



3850 Certificate in Mathematics

Chief Examiners Report

June 2016

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The question paper is based on the learning outcomes and assessment criteria for 3850 as stated in the Qualification Handbook. This report refers to the assessment criteria (AC) causing particular concern to candidates.

General comments

Candidates should read the question carefully and attempt all questions.

Stage 1

Candidates appeared relatively confident when working with whole numbers but had problems working with fractions, including decimal fractions and converting within a system. Some candidates found working within a context more difficult than a straightforward sum but the cohort showed an improvement on many of the points noted in the Chief Examiner's report for 2015.

Unit		AC	Comment
101	Number	1.1 1.5 1.6	Candidates generally performed well in this section. However, candidates found it difficult to order amounts of money. Some candidates found it difficult to write in dollars an amount given in cents. Less than half of the candidates recognised decimal fractions and common fraction equivalences for halves and quarters.
102	Measurement and standard units	1.3 1.4/1.5 1.8/9 1.10/11 1.12	Less than a half selected the correct answer for clockwise rotation relating to the points of the compass. Less than a half were able to select the correct time shown by an analogue clock but over 75% were able to use digital time in context. Many candidates were unable to recognise capacity and a third felt that a spoon would hold five litres. Few candidates were able to identify the freezing point of water in degrees Fahrenheit. Many candidates do not recognise the different metric units when comparing length within a system.
103	Pictograms, tables, graphs and charts	1.8	Candidates generally performed well on this section. Some candidates were unable to select what was needed to finish the graph.
104	Shape and space	1.4 1.5/1.6 1.9 1.10	Many candidates found this section challenging. Over half of the learners had problems with tessellation and may have confused this with rotation. Candidates often found the perimeter instead of the area of squares and rectangles. Less than a third of candidates were able to find the volume of a cuboid. Just over a third identified the correct answer to a question about lines of symmetry.
105	Operations on whole numbers	1.7	This section attracted a good percentage of correct answers. The main problem appeared to be division and 1% did not attempt the division questions.

106	Operations on decimal fractions	1.3 1.5 1.7	Some candidates found this section challenging. Over 80% are confident with addition but subtraction requiring a decimal to be taken from a whole number caused problems. Less than half could multiply a decimal number by 100. The division problem set in context attracted over 50% correct answers although the division without context attracted fewer with just over a third giving the correct answer.
107	Operations on common fractions	1.1 1.2	Candidates found this section challenging. Between 1 and 2% of candidates did not attempt the questions. Less than a third could add or subtract fractions with the most common response being to simply add the numerators and the denominators for addition. However, over 80% demonstrated an understanding of 'half' in the context of sharing a whole number.
108	Appropriate strategies and mathematical terms	1.1 1.3	Candidates found this section challenging. They had difficulty recognising the operation required and using mathematical terms (although this difficulty may be related to fractions and decimals).

Stage 2

Candidates appeared relatively confident when working with whole numbers, percentages and decimals (apart from division) but over half experienced problems working with fractions. Average and range and Shape and space caused the most problems together with Measurement and standard units. There was also less confidence with the interpretation of tables, graphs, charts and maps.

Unit	AC	Comment	
201	Place value	1.3	Candidates generally performed well in this section. However, some candidates found it difficult to recognise tenths. The most popular incorrect answer was hundredths.
202	Measurement and standard units	1.2 1.3	Candidates found it particularly difficult to convert, and work with, metric units of length with less than a third selecting the correct answer. Only slightly more were able to work with mass. Less than a quarter selected the correct answer for conversion between imperial and metric units of length.
203	Operations on whole numbers	1.3	Candidates generally performed well on this section. However, just under half were unable to select the correct answer for division by a two digit number.
204	Operations on decimal fractions	1.3 1.4	Candidates found this section slightly more challenging than working with whole numbers. Over half of the candidates were unable to select the correct answer for division. Less than half the candidates were able to multiply by 100, then divide by ten.
205	Operations on common fractions	1.3	Less than half the candidates performed well on this section. Subtracting fractions was slightly more challenging than adding. The most common responses being to simply add/subtract the numerators and the denominators.

206	Percentages	1.2	Candidates generally performed well on this section. Calculating percentages caused more problems than expressing numerical information as a percentage. The question asking for 25% received the most incorrect answers – just under a half of the candidates chose the correct answer.
207	Conversions between common fractions, decimal fractions and percentages	1.1 1.2	Most candidates found this section challenging. The most popular choice was 0.70 as the smallest value rather than 55%. Only a third of candidates could convert four-fifths to a decimal fraction.
208	Orders of magnitude	1.1	Candidates generally performed well on this section. Over half were able to round numbers effectively - apart from numbers involving money.
209	Ratio and proportion	1.1 1.2	Candidates found this section challenging. Around a quarter of candidates chose the correct answer for each of the questions on scale. Just under half of the candidates chose the correct answer to the ratio problem.
210	Average and range	1.1 1.2	Candidates found this section challenging with less than a quarter of the candidates choosing the correct answers. There appears to be confusion between mean and mode as over half the cohort chose the distractor giving the mode. Less than a quarter of candidates chose the correct answer for range.
211	Elementary algebra	1.2	Candidates did reasonably well with this section. Candidates found substituting values into an equation relatively easy but had more problems solving simple equations with one unknown.
212	Shape and space	1.3 1.5 1.6 1.7	Candidates found some parts of this section challenging. Over half found the size of the missing angles and were able to recognise congruent triangles. They found the other questions difficult with only around a quarter of candidates choosing the correct responses.
213	Tables, graphs, charts and maps	1.1 1.3 1.7	Candidates did not perform as well on this section as last year. Only a third selected a correct response for interpreting a frequency table or for the question on bar charts. Less than a quarter chose the correct response for reading maps.

Stage 3

Candidates appeared relatively confident when working with integers, percentages and decimals but still experienced problems working with fractions. The section on ratio and proportion was more challenging at this level and average and range continued to cause problems. Both measurement and standard units and shape and space caused problems.

Unit		AC	Comment
301	Operations on integers	1.4	Candidates generally performed well in this section, however some candidates found it difficult to compare temperatures when one involved a negative number.
302	Operations on decimal fractions	1.4	Candidates generally performed well on this section. Some learners had problems using a combination of operations in context.
303	Operations on common fractions	1.2 1.3 1.4	Candidates found this section challenging. Subtracting fractions was challenging for over half of the candidates when this involved borrowing from a whole number. Multiplying and dividing caused problems for a similar number.
304	Order of operations	1.1	Candidates performed well on part of this section. Over half of the candidates had problems with the order of operations but only a few had problems with the flowchart.
305	Percentages	1.4	Candidates performed well on this section. However, around half of the candidates found the question on depreciation challenging.
306	Conversions between common fractions, decimal fractions and percentages	1.1	This section was challenging for around half of the cohort. Writing a decimal as a fraction in its simplest terms caused particular problems.
307	Ratio and proportion	1.1 1.2	Many candidates found the section challenging with less than a third choosing the correct answer for the question on scale and only a few more choosing the correct answer for conversion of money.
308	Measurement and standard units	1.1 1.2	Many candidates found this section challenging. Candidates found the first criteria for this section particularly challenging with only a quarter answering the questions correctly. The question on time was answered correctly by less than half of the candidates.
309	Reading and interpreting tables of figures, data and scales	1.1	Candidates found reading and interpreting tables difficult but performed well on reading scales.

310	Elementary statistics	1.2 1.3 1.4	Candidates found some questions in this section challenging. Candidates appeared to be confused by the term 'average mean' with more choosing the mode than the mean. However, the mode question was answered well. There was a spread of answers for the range and for probability.
311	Elementary algebra		Most candidates answered this section well
312	Shape and space	1.1 1.5 1.6 1.7 1.8 1.9	Candidates found this section particularly challenging. Candidates gave a spread of answers. Pythagoras' theorem caused concern for over half the candidates. Just over a third of candidates chose the correct response for the area of a composite shape. There was a spread of answers for the area of a quarter of a circle. There was a spread of answers with many candidates finding the area instead of the volume of the shape. Candidates appeared to have little understanding of the idea of similarity and the effect of doubling the length on triangles with most thinking that this doubles the angle.