3849-301 Level 3 Certificate in Using and Applying Mathematics
Paper 1: Mathematical Modelling

Sample assessment 2
Written

www.cityandguilds.com
April 2017
Version 1.0

Date of exam TBC

You should have the following for this examination

- a clean copy of the pre-release material
- pen with black or blue ink
- pencil
- 30cm ruler
- calculator
- graph paper.

General instructions

- There are **45 marks** for this paper.
- You have **1 hour 30 minutes** to complete this paper.
- Answer all of the questions.
- Write all working out and answers in this booklet.

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
- email
- internal or externally saved files
- mobile phones.

Additional paper or printouts can be used but these must clearly show your name, candidate number and centre number.

Paper 1: Mathematical Modelling

Refer to *Running a vehicle* in the pre-release material.

A company has branches throughout the UK in a range of different geographical locations. It employs sales staff each of whom is given a small company van to visit customers. Some of the staff are employed to work only in cities (such as London or Manchester) whilst others work only in rural areas; some staff work in areas that includes both urban and extra-urban travel.

The company usually replaces all of its vans every two years.

The company has asked for some advice to help them decide their new van buying policy. They want to know, for example, whether they should only buy diesel vans, only buy petrol vans or buy a mix of petrol and diesel vans.

Model some different scenarios to inform the advice you would offer to the company.

Prepare 2 or 3 presentation (eg PowerPoint) slides that summarises this advice.

You have been given no additional information about company practice. Wherever possible you should suggest alternative strategies as the company may be able to adjust factors such as where sales staff are located, how often vans are replaced. In your presentation highlight any assumptions you have made.

(45 marks)

End of Paper 1.