4748-119 (E-volve) and 4748-219 (Paper-based) Functional Skills Mathematics Level 1

Chief Examiner Report

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For external use

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1 Introduction

The purpose of this document is to provide centres with feedback on the performance of candidates for 4748-119 and 4748-219 Functional Skills Mathematics Level 1.

Centres should read this report in conjunction with the Guidance for Delivery document.

2 Overall Performance

This report covers the period from January 2023 to October 2023.

Candidates are expected to cover adequately underpinning knowledge and problem-solving skills within the assessment, including completing part of the assessment without a calculator. Candidates are therefore required to undertake a two-part assessment.

	Part 1 **Calculator not permitted** **(25 minutes)**	**Part 2** **Calculator permitted** **(1-hour 20 minutes)**
Underpinning knowledge **(15 marks = 25%)**	10 single mark context free questions	5 single mark context free questions
Problem solving **(45 marks = 75%)**	2 problem solving questions with practical context (total 5 marks)	1 single mark check (for sense of result) 9 problem solving questions with practical context (mark tariff between 2 and 6 marks each, total 39 marks)

Many candidates have coped well with the assessment requirements and have achieved pass grades. The overall pass rate has improved, at just under 50% for this assessment. The number of candidates achieving high marks (85%+) has also increased.

However, a very significant percentage of candidates have performed poorly. Approximately 25% of candidates have achieved 20 marks or less.

2.1 Areas of good performance

A large number of candidates produced well worked solutions to the problems set, both online and on paper.

Most of these candidates coped with calculation requirements and understood the principles of basic operations (addition, subtraction, multiplication, division and BIDMAS) and could deal with fractions, decimals, percentages, and ratio/proportion. They have shown understanding of line symmetry, basic geometry, scaling and the interpretation of plans and elevations.

Statistical problems have been dealt with competently by these candidates, who calculated means and ranges, and accurately completed probability questions using word and numerical descriptions. The candidates used and produced graphical presentations including the results of grouping discrete data and scaled diagrams.

Successful candidates have given reasonable explanations of their results and demonstrated understanding of the problem contexts.

2.2 Areas for development

2.2.1 General observations

Script marking shows that some candidates are not able to meet the demands of the Level 1 papers. Many candidates did not make accurate calculations using fractions, percentages and ratios; rounding to given numbers of decimal places; reading and applying scales; grouping data and making statistical calculations including probability.

Candidates must understand that problem solving involves not only calculation but also the selection of relevant data and the presentation and explanation of results.

Candidates are expected to show their working to be eligible for compensation marks in cases where they have not achieved a fully correct answer.

Some online candidates do not appear to have had sufficient practice in using the diagram or chart tools and therefore lost a significant number of marks.

2.2.2 Underpinning knowledge (UPK) questions

There are 15 underpinning knowledge questions, generally with no contextual setting. Ten of these questions are in the non-calculator section. Here candidates have just under two minutes per question and therefore need to be remain aware of the time limitations.

Many of the questions are calculations involving an understanding of fractions, percentages, and ratios. Some involve basic geometry (calculation of angles); calculations of areas, perimeters, and volumes; and simple statistics questions including probability.

Many of the difficulties encountered by candidates in the UPK sections translate into difficulties in dealing with problem solving (PS) questions, where the same issues arise for solving questions in more complex contexts.

Areas where some candidates performed less well – UPK (across the assessment versions)

The following UPK question types were less successfully attempted by more than half the candidates.

Underpinning knowledge	Examples/explanation
Calculations involving decimals:	Some candidates lost marks (even when using a calculator) by misplacing decimal points.
	Some candidates ignored or had difficulty with the instruction to round to a given number of places.
Calculations using fractions:	Many candidates found difficulty multiplying whole numbers by fractions.
	Some candidates could not find fractions of whole numbers. Note: common error: one third is not 30%, nor 0.3 $\frac{3}{4}$

	Note: Candidates need to be aware of the answer box format shown above
	Many candidates could not approximate fractions to estimate addition.
Calculations involving percentages:	Some candidates had difficulty working out percentages of quantities. e.g. 20 as a percentage of 50.
	Some candidates could not increase a whole number by a given percentage. e.g. increasing £45 by 15%.
Equivalences between fractions, decimals and percentages:	Many candidates were unable to order values because they misunderstood equivalent values. e.g. $\frac{3}{5}$ = 60% = 0.6
Use of ratio:	Many candidates did not understand calculations finding amounts from given ratios. e.g. amount of substance to make a 1 in 50 solution.
Use of scale:	Many candidates misread linear distance on 2mm graph paper, although understanding the scale given.
Understanding line symmetry:	Some candidates could not accurately draw lines of symmetry on given shapes.
	Some candidates did not recognise the numbers of lines of symmetry in given 2-D shapes
Calculation of area and perimeter:	Some candidates did not use appropriate additions (perimeter) or multiplication (area) of linear dimensions.
Calculation of volume:	Some candidates added dimensions rather than multiplying them. e.g. volume of a cube given one side
Conversions:	Many candidates incorrectly equated decimal hours as hours and minutes. e.g. 3.25 hours is not 3 hours 25 minutes
	Some candidates did not use correct conversions of weight. e.g. grams converted to kilograms.
	Some candidates did not use correct conversions of linear dimensions. e.g. common errors with mm to cm and km to m.

2.2.3 Problem solving (PS) questions

There are 12 problem solving questions, including two in the 'calculator not-permitted' section.

Many candidates have found difficulty coping with the style and scope of problem-solving questions, given the number of different contexts presented.

There is little or no scaffolding within a question and little guidance given beyond a start point and a finish point. Candidates are expected to choose an appropriate approach and methods as well as carry out calculations. They are also given opportunities to interpret information.

Areas where some candidates performed less well –

Problem Solving

Units
Misunderstanding units, particularly relating to linear dimensions (mm, cm, m and km) and those of time, prevents some candidates from successfully completing questions. Many candidates did not show units either in their answers or workings. Although a candidate will not be repeatedly penalised for this, the absence of units can lead to confusion for the candidate as their answer develops. e.g. when dealing with scale plans. Similarly, the £ sign is not used, and answers are given in incorrect money format. e.g. an answer £4.30 written as £4.3 or £4.333 will be penalised.

Explanations:
Many candidates are missing out on an extra mark in questions that require 'rounding off' with a brief summary of how their results answer the problem outlined in the question.

Problem-solving questions may specify a requirement for explanation, sometimes asked as 'comments'. Candidates must be aware that, although marks will be awarded for relevant calculations, full marks will require clear explanations using their results, preferably with reference to numerical values calculated.

The explanation should link with (refer back to) the problem stated in the question using values calculated.

Example of a problem	Example of an expected answer
A customer wants to buy the best value paint.	**Result of calculation:** option A costs £19.00 option B costs £23.50 **Answer:** customer should buy option A **Explanation**: option A is cheaper by £4.50.
A holidaymaker wants to choose the warmest place to go.	**Result of calculation:** mean temperature for place A is 26°C and place B is 19°C **Answer:** the holidaymaker should choose place A **Comment:** A is warmer than B average temperature for A is 26°C > 19°C for B.

Check for sense: Many candidates experience difficulty with this type of question where there is an expectation that they will consider whether a result is sensible or not. Candidates should be advised to look at given data or graphical evidence relating to a given comment or result.

Example	Response
A student works out that the average temperature in Manchester for December is 165°C	165°C is far too high a temperature.
Recognise whether an interpretation of data presented as a chart is accurate (bar charts not starting at zero on the vertical scale may distort differences).	Sales in May are not twice as much as in June as bar scale does not start at zero.
Recognise whether (or not) appropriate amounts or units are used.	100m is too big for the width of a door, wrong units used, cm not m.
	a person will not weigh 80g, wrong units used, should be kg.
	the area of a bedroom floor will not be 24cm^{2,} should be 24m^2.

The following problem-solving question types were not successfully achieved by more than half the candidates.

Question types	Example
Calculation requiring $\frac{3}{4}$ of large number:	Some candidates could not calculate the number of items required; many gave an answer that was $\frac{1}{4}$ of the given value.
Calculation involving discount and costs for a number of journeys over a period of time:	Many candidates do not understand the concept of a discounted ticket so were unable to calculate an accurate fare with a third off. Some equated one third with 30%.
Problems involving calculation of areas and perimeters from diagrams and scaled diagrams:	Many candidates could not calculate areas of L-shaped items.
	Many candidates could not scale up a linear distance from a scaled diagram of a rectangle and therefore could not work out the number of these distances that would be necessary to make the given overall distance required.
	Many candidates did not calculate perimeters of areas that required, e.g. fencing, and therefore could not cost material.
	Many candidates did not understand the scaled dimensions given in diagrams.
	Some candidates found difficulty in (or missed) finding unlabelled dimensions from the incomplete dimensions given.
	Many candidates did not follow a simple word formula for the area of a circle – many appeared not to understand (or missed) radius squared in the formula.
Problems involving calculation of capacity (volume)	Many candidates did not calculate capacity (volume) of objects in context and failed to multiply the three appropriate dimensions – many add dimensions.

	Many candidates could not relate the capacity of a container to the volume of material needed to fill it.
Calculation of payments over 3 years given one month:	Although candidates generally dealt with problems involving money, many did not understand simple interest over a period of time.
	Many candidates could not follow the simple word equations given.
	Some candidates did not know (or use) 12 months = one year.
Grouping data and presenting grouped data graphically:	Most candidates attempted these questions. Many lost marks by miscounting and/or failing to divide groups into suitable equal parts.
	Candidates lost marks in producing bar charts without axis labels and/or without clearly identifying their groups.
Problems involving ratio and proportion:	Many candidates could not scale up ingredients in a recipe (increasing number proportionally).
	Many candidates could not work out the number of items required for one month, given number for six days.
	Many candidates did not work out the amounts required for each item in a mixture given a ratio. They were therefore unable to cost the materials.
Problems involving tax calculation:	Many candidates did not pick up on the 'free pay' aspect of these calculations and applied a 20% deduction to whole salaries.
	Some candidates added 'free pay' and 20% to the original salary with the result that a person paid more tax than the salary they had.
Creating an events timetable	Although many candidates produced accurate timetables, usually in the form of a table, some lost marks by omitting headings or using inconsistent time formats.
Problems involving averages (mean only required at Level 1) and range	Many candidates did not work at average times accurately, many equated minutes and decimal points, e.g. 32minutes 30seconds as 32.3 minutes.
	Some candidates did not calculate and round the result when adding daily values for one week for comparison with given values for other weeks.
	Many candidates considered range to be an alternative average to mean rather than a value describing the spread (variation or consistency) of the original data and lost marks when making comparisons of results.
	Many candidates lost marks for presentation of results by omitting axis labels and/or clear identification of items.

3 Recommendations/Advice for centres:

The assessment, is based on the: DfE Subject content functional skills Maths

Centres should understand that the assessment is based on the 31 Subject Content Statements (SCS), and also the general descriptions preceding each section and that the content at Level 1 subsumes and builds upon the content at all the lower levels (i.e., Entry 1 to 3).

Centres should consider carefully whether a candidate is operating at an appropriate level to be entered for a Level 1 examination.

There are two platforms, paper-based and online available for this assessment. Centres should ensure that an appropriate choice of platform is made for candidates based on each candidate's need and preference.

Centres should advise candidates about appropriate 'exam technique' particularly with regard to attempting questions in order. Candidates may attempt questions in any order.

Candidates who choose to access assessment online need to be prepared not only in terms of the prescribed Functional Skills subject content, but also in terms of using the E-volve platform. They must be well practiced in the use of the presentation tools (tables, diagrams, charts and graphs). Centres are reminded that sample assessments as well as familiarisation tests are available to use on Open Assess.

Online candidates must also understand how to insert sufficient text, e.g. to show calculations and working, so that potential compensation marks, in the event of incorrect answers, are accessible. The importance of showing working in paper-based assessment should be stressed for the same reason.

Additional Information

Centres should be aware that pass marks may vary from paper to paper as a result of an awarding process undertaken by City & Guilds. (which is available in our pass rates document) Any difference in pass marks reflects the perceived and actual difference in demand of the exam papers. Therefore, it is possible that two candidates with the same score may have different overall results (pass or fail) if they have taken different versions of papers.

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