Level 3 Certificate in Using and Applying Mathematics
Written – sample assessment 1

Paper 1 Mathematical modelling

DATE TBC
TIME TBC

Centre number						
Enrolment number						

You should have the following for this examination
- answer booklet
- pen with black ink
- pencil
- 30cm ruler
- calculator
- graph paper.

Surname	Other names

General instructions
- Please answer all of the questions.
- There are **45 marks** for this paper.
- You have 1 hour 30 minutes to complete Paper 1.
- Additional paper or inserts may be used but this must clearly show your name, your candidate number, your centre number and the question number.

You may use
- A scientific or graphical calculator.
- A PC installed with the following standard application office software:
  - word processor
  - spreadsheet
  - database
  - graphics and presentation packages.

You must not use
- internet
- e-mail
- mobile phones
- any pre-prepared files held on internal or external systems.

Marks available and weighting:

	Component	**Maximum raw mark**	**Scaling Factor**	**Maximum scaled mark**
Paper 1	Mathematical modelling	45	1	**45 marks**

Paper 1: Mathematical modelling
Refer to *Drug Decay* in the pre-release material.

Model the level of painkiller for a patient who is told to take up to a maximum of 4000 milligrams per day with doses at regular intervals. For example, they could take 1000 milligrams at 8 am, 12 noon, 4pm and 8pm every day.

Consider the effect of the person taking different doses at different regular intervals during the day.

The painkiller has a half-life of between 1 and 4 hours.

Use what you find out from your models to write a brief note to explain to patients how the concentration of a drug in general varies with time.

Show clearly all your working and highlight your final briefing note.

(45 marks)

End of Paper 1.