**Pearson Edexcel Level 3 Certificate in Mathematics in Context**

**Comprehension teaching and practice material**

These materials are designed to support teaching and learning of mathematical comprehension skills. They may be used for classroom discussion, teaching and learning and/or student practice. They provide comprehension practice on four topics as follows:

**Waste and recycling**

Earthquakes

Winter Olympics

Ebola

Each zip file contains four types of material as follows:

Teacher notes

Comprehension passage and questions

Mark scheme

Spreadsheet(s)

These teacher notes suggest other supporting resources including videos. The teacher notes also provide a mapping of the task questions to GCSE Mathematics (9-1) and the current GCSE Statistics and indicate where skills specific to Mathematics in Context are required. Some tasks’ questions include more challenge than others and this is made clear within the teacher notes.

Students should have access to formulae where required. The formulae sheet is provided in the specification (Appendix 3) and in the sample assessment materials.

**Waste and recycling**

**Background**

Household waste disposal is a key task for county councils. In practice, much of the work is delegated to private contractors with the council providing targets and being responsible for strategic planning.

Because of the impact of landfill taxes (currently £80 per tonne), there is a great incentive on councils to recycle to reduce the amount of waste they send to landfill.  
The task explores some issues that county councils face in dealing with waste generated by households based on the experience of Wiltshire. The questions are mainly arithmetical or statistical.

**Resources**

There is a suitable general background short film at

[www.**youtube**.com/watch?v=IY50vTVFWN4](file:///\\ukedxfilsrv04\Marketing%20&%20Prod%20Dev%20Division\Prod%20Mgr\Keith&Graham\Sums\Graham's%20e-mail%20emporium\17%20Core%20Mathematics\03%20Practice%20Papers\Paper%201%20font%202\Core%20Maths%20Wiltshire%20Waste%20Final\www.youtube.com\watch%3fv=IY50vTVFWN4)

Google Earth can be used to examine, for example, the effect of landfill on the environment. The site at Compton Bassett (shown in the YouTube video) can be seen, areas calculated and so on.

All 4 tables are also supplied in spreadsheet form for analysis if required.

**Comments on the questions**

**1** Give an answer as a percentage change.

**2** Find a percentage of (or calculate using reverse percentage).

**3** Reverse percentage.

**4** Calculate the volume of a cuboid, then use proportionality (200 m by 200 m is about 8 football pitches so it's a big hole).

**5**  (a) Draw a scatter diagram.

(b) Interpret the equation of a regression line. Interpret the value of the correlation coefficient.

**6**  Calculate a rate (per household) from information in tables and comment on the

trend.

**7** (a) Use the difference and multiply by the number of households.

(b) This requires several steps and although the mathematical techniques are not demanding, it does require high level thinking to map a way through its complexity.

**Analysis based on GCSE (9–1) Mathematics and GCSE Statistics (current specification)**

**Task: Waste and recycling**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Question** |  | **Demand/Content** | | | | |
|  |  | **GCSE Maths** | | **GCSE Stats** | | **Other** |
|  |  | **F** | **H** | **F** | **H** |  |
| **1** | Percentage change | ✓ |  |  |  | F tier |
| **2** | Calculate a percentage of | ✓ |  |  |  | F tier |
| **3** | Reverse percentage | ✓ |  |  |  | F tier |
| **4** | Volume and proportionality | ✓ |  |  |  | F tier |
| **5 (a)** | Draw a scattergram | ✓ |  | ✓ |  | A3 |
| **(b)** | Interpret equation of the regression line |  |  |  |  | A9 New to Core, but requires interpretative skill not mathematical technique. Based on *y = mx + c* |
| **(c)** | Calculate a rate (tonnes per household) |  | ✓ |  | ✓ | A5 H tier because no scaffolding |
| **7 (a)** | Rates/ proportionality | ✓ |  |  |  | F tier |
| **(b)** | Complex problem |  | ✓ |  | ✓ | Maths techniques are not high but a complex problem. |