Examiners' Report

July 2016

Pearson Edexcel Functional Skills Mathematics Level 1 (FSM01)

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General comments

Learners that were fully prepared for examination with a ruler, calculator and protractor did well. Some learners were either unfamiliar with the use of a protractor or did not have one available for examination. This was evidenced by learners measuring the lengths of the sides of the triangle, as opposed to the angle in question in question 4a or guessing the angle.

Evidence of no calculator was very apparent in question 1a and throughout multi-step questions, such as question 3. Learners that had no ruler were unable to access question 3b, which required learners to work with scale accurately.

Most learners accessed Section A successfully and made good progress through the section. It was encouraging to see that centres had prepared learners to work well with money, demonstrated through the level of accuracy that learners presented in their answers when adding and subtracting money to two decimal places. Learners that had a calculator available did well with these questions, as it enabled them to present efficient answers with good organisation. Learners that did not write their units down correctly or those that used a disorganised approach to working with units made common errors.

On papers where there is a simple addition including mixed units of pounds and pennies, at level 1, we do try to support learners by lining up the units within the question. Centres should encourage learners to use our laid out sums within the question to help organise their answer. This may minimise common mistakes. Learners should also be encouraged to check the units of their final answers. Examples of this are in questions 1a and 3a where the sums are laid out to support learners and information is also presented in a table.

Learner responses to question 3b were encouraging, with many learners accessing the 1:1 scale. Centres, particularly those that are working with learners within a vocational context, should continue to use practical scenarios within the home and workplace to allow learners to practice using common measures within context. Where learning is taking place in a classroom without context, centres should continue to encourage practical application of mathematics providing scenario based questions, as presented in question 3b, as the performance achieved by the majority of learners was very good.

Many learners did not access the measure, shape and space question involving angles. Centres should provide more support on the use of angles to help develop learner confidence, knowledge and understanding

of angles in practical applications. Many learners either did not have a protractor or did not have the knowledge to identify a common angle.

The formula question was answered very well and centres should be congratulated on ensuring that this area of the specification had been taught well, resulting in some good, full answers and reverse calculations presented as a check.

Section B continued to be answered well; however, many learners did not understand how to calculate range, presenting only the literal meaning of the word range, as opposed to the required calculation, i.e learners recorded the highest and lowest numbers, but did not subtract these figures.

Time continues to be a challenge for learners at level 1. Learners continue to make common errors with time, such as using a calculator and not remembering that time is calculated in minutes, calculating decimals and fractions of hours incorrectly. Learners continue to get confused between a quarter and three quarters of an hour. Centres should provide learners with a good foundation of working with 30 minutes, 0.5 hours, 15 minutes, 0.25 hours and the equivalent fractions. Learners should be discouraged from working with decimals when working with time where the question moves away from working in common measures, which is more common at level 1 and level 2 as learners are required to work with more complexity and questions become more challenging.

Learners should be encouraged to identify their consistent units at the beginning of the question and to find the best units to work efficiently. Learners should also be encouraged to write their conversions down next to the alternatives, as the ability to convert awards marks. This will also help to organise learner's responses, as learners tend to work untidily with time, which creates further confusion, as learners get lost half way through, particularly when they pass over an hour and pass over noon. Centres should provide as many checking techniques as possible to learners, including checking the question at a macro and micro level.

Learners continue to confuse perimeter and area, this is because at level 1, learners are only required to count squares or count how many times a shape fits along one side, which often creates this confusion. Area calculations in the form of length × width are only required at level 2. Centres could spend more time demonstrating counting by squares methods, as we always facilitate an answer using counting by squares on our level 1 papers by providing a shape to support learners to count squares. This will consolidate area in preparation for level 2 progression and may free up space on schemes of work, particularly if centres are teaching length × width methods.

Our papers are now moving towards using a data collection sheet in addition to designing a data collection sheet. Learners wasted time during this examination by not creating efficient data collection sheets. Many replicated the telephone number, which was not required. Peer evaluation and centre feedback may support learners in preparation for examination to ensure that data collection sheets are efficient.

It was clear that many learners do not understand ratio and its practical application from the answers reviewed. Centres need to provide learners with more practice on using ratio and calculating using ratio in practical scenarios.

It was encouraging that learners had a good grasp of the data within the chart and were able to provide a number of accurate comments. More practice with fractions and the use of the pie chart to demonstrate angles may have encouraged learners to review some of the more challenging aspects of the pie chart – most learners were able to identify a half, but were not able to identify a quarter or an eighth. Only one learner accessed the question by describing the segments of the pie chart accurately in degrees using their protractor or by correlating the fractions of the pie chart with their knowledge of how to create a pie chart.

Section A

Q1a)
Learners that were prepared with a calculator and those that organised their approach to the question by working tidily were most successful. Learners that relied on inefficient methods of calculation without a calculator made common errors with units.

Learners were required to interpret their answer in correct units. Many learners presented answers correctly; however, many also presented answers in mixed and inaccurate units.

Q1b)
The majority of the learners accessed this question. Common errors and the reason for not achieving full marks include:

- Inaccurate use of 30% instead of 33%
- Final answers presenting the total cost of the courses as the amount of saving
- Learners not providing a reverse calculation or estimation to demonstrating checking skills

In a minority of cases, but apparent to mention, some learners did not fully understand a third and calculated a quarter. Where this was evidenced, many learners were stating that they were going to calculate 25%. Centres should provide learners with more practice on identifying common fraction equivalences in decimal and percentage formats to ensure that this knowledge is consolidated and facilitates efficient methods for calculating cost savings in multistep problems.

Q2)
This question used likelihood in a practical scenario. Most learners identified from the symbols that rain was likely. Some learners did not access the unfamiliar diagram. Centres should provide learners with a good range of practical examples of likelihood by discussing likelihood in a good range of contexts so that learners are fully prepared for examination.

Q3a)

Many learners begun to access this multi-step question and begun to work with length and cost.

Learners that did not have a calculator found this question particularly challenging, as there were a number of calculations that required efficient strategies.

Many learners calculated the cost of extensions, but did not remember to add on the £15 to their extensions to calculate the total cost of the baby gate including the extensions.

Centres should provide learners with opportunity to practice and consolidate their mathematics using multi-step problems and should provide plenty of exam practice, including tips on exam strategy, such as, highlighting key information on the paper and going back to check that they have completed all aspects of the question.

Where costs are often presented in real life situations ending in 99p, learners should be encouraged to check their answers in full pounds to ensure that they are accurate. Strategies such as, adding in full pounds and the subtracting the pennies should be used, particularly where a calculator is not being used.

Q3b)

Most learners accessed the 1:1 scale within this question and made a good attempt at working with the constraints. Some learners missed one or two of the constraints, but were awarded marks for using scale.

It was disappointing to see that some learners did not have a ruler, so lost marks for guessing/estimating and for inaccurate final answers.

Where centres are adapting papers to meet candidate needs, it is important to ensure that when photocopying question papers on to coloured paper or enlarging papers that they give full consideration to questions that require learners to work accurately with scale. Unfortunately, some centres did not adapt papers effectively, which did not give equality of opportunity for this question. In these cases, examiners gave as much credit as possible and worked with the 1:1 scales that learners had been presented.

Section B

Q4a)
It was very evident that many learners did not have a protractor available for this question and that many learners were unable to recognise simple angles.

Q4b)
Most learners attempted this formulae question presented as a number machine. Many learners also provided good reverse calculation methods to check their answer.

It is encouraging to see good performance for this question. To prepare learners for level 2, centres should identify teaching and learning strategies to effectively transfer knowledge, understanding and skills from level 1 formulae that uses number machines to two-step formulae presented in unfamiliar and less structured formats.

Centres should also ensure that the good understanding of checking processes seen using number machines are transferred to other questions that require reverse calculation checking processes. Learners clearly understand checks when doing these questions, but do not understand them so well where the process is not so clearly provided in the question, as it is with a number machine.

Q5a)
Most learners accessed this question and understood the diagram. Learners that did not have a calculator found the mixed units a challenge to work with and many learners did not read the question accurately, thus omitting the start from home or finish from home constraints. Highlighting these key points may improve candidate performance when presenting their answers.

Q5b)
A minority of learners did not know how to calculate the range and merely presented the highest and lowest figures without completing the subtraction calculation. Unfortunately, this did not result in any marks being awarded for this one mark element. Centres should ensure that they consolidate understanding of calculating range. This may be something that centres do not pay enough attention to, as learners are understanding the highest and lowest cost, but are not undertaking the calculation required.

Most learners accessed the mean average; unfortunately, it was apparent that errors were mainly associated with not having a calculator and were due to inaccuracy in calculation and not attributed to not understanding the process of mean average.

Q6)

Many learners accessed this challenging, multistep time question. Common errors were with not understanding three quarters of an hour, with some learners identifying this as 75 minutes or as 15 minutes, again consolidating my assertion that learners were not certain in their knowledge of the use of fractions and equivalences in practical application.

Some learners did not work effectively in time, attempting to work in decimal formats and not fully understanding minutes and hours.

Some learners lost accuracy marks in their addition of time and did not use appropriate checking processes to ensure that their answer was correct, such as, working with the total time or counting backwards.

Section C

Q7)
This particularly challenging level 1 question that differentiated those that were working at Entry level and those had consolidated their level 1 skills and were examination ready.

Some learners made good attempts to work efficiently by counting squares and understanding unitisation. Identifying $3 \times 10 = 30$ and $6 \times 10 = 60$ or $30 \div 3 = 10$ and $60 \div 6 = 10$ working with length and width. Some learners fully understood emerging level 2 skills and more efficient methods of working with area, which was not required to answer this multistep question, but was credited in the mark scheme alongside the level 1 method of working with lengths and widths and counting squares.

Some learners had no concept of area and begun to work with perimeter, so it is important that centres make the full distinction between perimeter and area at level 1, which is very subtle due to the learners not needing to know length × width, which is a level 2 skill.

Further to this, at level 1, learners are only required to understand area by counting squares or fitting length or width along one side. Centres should ensure that the distinction between level 1 use of perimeter and area is clear and that learners understand this, as they are confusing the two when working with lengths and widths and how one shape's proportions correlate with another shape in the same number series.

Learners had a good understanding that their answer needed to be multiplied by £20 to achieve the final answer, with one mark allocated to this specifically if they were unable to make the distinction between area and perimeter.

The final answer £2000 was not required in pounds as the units for the final answer, but it is best practice and centres should always promote with learners that they should present their final answer with correct units, which many learners did not.

Q7b)
This question required learners to create a functional and efficient data collection sheet for them to use themselves to present data.

Many learners made some very good attempts, but lost marks due to inefficient data collection sheets. Many learners did not present a column for telephone number and wrote the telephone number repeatedly. Some learners also lost marks by not presenting the full list of headings, as required.

Highlighting the key information within this question could have saved the candidate time in repetitive inefficient solutions and could have prompted the process of checking that all constraints had been met, supporting efficiency.

There was plenty of space on the question paper for learners to sketch a draft data collection sheet and for them to evaluate this before attempting their final answer. Learners should be encouraged to do this and use the space in the exam paper wisely, as their sketch may also support the allocation of marks, particularly if they do not have the skills or confidence to evaluate their sketch fully to construct a final answer.

Most learners used their data collection sheet to populate the data, albeit, inefficiently.

Q8a)
Many learners did not demonstrate an understanding of ratio to answer this level 1 question. Many learners understood the ratio of 1:2 to mean half and presented £60 as their final answer, which did not achieve any marks.

Ratio is a skill not previously learned at Entry Level. Centres should check that their schemes of work include ratio, as learners have no previous knowledge of ratio to build upon.

Q8b)
It was encouraging that many learners were able to calculate 20 percent and used a number of strategies such as finding 10 percent and doubling to find the correct answer. Learners should use these practical strategies to support their check. Some learners lacked confidence with efficient strategies to find 20 percent, which was evidenced by a large amount of crossing out and untidy work. This lack of confidence also hindered the process of checking.

Q8c)
Some great answers and good understanding of pie charts. Learners provided a number of full answers; however, some of these answers consolidated a lack of understanding of angles and equivalences in fractions, a common theme from candidate responses on this paper.

In a minority of cases, learners presented non-mathematical solutions, such as, "I think the money should go to the hospital, because the sick people are in most need of the money". Such answers do not attribute

marks as they are based on opinion and the learner has not interpreted the data.