

# Functional Skills

# Maths – Level 2 Sample

## Mark Scheme and Marking Guidance

The following documents are included in this marking guidance:

- General marking guidance and assessment principles.
- Mark schemes and guidance.

**Assessment Code: FSML2SA/P**

## General Marking Guidance

- All candidates must receive the same treatment. You must mark the first candidate in exactly the same way as you mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- 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.

## Allowable responses

All of the following are Allowable types of responses.

- Writing initials of objects
- Drawings or symbols
- Drawing lines to show position or matches
- Evidence of counting
- Marking in any way to indicate choices.

## Applying the Mark Scheme

- The mark scheme states the marks awarded for the process and the answer. In most questions the majority of marks are awarded for the process the candidate uses to reach an answer. The most likely processes used by candidates are given. However, if the candidate gives different evidence for a correct process you should award the mark(s).
- If working is crossed out and still legible, then it should be marked, as long as it has not been replaced by alternative work.
- If the candidate shows more than one set of working, then you should mark the one you consider to be closest to the mark scheme.
- If it appears that the candidate has misread the question, marks can still be awarded for applying the correct process.
- 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.
- Where transcription errors occur and the candidate presents a correct answer in working, but writes it incorrectly on the answer line, mark the better answer.
- **Error carried forward** marks (**ecf**) 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.
- Marks can usually be awarded where units are not shown. Where units, including money, are required this will be stated explicitly. For example, 5(m) or (£) 256.40 indicates that the units do not have to be stated for the mark to be awarded.

- **Correct money notation (cmn)** 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  $\pounds 12 \div 5$ ,  
Mark as correct: £2.40 240p £2.40p  
Mark as incorrect: £2.4 2.40p £240p 2.4 2.40 240.
- Candidates may present their answers or working in many **equivalent ways**. This is denoted as '**oe**' – 'or equivalent'. 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.
- **Parts of questions:** because most Functional Skills questions are unstructured and open, you should be prepared to award marks for answers that are not in their expected position e.g. an answer expected in a later part of a question may be given earlier in the candidate's response.

### Using the mark scheme

- apply the mark scheme methodically
- most mark points are single, however, where required:
  - initially apply the unshaded section for each question
  - if this is not achieved, then work down the shaded rows until you find the right mark
  - if none of the shaded sections are met then award 0 for that part of the mark scheme.

## Section A - Festival!

Question	Answer	Marks	Skills
1	1. Represents the calculation to find basic weekly wage for 12 hours: 12 (hours) x (£)6.75 <b>OR</b> 2. Represents the calculation to find basic weekly wage for 9 hours: 9 (hours) x (£)6.75	1	R
	1. Calculates basic weekly wage for 12 hours: (£)81 <b>OR</b> 2. Calculates basic weekly wage for 9 hours: (£)60.75	1	A
	1. Calculates weekly overtime for 3 hours: 3 (hours) x (£)1.85 = (£)5.55 <b>OR</b> 2. Calculates weekly basic wage plus overtime for 3 hours: 3 (hours) x ((£)6.75 + (£)1.85) = (£)25.80	1	A
	Represents the calculation to find total weekly wage with overtime: 1. (£)81 + (£)5.55 <b>OR</b> 2. (£)60.75 + (£)25.80  Allow: ecf from miscalculated basic wage and/or overtime as long as are added together	1	R
	Represents the calculation to find number of weeks: (£)250 / (£)86.55  Allow: ecf from miscalculated total weekly wage	1	R
	Interprets the need to round up 2.88 weeks: 3 weeks  Allow: ecf from miscalculated number of weeks as long as the answer is <b>rounded up</b>	1	I

<b>2</b>	Calculates maximum to spend on camp site: 4/5 <b>OR</b> $0.8 \times (\pounds)250 = (\pounds)100$  Allow: oe	1	A
	Calculates maximum to spend on travel: 25/100 <b>OR</b> 0.25 <b>OR</b> $\frac{1}{4} \times (\pounds)250 = (\pounds)62.50$  Allow: oe	1	A
	Interprets that: (as travel max is $(\pounds)62.50$ ) Ever green and Silent world are too expensive  Allow: ecf for a sensible decision made on miscalculations	1	I
	Interprets that: (as camp site max is $(\pounds)100$ ) Ever green is too expensive  Allow: ecf for a sensible decision made on miscalculations	1	I
	Interprets the need to: review further details/total cost/distance to decide on final two camp sites (ratings don't discriminate well enough to use)	1	I
	Interprets that in choosing two camp sites: Happy campers and Tents r Us –removing most expensive <b>OR</b> Happy campers and Trees and tents – removing furthest away  Allow: ecf for a sensible decision made on miscalculations	1	I
<b>3</b>	Interprets that the class intervals should not overlap: e.g. 10-19, 20-29 etc. or 11-20, 21-30  Allow: oe	1	I
	Interprets that the range of class intervals should be increased: e.g. 0-9 and 60-69, 70-79 etc.  Allow: oe	1	I

4	Interprets that the timings should be; 15:00 to 15:50 Harlow 16:00 to 16:45 The Besties 17:10 to 18:15 Fist 20:00 to 21:10 (café) (or 20:30 – 21:00) 21:30 to 22:30 Sevens 22:55 to 00:00 Jenny	3	I
	Interprets that there are TWO fixed points: Café (20:30 to 21:00) <b>AND</b> Sevens – only in one slot	(2)	(I)
	Interprets that there is ONE of the two fixed points: Café (20:30 to 21:00) <b>OR</b> Sevens – only in one slot	(1)	(I)
5	Represents a calculation to show that the scale of 1 mile = 5cm would give dimensions of: 17cm x 7.5cm	1	R
	Interprets that: the best scale is <b>D</b> : 1 mile = 5cm	1	I
<b>Total for Section A:</b>		<b>19</b>	

Section B - Collecting Rain			
Question	Answer	Marks	Skills
1	Represents the calculation to find the monthly cost of this year's water bill: (£)261/12	1	R
	Calculates the monthly cost of this year's water bill: (£)21.75	1	A
	Represents the calculation to find the difference between monthly water bills: (£)21.75 – (£)14.55  Allow: ecf from miscalculated monthly cost of this year's water bill	1	R
	Calculates the monthly difference: = (£)7.20 cmn  Allow: ecf from miscalculated monthly cost of this year's water bill	1	A
2	Converts cm to m or cm <sup>3</sup> to m <sup>3</sup> at any point  Allow: from values used in calculation	1	R
	Represents equation by inputting all values: $v = 22/7 \times (0.25(m))^2 \times 0.865(m)$  Allow: 3.14 or 3.1428 or 3.143 for $\pi$	2	R
	Represents equation with one error: e.g. uses diameter instead of radius	(1)	(R)
	Calculates volume: 0.1699(m <sup>3</sup> )  Allow: 0.17(m <sup>3</sup> )	1	A
	Interprets volume to two dps: 0.17(m <sup>3</sup> )  Allow: ecf from miscalculated volume only if <b>rounded to 2 dps</b>	1	I

<b>3</b>	Represents the calculation to find how much one rainwater barrel of water would cost: 0.17(m <sup>3</sup> ) x (£)1.98 (= 33.66(p))  Allow: ecf from miscalculated volume of rainwater barrel in <b>Q2</b>	1	R
	Calculates how much one rainwater barrel of water would cost: 34(p) cmn	1	A
<b>4(a)</b>	Complete valid check of any original calculation seen in <b>Q3</b> using a different method to the one shown: e.g. a reverse calculation <b>OR</b> a calculation using estimated / approximate values	1	A
<b>4(b)</b>	Explains why check was effective, for example: My estimation is close to the answer I found therefore effective <b>OR</b> Check is above the original answer which is as I expected because I rounded up <b>OR</b> I reversed the multiplication by dividing and got the original capacity/volume of the barrel. Allow: oe	1	I
<b>5</b>	Represents the calculation to find the probability: 189 rainy days / 365 days in year  Allow: ecf from miscalculation of number of rainy days in a year	1	R
	Calculates probability: 0.52  Allow: 0.5178 <b>OR</b> 0.518 <b>OR</b> 0.5 <b>OR</b> ½ <b>OR</b> 50% Allow: ecf from miscalculation of number of rainy days in a year	1	A
	Interprets that: Ruby's probability is incorrect  Allow: ecf from miscalculation of number of rainy days in a year	1	I
<b>Total for Section B = 17 marks</b>			

<b>Section C - Fitness Drive</b>			
<b>Question</b>	<b>Answer</b>	<b>Marks</b>	<b>Skills</b>
<b>1</b>	Represents the calculation to find total number of steps: 5 000 + 5 600 + 4 980 + 5 900 + 6 250 + 6 340 + 5 680	1	R
	Calculates total number of steps: 39 750	1	A
	Conversion between cm of step and km at any point  Allow: from value used in calculation	1	R
	Represents the calculation to find distance walked: 39 750 steps x 80cm <b>OR</b> 0.8m <b>OR</b> 0.0008km  Allow: ecf from miscalculated number of steps	1	R
	Calculates distance walked: 3 180 000cm <b>OR</b> 31 800m <b>OR</b> 31.8km  Allow: ecf from miscalculated number of steps	1	A
	Represents calculation to find number of calories used walking: 31.8(km) x 72.5 (calories)  Allow: ecf from miscalculated distance in km	1	R
	Calculates number of calories used in the week when walking: 2305.5 (calories)  Allow: ecf from miscalculated distance in km	1	A
<b>2</b>	Calculates the energy balance weekly figures: 1 (227) 2 -69 3 216 4 -167	1	A
	Calculates total monthly energy balance: (+)207 (calories)  Allow: ecf from addition of weekly figures	1	A
<b>3(a)</b>	Complete valid check of any original calculation seen in <b>Q2</b> using a different method to the one shown e.g. a reverse calculation <b>OR</b> a calculation using estimated / approximate values	1	A
<b>3(b)</b>	Explains why check was effective, for example: My estimation is close to the answer I found therefore effective <b>OR</b> Check is above the original answer which is as I expected because I rounded up  Allow: oe	1	I

<b>4</b>	Represents the calculation to find distance required to use 207 calories: 207 (calories) / 72.5 (calories per km)  Allow: ecf from miscalculated monthly energy balance in <b>Q2</b>	1	R
	Calculates distance required to use 207 calories: 2.855 / 2.86 / 2.9(km)  Allow: ecf from miscalculated monthly energy balance in <b>Q2</b>	1	A
	Interprets information and calculation to give advice to increase energy usage/exercise/walking by: walking <b>an extra</b> 2.855 / 2.86 / 2.9km per month  Allow: ecf for correct advice from miscalculated walking distance	1	I
<b>Total for Section C = 14 marks</b>			

## Item Breakdown Grid Level 2

Section A – Festival!													
Question	Skills standards	Coverage and Range											
		a	b	c	d	e	f	g	h	i	j	k	l
1	R, A, I												
2	A, I												
3	I												
4	I												
5	R, I												
Section A – Collecting Rain													
Question	Skills standards	Coverage and Range											
		a	b	c	d	e	f	g	h	i	j	k	l
1	R, A												
2	R, A, I												
3	R, A												
4(a)	A												
4(b)	I												
5	R, A, I												
Section A – Fitness Drive													
Question	Skills standards	Coverage and Range											
		a	b	c	d	e	f	g	h	i	j	k	l
1	R, A												
2	A												
3(a)	A												
3(b)	I												
4	R, A, I												

## Functional Skills Criteria for Mathematics – Ofqual – Level 2

Skills standards	Coverage and range	Assessment weighting
<p>Representing</p> <p>1. Understand routine and non-routine problems in familiar and unfamiliar contexts and situations.</p> <p>2. Identify the situation or problems and identify the mathematical methods needed to solve them.</p> <p>3. Choose from a range of mathematics to find solutions.</p>	<p>a) Understand and use positive and negative numbers of any size in practical contexts;</p> <p>b) Carry out calculations with numbers of any size in practical contexts, to a given number of decimal places;</p> <p>c) Understand, use and calculate ratio and proportion, including problems involving scale;</p> <p>d) Understand and use equivalences between fractions, decimals and percentages;</p>	30-40%
<p>Analysing</p> <p>4. Apply a range of mathematics to find solutions.</p> <p>5. Use appropriate checking procedures and evaluate their effectiveness at each stage.</p>	<p>e) Understand and use simple formulae and equations involving one- or two-step operations;</p> <p>f) Recognise and use 2D representations of 3D objects;</p> <p>g) Find area, perimeter and volume of common shapes;</p>	30-40%
<p>Interpreting</p> <p>6. Interpret and communicate solutions to multi-stage practical problems in familiar and unfamiliar contexts and situations.</p> <p>7. Draw conclusions and provide mathematical justifications.</p>	<p>h) Use, convert and calculate using metric and, where appropriate, imperial measures;</p> <p>i) Collect and represent discrete and continuous data, using ICT where appropriate;</p> <p>j) Use and interpret statistical measures, tables and diagrams, for discrete and continuous data, using ICT where appropriate;</p> <p>k) Use statistical methods to investigate situations;</p> <p>l) Use probability to assess the likelihood of an outcome.</p>	30-40%

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