3850 Certificate in Mathematics

Chief Examiner's Report

June 2019

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The question paper is based on the learning outcomes and assessment criteria for 3850 as stated in the Qualification Handbook. Many of the questions are based on the sample contexts but questions may be based on any aspect of the assessment criteria. This report refers to the Assessment Criteria (AC) causing particular concern to candidates.

General comments

Candidates should read each 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. However, most candidates attempted all the questions. Candidates are generally finding problems in the same areas as noted in the Chief Examiner's report for 2018.

Unit		Comment
101	Number	Candidates generally performed well in this section especially following sequences and finding the missing number. Candidates were able to order lengths of time but found ordering amounts of money challenging. Only a quarter of the candidates were able to recognise decimal fractions and common fraction equivalences for halves and quarters.
102	Measurement and standard units	Candidates found this section challenging. Many candidates were unable to estimate the height of a door or the mass of an egg. Over half of the candidates were unable to read a thermometer in degrees Fahrenheit and were unaware of the boiling point of water. Less than half were able to select the correct answer for time expressed as a 24-hour clock time.
103	Pictograms, tables, graphs and charts	Candidates performed well on this section. However, only a third of candidates were able to select what was needed to finish the graph and slightly over a third of candidates recognised that paying cash into a bank account would show as a credit.
104	Shape and space	Many candidates found this section challenging and confused millimetres with centimetres. Over half of the learners had problems with tessellation. Candidates often found the perimeter instead of the area of squares and rectangles, even when the squares were shown on the rectangle. Only a quarter of the candidates were able to find the volume of a cuboid shown as a 3D diagram and just over a third gave the correct answer when only the top

		layer was shown. The majority of candidates confused perimeter and volume and just added up the figures shown. Candidates performed well on the symmetry question.
105	Operations on whole numbers	This section attracted a good percentage of correct answers. Over three-quarters of the candidates gave correct answers for addition and subtraction and over half of the candidates gave the correct answers for multiplication and division.
106	Operations on decimal fractions	Some candidates found this section challenging. Subtraction requiring a decimal to be taken from a whole number caused problems for over half of the candidates and so did subtracting a number with two decimal places from a number with one decimal place. Last year, the multiplication and division problems set in context attracted more correct answers than those without context but this year only a third of the candidates were successful in either. The most popular incorrect answer involved no carrying.
107	Operations on common fractions	Candidates found this section challenging. Just under a third could add or subtract fractions and around the same percentage demonstrated an understanding of 'a quarter' in the context of sharing a whole number.
108	Appropriate strategies and mathematical terms	Candidates found this section challenging. Just under a half of candidates could recognise the operation required to solve a problem with only a few more able to recognise a suitable check. However, over half showed an understanding of mathematical terms in everyday conversation this year.

Stage 2

Candidates appeared relatively confident when working with whole numbers, percentages and decimals (apart from division). Range and Shape and space caused the most problems together with Measurement and standard units. There were still some problems with the interpretation of Tables, graphs, charts and maps. Candidates are generally finding problems in the same areas as noted in the Chief Examiner's report for 2018.

201	Place value	Candidates generally performed well in this section. However, only a third of candidates were able to recognise hundredths.
202	Measurement and standard units	Candidates found this section challenging. They found it particularly difficult to convert, and work with, metric units of length and mass with only a third selecting the correct answer. Around a half of the candidates selected the correct answer for conversion of imperial units of capacity and almost as many obtained the correct answer when working with time.
203	Operations on whole numbers	Candidates generally performed well on this section. However, just over half were unable to select the correct answer for division by a two digit number.
204	Operations on decimal fractions	Candidates found this section more challenging than working with whole numbers. Two thirds could multiply a decimal number by a whole number but only just over a third of the candidates were able to select the correct answer for division. Less than half of the candidates were able to multiply by 100, then divide by ten.
205	Operations on common fractions	Candidates found this section challenging. Just under half the candidates were able to calculate one third of a number but over half were able to add fractions. Subtraction was more challenging, particularly subtracting hundredths from tenths.
206	Percentages	Some candidates found this section challenging. Calculating percentages caused more problems than expressing numerical information as a percentage.
207	Conversions between common fractions, decimal fractions and percentages	Most candidates found this section challenging. They had problems converting fractions to decimal fractions. Over a half thought $\frac{4}{5}$ written as a decimal fraction was 0.45 and a third thought $\frac{7}{100}$ written as a decimal fraction was 70.

208	Orders of magnitude	Candidates generally performed well on this section. Writing a number correct to two decimal places and rounding to a whole number were the most difficult.
209	Ratio and proportion	Some candidates found this section challenging. Three-quarters of the candidates chose the correct answer to the ratio problem but only a quarter of candidates chose the correct answer for the length of the wall on the plan. Less than a third were able to interpret the scale on a map.
210	Average and range	Most candidates found this section challenging with only a third choosing the correct answer for the average mean. Less than a third chose the correct answer for range. The most popular answer was the mode.
211	Elementary algebra	Candidates performed well on substituting values into a formula but only half could find the missing values.
212	Shape and space	Candidates found some parts of this section challenging. Over a half of the candidates were able to use the properties of angles on a straight line and almost half were familiar with congruent shapes. They generally found the questions on area and perimeter difficult with only a third of candidates choosing the correct responses.
213	Tables, graphs, charts and maps	Some candidates found this section challenging. Less than a half answered the question on intervals of a frequency table correctly.

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 range continued to cause problems. Both Measurement and standard units and some aspects of Shape and space caused problems but this year candidates performed much better on the question related to Pythagoras' theorem.

301	Operations on integers	Candidates generally performed well in this section. However, half of the candidates chose the incorrect answer for standard form. About a quarter of candidates found it difficult to compare temperatures when one involved a negative number or to write a binary number.
302	Operations on decimal fractions	Candidates generally performed well on this section. Some learners had problems using a combination of operations.
303	Operations on common fractions	Some candidates found this section challenging. Subtracting fractions was challenging for over half of the candidates when this involved borrowing from a whole number.
304	Order of operations	Candidates generally performed well on part of this section but over half had problems with the question involving a flowchart.
305	Percentages	Candidates performed well on this section. This year over half of the candidates chose the correct answer for the question on depreciation.
306	Conversions between common fractions, decimal fractions and percentages	This section was challenging for some candidates. Over three-quarters of the cohort were able to express a percentage as a decimal fraction but less than a third could express a fraction as a decimal fraction.
307	Ratio and proportion	Candidates found the section challenging. Less than a third could work out the actual distance using the scale from a map and over a third had problems when a when a car travelled at a faster speed.
308	Measurement and standard units	Many candidates found this section challenging. Over a third had problems working with centilitres and millilitres or grams and kilograms. However, over three-quarters of the candidates were able to work out the time in Madrid when they were given

		the time in Kingston.
309	Reading and interpreting tables of figures, data and scales	Candidates generally performed well on this section. They found reading and interpreting the table on dog harnesses easier than the table on population.
310	Elementary statistics	Candidates found some questions in this section challenging. Deciding which statistic would be more useful caused a problem for the majority of candidates and less than a third were able to calculate the mean with only slightly more able to calculate the range. However, half of the candidates were able to answer the question on probability.
311	Elementary algebra	Most candidates answered this section well. The weakest area was deciding on the correct formula.
312	Shape and space	Candidates found this section particularly challenging. Over half were able to find the missing angles and a similar number could use Pythagoras' theorem to find a missing length. However, less than a third were able to find the area of a circle and fewer candidates were able to find the area of the shape. Candidates appeared to have little understanding of the idea of similarity and the effect of doubling the length of the sides of a triangle with most thinking that this doubles the size of the angles.