

**FUNCTIONAL SKILLS ONSCREEN (MATHEMATICS)  
MARK SCHEME – LEVEL 2 – SET 27**

**Guidance for Marking Functional Mathematics Onscreen**

**General**

- 1 All candidates must receive the same treatment. You must mark the first candidate in exactly the same way as you mark the last.
- 2 Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- 3 All the marks on the mark scheme are designed to be awarded. You should always award full marks if deserved, i.e. if the answer matches the mark scheme. You should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.

**Applying the Mark Scheme**

- The mark scheme has a column for **Process** and a column for **Evidence**. In most questions the majority of marks are awarded for the process the candidate uses to reach an answer. The evidence column shows the most likely examples you will see: if the candidate gives different evidence for the process, you should award the mark(s).
- **Finding 'the answer'**: in onscreen tests, many questions have an answer box for the candidate to give their decision or answer, as well as the working box. In most cases the marks are awarded for the process(es) which lead(s) to the answer. Full marks cannot be gained from simply stating a correct decision. You must read what is in the working box as well as the answer box. You may need to award marks for an answer which is only stated in the working box.
- If there is a **choice of methods** shown, then mark the working leading to the answer given in the answer box or working box. If there is no definitive answer then marks should be awarded for the 'lowest' scoring method shown.
- A suspected **misread** may still gain process marks and should be sent to review with a message detailing the suspected misread.
- **Transcription (or Typo)** errors also occur where a correct value is found and then a slightly different value is used in subsequent working or stated in the answer box. These should also be sent to review with a message detailing the error.
- It may be appropriate to **ignore subsequent work (isw)** when the candidate's additional work does not change the meaning of their answer. You are less likely to see instances of this in functional mathematics.

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- You will often see correct working followed by an incorrect decision, showing that the candidate can calculate but does not understand the demand of the functional question. The mark scheme will make clear how to mark these questions.
- **Follow through marks** must only be awarded when explicitly allowed in the mark scheme. Where the process uses the candidate's answer from a previous step, this is clearly shown. Speech marks are used to show that previously incorrect numerical work is being followed through, for example '240' means **their** 240.
- Marks can usually be awarded where **units** are not shown. Where units, including money, are required this will be stated explicitly in the mark scheme. For example, 5(m) or (£)256.4 indicate that the units do not have to be stated for the mark to be awarded however 25g does require the units. If units, including money, are stated in the working box but not transferred to the answer box then accept this as long as the value of the answer has not changed.
- **Correct money notation** indicates that the answer, in money, must have correct notation to gain the mark. This means that money should be shown as £ or p, with the decimal point correct and 2 decimal places if appropriate.  
e.g. if the question working led to  $£12 \div 5$ ,  
Mark as correct: £2.40 or 240p or £2.40p or 2.40£  
Mark as incorrect: £2.4 or 2.40p or 2.4 or 2.40 or 240  
Guidance on the use of £2.40p will be given where appropriate in the mark scheme.
- Candidates may present their answers or working in many **equivalent** ways. This is denoted **oe** in the mark scheme. For example repeated addition for multiplication and repeated subtraction for division are common alternative approaches. The mark scheme will specify the minimum required to award these marks. Units may not be consistent for process marks but must be consistent for a final comparison of values if **oe** stated.
- A **range** of answers is often allowed: e.g. [12.5,15] is the inclusive closed interval.
- **Parts of questions:** because most FS questions are unstructured and open, you should be prepared to award marks for answers seen in later parts of a question, even if not explicit in the expected part.

Discuss any queries with your Marker Leader / Assistant Marker Leader. Use review as appropriate, ePEN messenger or the telephone but be careful not to disclose question specific detail in an email.

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**Graphs**

The mark schemes for most (although not all) graph questions have this structure:

Process		Evidence
	1 or	1 of linear scale(s), labels, plotting
	2 or	2 of linear scale(s), labels, plotting
	3	all of linear scale(s), labels, plotting

- Note that the mechanism usually restricts the candidate's choice of graph.
- A **linear scale** must be linear **in the range where data is plotted**, whether or not it is broken, whether or not 0 is shown, whether or not the scale is shown as broken. Thus a graph that is 'fit for purpose' in that the **data is displayed clearly and values can be read**, will gain credit.
- The minimum requirements for **labels** will be given, but you should give credit if a title is given which makes the label obvious. Do not accept k for 1000
- **Plotting** must be correct for the candidate's scale. Award the mark for plotting if you can read the values clearly, even if the scale itself is not linear. Guidance on the tolerance allowed will be given in the mark scheme.
- The mark schemes for **Data Collection Sheets** refer to **input opportunities** and to **efficient input opportunities**. When a candidate gives an input opportunity, it is likely to be an empty cell in a table, it may be an instruction to 'circle your choice', or it may require writing in the data in words. These become efficient, for example, if there is a well-structured 2-way table, or the input is a tick or a tally rather than a written list.

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Question	Process	Mark	Skills Standard	Evidence
Q1	Identifies payable full 30 min periods or begins to work with money and 30 min periods	1 or	R2	$(0.5 + 1.5 + 3 + 0.5 + 2.5) \times 2 (=16)$ <b>OR</b> $1 + 3 + 6 + 1 + 5 (=16)$ <b>OR</b> $(30 + 90 + 180 + 30 + 150) \div 30 (= 480 \div 30 = 16)$ <b>OR</b> Accept at least 4 of: <b>6.35 and <math>(3 \times 6.35 (=19.05))</math> and <math>(6 \times 6.35 (=38.1))</math> and 6.35 and <math>(5 \times 6.35 (=31.75))</math></b>  Allow $(0.75 + 1.5 + 3 + 0.833.. + 2.66..) \times 2 (=17.5)$ Allow $(45 + 90 + 180 + 50 + 160) \div 30 (=17.5)$
	Finds total payable	2 or	A4	<b>'16' <math>\times 6.35 (=101.6)</math> <b>OR</b></b> <b><math>6.35 + '19.05' + '38.1' + 6.35 + '31.75' (=101.6)</math> <b>OR</b></b> <b><math>100 \div 6.35 (=15.74..)</math></b>  Allow <b>'17' <math>\times 6.35 (=107.95)</math></b> Allow <b>'17.5' <math>\times 6.35 (=111.12, 111.13)</math></b>
	Communicates their answer with accurate figures	3	I7	<b>Yes <b>AND</b> (£)101.6(0) <b>OR</b></b> <b>Yes <b>AND</b> 15.74.. and 16 (full half hours)</b>
<b>Total marks for question</b>		<b>3</b>		

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Question	Process	Mark	Skills Standard	Evidence
Q2(a)	Estimates distance and considers reasonableness of answers	1	I6	Selects: 50 cm
Q2(b)	Considers the scale	1 or	I6	Draws a resized rectangle <b>AND</b> not over door arc and at least half a square from the furniture <b>AND</b> one side 3 squares <b>or</b> one side 5 squares <b>or</b> sides in the ratio 5:3
	Fully correct answer	2	A5	Draws a rectangle 3 squares by 5 squares <b>AND</b> not over door arc and at least 2 squares from the furniture
<b>Total marks for question</b>		<b>3</b>		

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Question	Process	Mark	Skills Standard	Evidence
<b>Q3</b>	Converts units or starts to reverse substitute	1 or	R1	$4.5 \times 1.6(=7.2)$ <b>OR</b> $(14.57 - 2.4) \div 1.5(=8.11..)$
	Full process to find figures to compare	2 or	A4	$2.4 + 1.5 \times '7.2'(=13.2)$ <b>OR</b> $4.5 \times 1.6(=7.2)$ <b>and</b> $(14.57 - 2.4) \div 1.5(=8.11..)$ <b>OR</b> '8.11..' $\div 1.6(=5.07..)$
	Correct answer with accurate figures	3	I7	No <b>and</b> (£)13.2(0) <b>OR</b> No <b>and</b> 7.2 <b>and</b> [8.1,8.2] (km) <b>OR</b> No <b>and</b> [5,5.1] (miles)
	Shows valid check of their calculations	1	A5	Any valid check e.g. reverse calculation or estimation
<b>Total marks for question</b>		<b>4</b>		

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Question	Process	Mark	Skills Standard	Evidence
Q4	Correctly works with a third	1	R1	28.68 ÷ 3(=9.56) <b>OR</b> 28.68 × 2 ÷ 3(=19.12) <b>OR</b> (28.68 × '8') ÷ 3(=76.48)
	Finds number of sacks needed	1or	R2	180 ÷ 25(=7.2) Allow 200 ÷ 25(=8)
	Full process to find total cost or difference between cost and budget per sack	2	A4	'9.56' × 2 × '8'(=152.96) <b>OR</b> (28.68 × '8') - ('9.56' × '8')(=152.96) <b>OR</b> (160 ÷ 8) - '9.56' × 2(=0.88) Allow use of 7.2 for '8' in this mark
	Process to find the remainder	1 or	A4	160 - '152.96'(=7.04) oe <b>OR</b> '0.88' × 8(=7.04)
	Correct answer	2	I6	(£)7.04 <b>or</b> 704(p)  Note: Allow use of 0.333 or 0.666 or better for a third throughout this question
<b>Total marks for question</b>		<b>5</b>		

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Question	Process	Mark	Skills Standard	Evidence
<b>Q5</b>	Works with average or percentage	1 or	R3	$(499 + 420 + 439.99 + 479.99) \div 4 (=459.745)$ <b>OR</b> At least 3 of: 399.2 <b>and</b> 336 <b>and</b> 351.992 <b>and</b> 383.992 <b>OR</b> $(399.2 + 336 + 351.992 + 383.992) (=1471.184)$ <b>OR</b> $(479.99 + 439.99) \div 2 (=459.99)$ <b>OR</b> $383.992 + 351.992 (=735.984)$
	Full process to find the price	2 or	A4	$'459.745' \times 0.8 (=367.796)$ <b>OR</b> $'1471.184' \div 4 (=367.796)$ <b>OR</b> $'459.99' \times 0.8 (=367.992)$ <b>OR</b> $'735.884' \div 2 (=367.992)$
	Correct answer in correct money notation	3	I6	$\pounds 367.79$ <b>OR</b> $\pounds 367.80$ <b>OR</b> $\pounds 367.99$ In correct money notation
<b>Total marks for question</b>		<b>3</b>		



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Question	Process	Mark	Skills Standard	Evidence
Q6	Begins to interpret the problem	1 or	R1	<p>Drags in 3 rows <b>and</b> selects 1 from each group <b>and</b> at least one AB total is present and correctly added.</p> <p><b>OR</b></p> <p>Drags in 3 rows <b>and</b> selects 1 from each group <b>and</b> both constraints are met by the selection (<b>but</b> both AB totals are absent or incorrectly added.)</p> <p><b>OR</b></p> <p>Both AB totals are present and correct <b>and</b> constraints are met by the selection (<b>but</b> does not select one from each group )</p>
	Improves the solution	2 or	R2	<p>Drags in 3 rows and selects 1 from each group <b>and</b> selection meets both constraints and 1 AB is present and correctly added.</p> <p><b>OR</b></p> <p>Drags in 3 rows and selects 1 from each group <b>and</b> both AB totals are present and correctly added <b>and</b> selection meets 1 constraint.</p>
	Fully correct answer	3	A5	<p>Drags in 3 rows and selects 1 from each group, <b>and</b> selection meets both constraints <b>and</b> both AB totals are present and correctly added.</p> <p><b>Solutions:</b>  <b>Wall climbing, Mini golf, Go-karts, 245 min, (£)53.57</b>  <b>Quad bikes, Mini golf, Tennis, 245 min, (£)53.67</b></p>
<b>Total marks for question</b>		<b>3</b>		

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Question	Process	Mark	Skills Standard	Evidence
<b>Q7(a)</b>	Works with the volume or area	1 or	R3	$6.2 \times 4.9 \times 0.225 (=6.83(55)) \text{ (m}^3\text{)}$ <b>OR</b> $8 \times 0.87(=6.96) \text{ (m}^3\text{)}$ <b>OR</b> $6.2 \times 4.9(=30.38) \text{ (m}^2\text{)}$
	Full process to find figures to compare	2	A4	$'6.83(55)' \div 0.87 (= [7.85, 7.86])$ <b>OR</b> $8 \times 0.87(=6.96) \text{ (m}^3\text{)}$ <b>and</b> $6.2 \times 4.9 \times 0.225(=6.83(55)) \text{ (m}^3\text{)}$ <b>OR</b> $'6.96' \div 30.38(=0.229\dots) \text{ (m)}$
	Valid decision with correct figures	1	I7	Yes <b>AND</b> $[7.85, 7.86]$ (8 bags) <b>OR</b> Yes <b>AND</b> $6.83(55) \text{ (m}^3\text{)}$ <b>and</b> $6.96 \text{ (m}^3\text{)}$ <b>OR</b> Yes <b>AND</b> can dig further to $0.229 \text{ (m)}$
<b>Q7(b)</b>	Shows valid check	1	A5	Any valid check e.g. reverse calculations or estimation
<b>Total marks for question</b>		<b>4</b>		

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Question	Process	Mark	Skills Standard	Evidence
<b>Q8</b>	Uses consistent units	1	R2	E.g. 1.2 <b>or</b> 29.7 <b>or</b> 21 <b>or</b> 91 <b>or</b> 49 <b>or</b> 27.3 <b>or</b> 18.6 may be seen in subsequent calculations
	Works with 12 mm margin on all edges	1	I6	Uses 273 <b>and</b> 186 oe
	Begins the process to find the number of tickets fitting onto card or uses an area method in consistent units	1 or	A4	'273' ÷ '91' (=3) <b>or</b> '186' ÷ '49' (=3.79..) oe <b>OR</b> '273' ÷ '49' (=5.57..) <b>or</b> '186' ÷ '91' (=2.04) oe Allow '297' ÷ '91' (=3.26..) <b>or</b> '210' ÷ '49' (=4.28..) oe '297' ÷ '49' (=6.06..) <b>or</b> '210' ÷ '91' (=2.30..) oe '285' ÷ '91' (=3.13..) <b>or</b> '198' ÷ '49' (=4.04..) oe '285' ÷ '49' (=5.81..) <b>or</b> '198' ÷ '91' (=2.17..) oe <b>OR</b> '273' × '186' (=50778) <b>or</b> '91' × '49' (=4459) oe Allow '297' × '210' (=62370) <b>or</b> '285' × '198' (=56430) oe 500 ÷ 60 (=8.33..) <b>and</b> (has to get) 9 from each
	Full process to find number of tickets that fit onto one card or uses area method in consistent units	2 or	A4	'3' × '3' (=9) <b>OR</b> '5' × '2' (=10) <b>OR</b> Allow '3' × '4' (=12) <b>or</b> '6' × '2' (=12) <b>or</b> '5' × '2' (=10) <b>OR</b> '50778' ÷ '4459' (=11.38..) <b>OR</b> '62370' ÷ '4459' (=13.98..) <b>or</b> '56430' ÷ '4459' (=12.65..) <b>OR</b> 500 ÷ 60 (=9) <b>and</b> '273' ÷ '91' (=3) <b>or</b> '186' ÷ '49' (=3.79..)
	Correct number of sheets of card or tickets	3	R3	500 ÷ '9' (=55) <b>OR</b> 500 ÷ '10' (=50) <b>OR</b> '9' × 60 (=540) <b>OR</b> '10' × 60 (=600) <b>OR</b> 500 ÷ 60 (=9) <b>and</b> ('273' ÷ '91') (=3) × ('186' ÷ '49') (=3.79..) (=9) These must come from a correct method

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<b>Question</b>	<b>Process</b>	<b>Mark</b>	<b>Skills Standard</b>	<b>Evidence</b>
	Valid decision from their figures (ft) using whole tickets	1	I7	E.g. Yes <b>and</b> 55 <b>OR</b> Yes <b>and</b> 50 <b>OR</b> Yes <b>and</b> 540 <b>OR</b> Yes <b>and</b> 600 <b>OR</b> Yes <b>and</b> needs 9 <b>and</b> can get 9 from each sheet Follow through their figure using whole tickets
<b>Total marks for question</b>		<b>6</b>		

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Question	Process	Mark	Skills Standard	Evidence
Q9	Works with the ratio	1 or	A4	$8 + 1 + 1 (=10)$ <b>OR</b> $2.9 \div 8 (=0.362(5))$ <b>OR</b> $2.9 \div 3.5 (=0.82..)$
	Full process to find figures to compare	2 or	R2	$3.5 \div '10' \times 8 (=2.8)$ <b>OR</b> $'0.362(5)' \times '10' (=3.62(5))$ <b>OR</b> $2.9 \div 8 (=0.36(25))$ <b>and</b> $3.5 \div '10' (=0.35)$ <b>OR</b> $2.9 \div 3.5 (=0.82...)$ <b>and</b> $8 \div '10' (=0.8)$
	Correct answer with correct figures	3	I7	<b>Yes and 2.8 (litres) OR</b> <b>Yes and 3.62(5) (litres) OR</b> <b>Yes and 0.35 and 0.36(25) (litres) OR</b> <b>Yes and 0.82.. and 0.8 (parts)</b>
<b>Total marks for question</b>		<b>3</b>		

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Question	Process	Mark	Skills Standard	Evidence
Q10(a)	Interprets problem and begins to order decimals.	1 or	R1	F, A, D in any order F, D, H in order A, D, H in order F, A, in order and any other team or blank
	Fully correct solution	2	A5	1st place F 2nd place A 3rd place D
Q10 (b)	Finds correct difference ft. their answer to (a)	1	I6	0.144 <b>and</b> selects ‘seconds’ Ft the difference between their 1 <sup>st</sup> and 2 <sup>nd</sup> place time, ignore negative sign, <b>and</b> selects ‘seconds’
<b>Total marks for question</b>		<b>3</b>		

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Question	Process	Mark	Skills Standard	Evidence																			
<b>Q11(a)</b>	Begins to prepare data collection sheet	1 or	R2	Input opportunities <b>AND</b> headings for at least 2 of: One/Two (accept O/T or 1/2) male/female (accept M/F) under 18 and 18 or over																			
	Constructs data collection sheet	2	I6	Input opportunities with headings for all: One/Two (accept O/T or 1/2) male/female (accept M/F) under 18 and 18 or over																			
	Begins to populate data	1 or	A4	Completes their table with no more than 2 data errors or omissions																			
	Fully correct efficient solution	2	I6	Fully correct two-way table with 8 completed cells e.g. <table border="1" style="margin-left: 20px;"> <thead> <tr> <th></th> <th colspan="2">Male</th> <th colspan="2">Female</th> </tr> <tr> <th>Game level</th> <th>age &lt;18</th> <th>age 18+</th> <th>age &lt;18</th> <th>age 18+</th> </tr> </thead> <tbody> <tr> <td>One</td> <td>1</td> <td>2</td> <td>1</td> <td>2</td> </tr> <tr> <td>Two</td> <td>1</td> <td>5</td> <td>3</td> <td>0</td> </tr> </tbody> </table>		Male		Female		Game level	age <18	age 18+	age <18	age 18+	One	1	2	1	2	Two	1	5	3
	Male		Female																				
Game level	age <18	age 18+	age <18	age 18+																			
One	1	2	1	2																			
Two	1	5	3	0																			
<b>Q11(b)</b>	Evaluates their table correctly	1	A5	Correctly evaluates their efficient table e.g. 5 Figures must be consistent with their table																			
<b>Total marks for question</b>		<b>5</b>																					

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Question	Process	Mark	Skills Standard	Evidence
<b>Q12a</b>	Process to find number of point bundles needed	1 or	R2	$(20000 - 17540) (=2460)$ <b>OR</b> $(20000 - 17540) \div 2000(=1.23)$ <b>OR</b> 2 bundles needed
	Finds total cost of whole point bundles	2	I6	'2' $\times$ 34 $(= (£)68)$
	Process to convert hotel cost to £s or process to find budget for hotel	1 or	R3	$6650 \div 11.865(=560.47..)$ <b>OR</b> $700 - '68'(=632)$
	Full process to find figures to compare	2 or	A4	'68' + '560.47..' $(=628.47..)$ <b>OR</b> '632' $\times$ 11.865 $(=7498.68)$ <b>OR</b> $700 - '560.47..' (=139.53..)$
	Correct answer with accurate figures	3	I7	Yes <b>and</b> (£) [628,629] <b>OR</b> Yes <b>and</b> (£) 632 <b>and</b> (£) [560, 561] (budget and cost for hotel in £ when points are paid for) <b>OR</b> Yes <b>and</b> (£)[139,140] <b>and</b> (£)68 (budget and cost for points when hotel is paid for) <b>OR</b> Yes <b>and</b> (HKD) 7498.68 (budget for hotel in HKD when points are paid for)
<b>Q12b</b>	Valid check	1	A5	Any valid check e.g. reverse calculations or alternative method
<b>Total marks for question</b>		<b>6</b>		