

3850 Certificate in Mathematics

Chief Examiner's Report

June 2017

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The question papers are 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 within the handbook 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 the question carefully and attempt all the 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. The cohort showed an improvement on several of the points noted in the Chief Examiner's report for 2016, which is available on the City & Guilds website. There was a significant increase in the number of candidates able to recognise different metric units when comparing length within a system. There was also an increase in the percentage of candidates able to select what was needed to finish the graph and almost half of the candidates identified the correct answer to a question about lines of symmetry. Some candidates found working within a context more difficult than a straightforward sum.

Unit		Comment
101	Number	Candidates generally performed well in this section. However, over half of the candidates found it difficult to order amounts of money and less than half of the candidates recognised decimal fractions and common fraction equivalences for halves and quarters.
102	Measurement and standard units	About a quarter of candidates selected the correct answer for clockwise rotation relating to the points of the compass. Just over a half of candidates were able to select the correct time shown by an analogue clock but almost three-quarters were able to use digital time in context. Many candidates were unable to recognise capacity and a third of candidates felt that a teaspoon would hold five litres. Few candidates were able to identify body temperature or the boiling point of water in degrees Fahrenheit. However, there was a significant increase in the number of candidates able to recognise the different metric units when comparing length within a system – over half of candidates were able to select the correct answer.

103	Pictograms, tables, graphs and charts	Candidates performed well on this section. There was an increase in the percentage of candidates able to select what was needed to finish the graph. Only a third of candidate recognised that paying cash into a bank account would show as a credit. The majority of learners thought this was a direct debit.
104	Shape and space	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. Just over a third of candidates were able to identify the net of a box with a lid. The most popular response was the net that folds to a box without a lid. Almost a half of the candidates were able to find the volume of a cuboid shown as a 3D diagram but less than a quarter of candidates gave the correct answer when only the top layer was shown. The majority of candidates just counted the squares shown and did not attempt to calculate for the two layers. Almost a half identified the correct answer to a question about lines of symmetry.
105	Operations on whole numbers	This section attracted a good percentage of correct answers. The main problem for over half of the candidates was division. The most popular answer for 627 divided by 3 was 29.
106	Operations on decimal fractions	Some candidates found this section challenging. Over 80% were confident with addition but subtraction requiring a decimal to be taken from a whole number caused problems. Although two thirds of the candidates could multiply decimals in one question, less than half could multiply a decimal number by 100. The division problem set in context attracted over 50% of correct answers, although the division without context attracted fewer with just over a third giving the correct answer.
107	Operations on common fractions	Although a higher percentage of candidates attempted the questions than last year, candidates still found this section challenging. Less than a third of candidates could add fractions with the most common response being to simply add the numerators and the denominators. Almost a half demonstrated an understanding of 'quarter' in the context of sharing a whole number.

108	Appropriate strategies and mathematical terms	Two thirds of candidates could recognize the operation required to solve a problem but fewer were able to recognize a suitable check. Almost half the candidates did not show an understanding of mathematical terms in everyday conversation and did not realise that 0.5 is less than 5.
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Stage 2

Candidates appeared relatively confident when working with whole numbers, percentages and decimals (apart from division) and there was an improvement in candidates' understanding when working with fractions and the conversion between imperial and metric units of capacity. The cohort showed an improvement on several of the points noted in the Chief Examiner's report for 2016, which is available on the City & Guilds website. There was some improvement in candidates' understanding of the scale on maps and a sharp increase in the percentage choosing the correct answer for ratio problems. 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 but generally, the cohort showed an improvement on 2016.

201	Place value	Candidates generally performed well in this section. However, only just over a third of candidates were able to recognise tenths.
202	Measurement and standard units	Candidates found it particularly difficult to convert, and work with, metric units of capacity and mass with less than a third of candidates selecting the correct answer. However over a half of candidates selected the correct answer for conversion between imperial and metric units of capacity.
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 slightly more challenging than working with whole numbers. Just over half of the candidates were able to select the correct answer for division out of context but less than a third could find the cost in context. Less than half of the candidates were able to multiply by 100, then divide by ten.
205	Operations on common fractions	There was an improvement this year with over half the candidates able to calculate one third of a number. Only a third of candidates were able to add and subtract fractions involving halves and quarters. However, a question involving both addition and subtraction was answered correctly by over half of the learners showing their competence with tenths and fifths.

206	Percentages	Candidates generally performed well on this section. 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. The most popular choice was 65% as the highest value rather than three-quarters. Almost a half thought that 3 out of 5 was 0.35 as a decimal fraction.
208	Orders of magnitude	Candidates generally performed well on this section. Over half were able to round numbers effectively – apart from numbers involving money.
209	Ratio and proportion	Some candidates found this section challenging. An increased percentage of candidates were able to answer the question concerning scale on the map correctly but only a quarter of candidates chose the correct answer for the length of the wall on the plan. There was a sharp increase in the percentage of candidates choosing the correct answer to the ratio problem.
210	Average and range	As last year, some candidates found this section challenging. There appears to be confusion between the 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 – almost half chose the highest number of hours.
211	Elementary algebra	Most candidates performed well on this section.
212	Shape and space	Candidates found some parts of this section challenging. Three-quarters were able to recognise congruent triangles and over half were able to use the properties of angles on a straight line. However, less than half understood the properties of isosceles and equilateral triangles. They found the questions on area and perimeter difficult with only around a quarter of candidates choosing the correct responses.
213	Tables, graphs, charts and maps	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 range continued to cause problems. Both measurement and standard units and shape and space caused problems. However the cohort showed an improvement on several of the points noted in the Chief Examiner's report for 2016, which is available on the City & Guilds website. There was a noticeable improvement in the understanding of average mean and mode.

301	Operations on integers	Candidates generally performed well in this section. However, some candidates were uncertain about prime numbers and standard form. About a quarter of candidates found it difficult to compare temperatures when one involved a negative number and only a third chose the correct option for the question on binary numbers.
302	Operations on decimal fractions	Candidates generally performed well on this section. Some learners had problems using a combination of operations in context – eg shopping tasks.
303	Operations on common fractions	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 of candidates.
304	Order of operations	Candidates performed well on this section. Fewer than half of the candidates had problems with the order of operations and only a few had problems with the flowchart.
305	Percentages	Candidates performed well on this section. However, around half of the candidates found the questions on interest and depreciation challenging.
306	Conversions between common fractions, decimal fractions and percentages	This section was challenging for over half of the cohort. The most popular answer for the comparison question was that 40% off is a better deal than \$40 off, even though the item costs less than \$100.
307	Ratio and proportion	Candidates found the section slightly more challenging this year with less than a third choosing the correct answers. Nearly 40% of candidates converting 450 Euros to Dollars using a conversion rate of 0.90 chose the answer \$4050

308	Measurement and standard units	<p>Many candidates found this section challenging. Over a third correctly found the volume of the cube but almost half of the candidates tried to divide grams by the number of kilograms.</p> <p>Just over half were able to work out the time in Kingston when they were given the time in Washington DC.</p>
309	Reading and interpreting tables of figures, data and scales	<p>Candidates found reading and interpreting the medal table easier than the table on bank accounts. Over half were able to answer the question relating to scale.</p>
310	Elementary statistics	<p>Candidates found some questions in this section challenging.</p> <p>Some candidates appeared to be confused by the term 'average mean', although over half chose the correct answer. The mode question was answered well by almost all the candidates.</p> <p>Most candidates did not understand the question on range but did better than last year on probability.</p>
311	Elementary algebra	<p>Most candidates answered this section well. The weakest areas were using the formula and the gradient of the line.</p>
312	Shape and space	<p>Candidates found this section particularly challenging. Candidates gave a spread of answers for some questions including the circumference of a circle and the volume of the shape.</p> <p>The question on Pythagoras' theorem was answered correctly by half of the candidates but less than a third of candidates chose the correct response for the area of the path.</p> <p>Candidates appeared to have little understanding of the idea of similarity and the effect of doubling the length on squares with most thinking that this doubles the area.</p>

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