improvement obtained	1	The new equations are manipulated to produce new predictions. A comparison is made between the data and the new predictions, and comments made on whether an improvement has been obtained.		
	1			
Oral communication.	2	Presentation	Please tick at least one box and give brief report	
		Interview		
		Discussion		
Half marks may be awarded but the overall total must be an integer.			<b>TOTAL/18</b>	

**Coursework must be available for moderation by OCR.**