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**LEVEL 2 FUNCTIONAL SKILLS QUALIFICATION IN MATHEMATICS**

**PRACTICE ASSESSMENT 1 (FSM207P)**

**MARK SCHEME**

Section A	Process (Task description)	Total mark	Mark allocation	Comments	PS or US	Subject content
Question 1	Calculate size of missing angle	1	<b>1 mark:</b> Correct answer, ie $(180 - 150) = 30^\circ$		US	22
Question 2	Add decimals	1	<b>1 mark:</b> Correct answer, ie $(42.567 + 49.63) = 92.197$		US	10a
Question 3	Subtract decimals	1	<b>1 mark:</b> Correct answer, ie $(54.983 - 33.947) = 21.036$		US	10b
Question 4	Find mode of a set of data	1	<b>1 mark:</b> Correct mode, ie 61		US	23b
Question 5	Method to find median	2	<b>1 mark:</b> Valid method to find median, eg $52.7 + 43.9 = 96.6$ AND $96.6 \div 2 = (48.3)$		US	23a
	Completes calculation to find median		<b>1 mark:</b> Correct median, ie 48.3		US	23a
Question 6	Calculates income	5	<b>1 mark:</b> Method to calculate total income, ie $26346 + 32783 + 25256 + 67327 + 53893 = (205605)$	Award if calculations done in different order	PS	2
	Method to find expenses for 6 months		<b>1 mark:</b> Method to calculate 6 months expenses eg, $1467.26 \times 6 = (8803.56)$		PS	2
	Method to find total income after expenses		<b>1 mark:</b> Method to find total income minus expenses, eg $205605 - 8803.56 = (196,801.44)$		PS	2
	Correct amount raised in August		<b>1 mark:</b> Correct amount of income needed in August, eg $(250000 - 196801.44) = 53,198.56$ OR  Correct total amount raised with 52000, eg $(196801.11 + 52000) = 248,801.44$		PS	2

	Valid decision and reason		<p><b>1 mark:</b> Appropriate comment, eg No they need to raise more than £52000 as they will not reach their target. No they will only reach 248801.44 which is less than their target</p>	Any valid reason which indicates need to raise more money. Only award f 53198.56 OR 248801.44 seen.	PS	2
<b>Question 7</b>	Correct total distance for Carmel	4	<p><b>1 mark:</b> Calculate distance for Carmel, ie <math>\frac{10}{3}</math> OR <math>3\frac{1}{3}</math></p>		PS	7b
	Method to add fractions		<p><b>1 mark:</b> Valid method to add fractions and mixed numbers, eg <math>1\frac{3}{6} + 1\frac{1}{6} + 1\frac{1}{6} + \frac{2}{6} = (4\frac{1}{6})</math> OR <math>\frac{9}{6} + \frac{7}{6} + \frac{7}{6} + \frac{2}{6} = (\frac{25}{6})</math> Any other valid method</p>		PS	7b
	Correct addition of fractions		<p><b>1 mark:</b> Correct total miles for Fiona, ie <math>4\frac{1}{6}</math> OR <math>\frac{25}{6}</math></p>		PS	7b
	Correct number of miles left to walk		<p><b>1 mark:</b> Correct subtraction of fractions, ie <math>(7 - 3\frac{1}{3}) = 3\frac{2}{3}</math> AND <math>(7 - 4\frac{1}{6}) = 2\frac{5}{6}</math></p>	Allow FT for their total distances	PS	7c

Section B	Process (Task description)	Total mark	Mark allocation	Comments	PS or US	Subject content
Question 8	Approximate decimal	1	<b>1 mark:</b> Correct answer, ie 24.93		US	9b
Question 9	Correct probability as a percentage	1	<b>1 mark:</b> Correct percentage, ie $(1 \div 6 \times 100) = 16.667\%$	Accept truncated or rounded figure % sign needed	US	27c
Question 10	Correct fraction	1	<b>1 mark:</b> Correct fraction in simplest form, ie $(25/350) = 1/14$		US	8
Question 11	Method to find number of staff per room	4	<b>1 mark:</b> Method to find number of staff needed for each room, eg $20 \div 2 = (10)$ OR $22 \div 4 = (5.5)$ OR $22 \div 8 = (2.75)$		PS	11a
	Correct number of staff		<b>1 mark:</b> Correct number of staff per room, ie 10, 6 AND 3	May be seen in calculations	PS	11a
	Method to find income		<b>1 mark:</b> Method to calculate income for 17 staff, eg $(16 + 22 + 22) \times 38.50 = (£2,310)$ OR $(20 + 22 + 8) \times 38.50 = (£1,925)$ OR Other valid combination	Any valid combination for 17 staff eg 9, 5 and 3 staff (£2310), 10, 4 and 3 staff (£2,233) 10, 5 and 2 staff (£2,156)	PS	11a
	Correct maximum income		<b>1 mark:</b> Correct maximum amount, ie £2310		PS	11a
Question 12	Method to calculate reverse percentage	2	<b>1 mark:</b> Method to calculate reverse %, eg. $29 \div 66 \times 100$ OR Any other valid method	Award if 44 or 43.93 seen	PS	6
	Correct number of children		<b>1 mark:</b> Correct number of children, ie 44	Do not award for decimal answer	PS	6
Question 13	Method to find number of ml per week OR per day	4	<b>1 mark:</b> Method to find number of ml/litres per week, ie $250 \times 37 \times 5 = (46,250\text{ml OR } 46.25 \text{ litres})$ OR Per day, ie		PS	14c

	Conversion of litres to pints		250 x 37 = (9250ml OR 92.5l)			
			<b>1 mark:</b> Method to convert litres to pints, ie 46.25 x 1.76 = (81.4 pints) OR 9.250 x 1.76 =(16.28) OR 0.250 x 1.76 = (0.44) Any other valid conversion		PS	14c
	Method to find number of cartons		<b>1 mark:</b> Method to find number of cartons, eg (81.4 + 10) ÷ 4 = (22.85) per week OR (16.28 + 2) ÷ 4 = (4.57) per day		PS	14c
	Correct increase in cost		<b>1 mark:</b> Correct increase in cost, ie (23 x 0.10 ) = (£)2.30		PS	14c
<b>Question 14</b>	Correct number of overtime hours worked	3	<b>1 mark:</b> Correct calculation of overtime hours worked, ie (42.25 – 35) = 7.25 OR 7¼ hours OR 7 hours and 15 minutes		PS	15c
	Method to calculate total overtime pay.		<b>1 mark:</b> Method to calculate total overtime pay, eg 383.24 – (35 x 8.58) = (82.94)		PS	15c
	Correct overtime rate of pay per hour		<b>1 mark:</b> Correct overtime rate, ie (82.94 ÷ 7.25) = (£)11.44		PS	15c
	<b>Process (Task description)</b>	<b>Total mark</b>	<b>Mark allocation</b>	<b>Comments</b>	<b>PS or US</b>	<b>Subject content</b>
<b>Question 15</b>	Calculate missing length	3	<b>1 mark:</b> Correct height of triangle, ie (57 – 24) = 33 (cm)	Award if 1296 seen	US	16b
	Method to find area		<b>1 mark:</b> Method to calculate area of shape eg	Award if 1296 seen	US	16b

	Correct area of shape		$(32 \times 24) + \frac{1}{2} (32 \times 33)$ <b>1 mark:</b> Correct area, ie 1,296 (cm <sup>2</sup> )		US	16b
<b>Question 16</b>	Method for finding surface area of sides	7	<b>1 mark:</b> Method to find surface area, ie $3.142 \times 18.3 \times 32.3 = (1,857.204\dots)$ $2 \times 3.142 \times 9.15 \times 32.3 = (1857.204\dots)$	Award if 1857.204... seen	PS	17b
	Correct surface area of side of vase		<b>1 mark:</b> Correct surface area, ie 1,857.204....(cm <sup>2</sup> )		PS	17b
	Method to find number of vases rejected		<b>1 mark:</b> Method to find 12.5%, eg $0.125 \times 600 (=75)$ OR Any other valid method	Award if 525 seen	PS	5a
	Correct total number of vases remaining		<b>1 mark:</b> Correct number of vases left, ie $(600 - 75) = 525$		PS	5a
	Method to find number of blue vases		<b>1 mark:</b> Method to find number of vases painted blue, eg $800000 \div 1857.204.. = (430.754\dots)$		PS	17b
	Method to find probability		<b>1 mark:</b> Method to find probability of picking blue vase, ie $430/525$ OR $430 \div 525$	Allow FT for incorrect figures	PS	27b
	Correct probability		<b>1 mark:</b> Correct probability, ie 0.819.... OR 0.82	Do not award if answer shown as a fraction Accept 0.8	PS	27b
	<b>Question 17</b>		Method to find number of lbs	4	<b>1 mark:</b> Correct number of lbs needed, eg $(6 \div 0.5) = 12$ lbs	
Use of conversion graph to convert lbs to kg		<b>1 mark:</b> Use of graph to find number of kg needed, ie 5.5kg	Allow FT for valid attempt for MP1		PS	14b
Method to find cost of required number		<b>1 mark:</b> Method to find cost of glaze, eg $5.5 \div 0.25 = 22 \times 9.86 = (\pounds 216.92)$ OR $5.5 \div 0.75 \approx 8 \times 24.96 = (\pounds 199.76)$ OR			PS	11b

	of kg		$5.5 \div 1 \approx 6 \times 33.98 = (\pounds 203.88)$			
	Correct decision		<b>1 mark:</b> Cheapest pack size identified, ie. 0.75kg OR $\pounds 199.76$	Do not award unless all three costs calculated	PS	11b

	<b>Process (Task description)</b>	<b>Total mark</b>				
<b>Question 18</b>	Choose correct diagram	1	<b>1 mark:</b> Correctly identifies front elevation, ie C		US	20
<b>Question 19</b>	Correct substitution into formula	2	<b>1 mark:</b> Correct substitution into formula, ie $5(2.5 - 1.96)^2$		US	3
	Correct calculation		<b>1 mark:</b> Correct calculation, ie 1.458		US	3
<b>Question 20</b>	Method to find volume of ball	5	<b>1 mark:</b> Method to calculate volume of one ball, ie $4 \div 3 \times 3.142 \times 3.5^3 (=179.6176\dots\text{cm}^3)$ OR $4 \div 3 \times 3.142 \times 3^3 (=113.112\text{cm}^3)$		PS	17a
	Correct volume of both balls		<b>1 mark:</b> Correct volume of both balls, ie 179.6176....(cm <sup>3</sup> ) AND 113.112(cm <sup>3</sup> )		PS	17a
	Method to calculate density		<b>1 mark:</b> Correct method to calculate density, ie $1.742 \div 179.6176..(=0.0097\dots)$ OR $1.040 \div 113.112 = (0.00919\dots)$	May use g or kg Allow FT for incorrect volume	PS	15b
	Correct density of both balls calculated		<b>1 mark:</b> Correct density of both balls, ie 0.00919 (kg/cm <sup>3</sup> ) OR 9.2 (g/cm <sup>3</sup> ) AND 0.0097...(kg/cm <sup>3</sup> ) OR 9.7 (g/cm <sup>3</sup> )			15b
	Correct ball chosen		<b>1 mark:</b> Correct ball chosen, ie Ball B			15b
<b>Question 21</b>	Finds mean for A and B for comparison	4	<b>1 mark:</b> Correct mean for teams A and B, ie Team A $(405.15 \div 6) = 67.525$ Team B $(410.17 \div 6) = 68.36\dots$		PS	25
	Method to calculate medians for both teams		<b>1 mark:</b> Method to find median for teams A and B Team A- $67.01 + 69.00 = 136.01 \div 2 = (68.005)$ Team B- $67.21 + 68.21 = 135.45 \div 2 = (67.725)$		PS	25
	Correct median for A and B		<b>1 mark:</b> Correct median for teams A and B. Team A = 68.005 Team B = 67.725		PS	25

	Valid explanation given		<b>1 mark:</b> Compares averages and gives appropriate decision from calculations.eg Team A has the lowest mean but team B has the lowest median time so both are correct.		PS	25
<b>Question 22</b>	Method to find total original cost or amount of profit per tracksuit.	3	<b>1 mark:</b> Method to find amount to compare, eg $135 \div 20 = (£6.75)$ OR $15.98 \times 20 = (£319.60)$		PS	5b
	Method to find percentage		<b>1 mark:</b> Method to find percentage of original price, eg $6.75 \div 15.98 \times 100 = (42.240\dots\%)$ OR $135 \div 319.60 \times 100 = (42.240\dots\%)$		PS	5b
	Correct % profit		<b>1 mark:</b> Correct percentage, ie 42.24%	Accept 42 or 43%	PS	5b

**Annotation notes:**

Annotation	Meaning
US	Underpinning skills
PS	Problem solving skills
FT	Follow through
(...)	Information that is not required for the mark point

## Functional Skills in Mathematics Level 2 – Mapping matrix

Paper number	FSMO207					
Section	Section A		Section B		Total	%
Total number of marks per task	15		45			
Problem Solving (PS) maximum marks	9		36		Total no of sub-elements mapped = 27	
Underpinning skills (US) maximum marks	6		9			
Tick the box to confirm that Section B contains at least three 5-8 mark question			✓ ✓ ✓			
Level 2 Subject Content	PS	US	PS	US		
1a. Write positive and negative numbers of any size						
1b. Order and compare positive and negative numbers of any size						
2. Carry out calculations with numbers up to one million including strategies to check answers including estimation and approximation	5(Q6)				5	
3. Evaluate expressions and make substitutions in given formulae in words and symbols				2(Q19)	2	
4. Identify the equivalence between fractions, decimals and percentages						
5a. Work out percentages of amounts			2(Q16)		2	
5b. Express one amount as a percentage of another			3(Q22)		3	
6. Calculate percentage change (any size increase and decrease), and original value after percentage change			2(Q12)		2	
7a. Order and compare amounts or quantities using proper and improper fractions and mixed numbers						
7b. Add amounts or quantities using proper and improper fractions and mixed numbers	3(Q7)				3	
7c. Subtract amounts or quantities using proper and improper fractions and mixed numbers	1(Q7)				1	
8. Express one number as a fraction of another				1(10)	1	
9a. Order and compare decimals						
9b. Approximate decimals				1(8)	1	
10a. Add decimals up to three decimal places		1(Q2)			1	
10b. Subtract decimals up to three decimal places		1(Q3)			1	
10c. Multiply decimals up to three decimal places						
10d. Divide decimals up to three decimal places						
11a. Calculate using ratios			4(Q11)		4	

11b. Calculate using direct proportion			2(Q17)		2	
11c. Calculate using inverse proportion						
12. Follow the order of precedence of operators, including indices						
<b>Total: Number and number system</b>					<b>28</b>	
13a. Calculate compound interest						
13b. Calculate percentage increases, decreases and discounts including tax and simple budgeting						
14a. Convert between metric and imperial units of length, using i) a conversion factor ii) a conversion graph						
14b. Convert between metric and imperial units of weight using i) a conversion factor ii) a conversion graph			2(Q17)		2	
14c. Convert between metric and imperial units of capacity using i) a conversion factor ii) a conversion graph			4(Q13)		4	
15a. Calculate using compound measures including speed						
15b. Calculate using compound measures including density			3(Q20)		3	
15c. Calculate using compound measures including rates of pay			3(Q14)		3	
16a. Calculate perimeters including triangles and circles and composite shapes including non-rectangular shapes (formulae given except for triangles and circles)						
16b. Calculate areas of 2-D shapes including triangles and circles and composite shapes including non-rectangular shapes (formulae given except for triangles and circles)				3(Q15)	3	
17a. Use formulae to find volumes of 3-D shapes including cylinders (formulae to be given for 3-D shapes other than cylinders)			2(Q20)		2	
17b. Use formulae to find surface areas of 3-D shapes including cylinders (formulae to be given for 3-D shapes other than cylinders)			3(Q16)		3	
18a. Calculate actual dimensions from scale drawings						
18b. Create a scale diagram given actual measurements						
19. Use coordinates in 2-D, positive and negative, to specify the positions of points						
20. Understand and use common 2-D representations of 3-D objects				1(18)	1	
21. Draw 3-D shapes to include plans and elevations						

22. Calculate values of angles and/or coordinates with 2-D and 3-D shapes		1(Q1)			1	
<b>Total: Measure, shape and space</b>					<b>22</b>	
23a. Calculate the median of a set of quantities		2(Q5)			2	
23b. Calculate the mode of a set of quantities		1(Q4)			1	
24. Estimate the mean of a grouped frequency distribution from discrete data						
25. Use the mean, median, mode and range to compare two sets of data			4(21)		4	
26. Work out the probability of combined events, including using diagrams and two-way tables						
27a. Express probabilities as fractions						
27b. Express probabilities as decimals			2(Q16)		2	
27c. Express probabilities as percentages				1(Q9)	1	
28a. Draw scatter diagrams						
28b. Interpret scatter diagrams						
28c. Recognise positive and negative correlation						
<b>Total: Handling data</b>					<b>10</b>	
<b>Total Mark PS/US Total %</b>	9	6	36	9	60	

<b>Problem solving and decision making requirements: Indicate the question numbers where this is required</b>	<b>Section A</b>	<b>Section B</b>
Read, understand, and use mathematical information and mathematical terms	Q6,7	Q11, 12 13, 14, 16, 17, 20, 21, 22
Address individual problems based on a combination of the knowledge and/or skills from the mathematical content areas (number and the number system; measures, shape and space; information and data). Some problems draw upon a combination of all three mathematical areas and require learners to make connections between those content areas.		Q16 (3) Q17 (2)
Use mathematical information and terms in a problem	Q6,7	Q11, 12 13, 14, 16, 17, 20, 21, 22
Use knowledge and understanding to a required level of accuracy	Q6, 7	Q11, 12 13, 14, 16, 17, 20, 21, 22
Identify suitable operations and calculations to generate results	Q6, 7	Q11, 12 13, 14, 16, 17, 20, 21, 22
Analyse and interpret answers in the context of the original problem	Q6, 7	Q11, 12 13, 14, 16, 17, 20, 21, 22
Check the sense and reasonableness of answers	Q6, 7	Q11, 12 13, 14, 16, 17, 20, 21, 22
Present and explain results clearly and accurately demonstrating reasoning to support the process and show consistency with the evidence presented.	Q6	Q11, 20, 21



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