edexcel
advancing learning, changing lives

Principal Examiners' Report
January 2011

FS

Functional Skills Mathematics Level 2 (FSM02)

Edexcel Limited. Registered in England and Wales No. 4496750
Registered Office: One90 High Holborn, London WC1V 7BH

A PEARSON COMPANY

Edexcel is one of the leading examining and awarding bodies in the UK and throughout the world. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers.

Through a network of UK and overseas offices, Edexcel's centres receive the support they need to help them deliver their education and training programmes to learners.

For further information, please call our Functional Skills line on **0844 576 0028**

or visit our website at www.edexcel.com/fs.

If you have any subject specific questions about the content of this Mark Scheme that require the help of a subject specialist, you may find our Ask The Expert email service helpful.
Ask The Expert can be accessed online at the following link:
http://www.edexcel.com/Aboutus/contact-us/

January 2011

Publications Code FC026573

FSM02 - Functional Skills Mathematics Level 2

Introduction

The majority of the learners found the paper accessible and attempted to answer all of the questions though there was some evidence of a few learners running short of time. The paper expects learners to use a calculator and time constraints may have been a problem to those who did not have access to the equipment they need.

Evidence that learners can meet the Functional Skills requirement must be shown and they need to realise the importance of the presentation of their work. Some of the learners' work was very difficult to follow and they need to be encouraged to follow the techniques they have learned to solve the problem, rather than randomly trying different processes in the hope of getting an answer.

Teachers should make sure learners are aware that decisions made without any working are unlikely to gain any marks. (E.g. whether the taxi driver had enough petrol). Encourage them to state the decision clearly and also to give the evidence for their decision

Whilst many learners showed some working, they need to be aware that complete processes are necessary to gain the full complement of marks. This should include a full method for their working and legible figures. It was disappointing to note that unnecessary simple errors in calculation were made because they did not use a calculator. Centres need to ensure that their learners have and more importantly use a calculator in this type of examination.

Learners need to be encouraged to read each question carefully, to choose the relevant information and most importantly, to check their work in case they have not used all the necessary information. They must also be encouraged to check whether their answers are reasonable.

Section A: Summer Fairs

Q1 (a) This question was generally well done and many learners were able to complete the summary sheet for the amounts. A number did not use a calculator and some had problems converting pence into pounds. A significant number of learners did relate their answer to this calculation to a realistic/sensible amount for the Income from entry to the fair. Many learners used the box provided to show the stages in their calculations.

Q1 (b) Many learners were able to successfully convert their income in part (a) to a profit ▫ by subtracting the costs as set out in the question. A very small number tried some other methods, which were either not relevant, or just not correct.

Q1 (c) Many learners were able to provide a suitable check for their calculation in part (b), usually by adding 75.30 back on to their answer to confirm the total income. Learners should realise that a reverse process or estimation is needed. A repeat of the previous calculation does not gain credit nor does the suggestion that a calculator should be used.

Others need more work on how to check their answers. Matching card games on functions and inverses may be a useful way to practise the 'checking' skills.
Some learners described using the inverse to check. Perhaps if they actually performed the calculation and carried it out they might spot and correct earlier errors.

Q2 This question was generally done well, with many learners showing a good understanding of the context of the problem and being able to calculate accurately the time points and total points in the Points Table. The most common error was -10 + (-8) = -2. Learners could be encouraged to draw a number line if they are having problems in this area. Many learners were than able to order their integers to determine the Results table, a small number of learners did not complete the points table, but many of these were able to gain marks for their working in the spaces provided, or by correct entries in the Results table. Learners should be encouraged to complete tables with missing entries to help them in their decision processes.

Q3 (a) A large majority of learners scored full marks on the drawing but a few were unable to grasp the context of the question. A few drew squares of a size which did not fit the constraints, others drew different shapes. Some credit was allowed for a rectangle but nothing for circles or hexagons. Learners should be encouraged to reflect on the solutions that they obtain and see if they consider them to be practical. Encourage learners to highlight the key points of information when reading through a question before they start to answer it. Teachers need to make sure that pupils know basic shapes especially the difference between a square and a rectangle.

Q3 (b)The majority of learners were able to access the first mark for finding the perimeter of their square. A few confused perimeter with area. A surprising number of learners were unable to count the squares correctly for their perimeter, sometimes over-counting, sometimes under-counting, when going round the corners.
A number failed to apply the scale factor to achieve the second mark.
Those learners that were able to correctly count round their perimeter and apply the scale factor correctly, were generally able to multiply their answer by 69p correctly. Quite a number of these got caught in the notation trap by either leaving off the £ sign or omitting the trailing zero for pence. The incorrect notation £55.20p continues to be popular for many learners.

Q3 (c) Many learners were able to substitute D=16 into the formula to calculate the circumference of the circle, with the vast majority of these giving their answer to at least 1 decimal place accuracy. Few learners used the value of pi in their calculator. Many learners used the space provided to show the substitution stage of the calculation which was awarded the first mark.

Section B: Taxi

Q4 Time continues to be a problem for many learners and centres are advised to give more practice in this area. Most learners were able to work out the finish times of the journey but completing the taxi column caused more problems. Learners obviously wrote the taxis down before completing the schedule then discovered they had made mistakes but did not go back and change the booking sheet to match.
The schedule was reasonably well completed but a significant number of learners did not go beyond writing down one or two journeys before giving up. Not all learners followed the pattern of the given examples and chose to give the destination of the journey rather than the name of the client. This would not be functional as the driver would not know who was to be collected. A common error was to write 10.05 as 10.5
It is important that learners read the question again after completing an answer to check that all restrictions have been catered for. Many learners did not read 'Allow 15 minutes ...' and placed Mr Micel before Ms Green on the booking schedule.

Q5 (a)The majority of learners were able to draw an appropriate correctly scaled diagram with a key or labels for male/female. A significant number of learners used a linear scale but chose to use 3 or 4 per cm which made plotting difficult or inaccurate.
Some learners chose to use compound bar charts but few were able to do so correctly with the top section only being plotted up to the higher of the values for males/females rather than the total height of males and females.
Many learners displayed the total for each age group which was not sufficient to display all of the given information.
The most successful approach was to use dual bar charts.
A small number of learners used scales that extended off the grid. They should practice planning scales to a size which will fit the constraint of the given grid. To improve learner understanding of appropriate charts and graphs, they need opportunities to see a range of charts for tables of given data and discuss common errors/misconceptions, particularly with compound bar charts and use of scales.

Q5(b) A large number of learners completed accurate calculations but failed to make a comparison. Teachers need to make it clear to learners that examiners will not make the decisions for them based on their calculations alone. Writing down two figures does not constitute a comparison. Most learners who did make comments did back them up albeit weakly in some cases.

Q5(c) Any age group or gender group was a correct decision but to gain the mark evidence had to be drawn from the given data. The majority of learners answered this in an acceptable manner although some failed to give a reason for their choice and so could not score the available mark. A few learners chose the 60 and over category but did not use the chart or comparisons made as their reason, stating it was because this age category could not drive so needed taxis!

Q 6 This was answered well with the majority of learners scoring full marks. Most used the '5 × 36' method. It was rare to see errors in calculations though some got muddled with their units. The most common error was not halving the tank of fuel and using 10 × 36. Some learners made an incorrect decision from correct working whilst a few learners showed all the calculations but did not then say if Sid had enough fuel to complete the journey. A small number incorrectly worked with the return journey.

Q7 Only a minority of learners gained full marks, mainly because they failed to substitute into the formula correctly.
The most common error was to add 320 and 30 and then multiply by 18 showing a lack of understanding of the correct order of operations. Others added 30 and 18 whilst 320 + 3018 was also seen.
Learners should be encouraged to show the working for any substitutions as this is needed for any follow through marks.
Learners also failing to convert from pence to pound was a common problem. Some learners did make a correct decision based on their calculations. Often though, numbers were left hanging in the air, being neither pence nor pounds, making it difficult to know how the decision had been made. Many gave an answer of 860 without units.
The majority of learners were able to give a correct statement about being Rachel being overcharged.

Section C: Farming

Q8 This proved to be the most difficult question on the paper.
Learners need practice in calculating lengths, areas and volumes and dealing with remainders.
Responses to this question highlighted the fact that many learners did not grasp the link between the written information, the two dimensional sketch of the back wall and the fact that this was in part a functional three dimensional problem.

Q8 (a) Many learners achieved the correct answer. Some failed to realise that decimal answers are not appropriate in this situation. Bales are whole!
Others gained full marks by working out 16 x 0.9 = 14.4, which was less than 14.5. Many did not realise that this part of the question was linear and the correct answer was embedded in the working. This was given full credit if their process was clear.

Q8 (b) A minority of learners found the correct area, or the dimensions of the correct area. Working out the ground space proved to be a challenging problem though most were able to go at least a little way towards it. Most said that there were 400 bales resting on the floor space but got little further. Some believed that the height of the barn was also 14.5m.

There was little evidence that learners understood the way that a three dimensional problem could be moved into a two dimensional "area" problem. An increased use of modelling real world contexts involving shape and space (and at the same time concentrating on units of measurement) would provide opportunities for teachers to create some enjoyable and interesting learning tasks.
Few took the opportunity to draw a 3D sketch of the barn or a 2D plan of the floor to aid their understanding. Drawing diagrams would be a useful item to incorporate in any teaching programme.

Q9 (a)Many recognised the need to find the difference between the proceeds from the sale of milk and the cost of keeping the cows when finding the profit. The difficulty lay in spotting that the times involved months and years and that money included pounds and pence. A key skill was to make sure that the same units were obtained before a comparison was made or difference calculated. Many were content to try to find the difference between two costs when those costs were in different units. The development of the critical analysis of data is fundamental. Learners need to reflect on what they have written.

Q9 (b) The statement "10% less" was frequently misread for "find 10%". Many were unable to score because they calculated 10% of production and not 90% as was required.
A reasonable majority of learners gained a mark for finding 5000 litres per cow, but then failed to find out 90%, often leaving the answer after finding 10%.

Q10. Students need to be familiar with converting between units, eg feet/metres and should be able to compare them and understand which has the larger or smaller value.
This question was answered quite well by most who applied the given conversion factor correctly to the problem. A few used an approximate but less accurate scale factor which was not worthy of marks. Some learners came to the wrong conclusion based on their answer but this was a minority. Some thought they had to fit the shed into the trailer and not the trailer in the shed.

Pass mark for FSM02

Maximum mark	**48**
Pass mark	**31**
UMS	**6**

Note: Grade boundaries vary from year to year and from subject to subject, depending on the demands of the questions.

Further copies of this publication are available from
Edexcel Publications, Adamsway, Mansfield, Notts, NG18 4FN

Telephone 01623 467467
Fax 01623 450481

Email publications@linneydirect.com

Order Code FC026573 January 2011

For more information on Edexcel qualifications, please visit www.edexcel.com/quals

Edexcel Limited. Registered in England and Wales no.4496750
Registered Office: One90 High Holborn, London, WC1V 7BH