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	**1 mark:** Correct answer, ie (180 – 150) = 30^0		US	22
Question 2	Add decimals	1	**1 mark:** Correct answer, ie (42.567 + 49.63)= 92.197		US	10a
Question 3	Subtract decimals	1	**1 mark:** Correct answer, ie (54.983 – 33.947)= 21.036		US	10b
Question 4	Find mode of a set of data	1	**1 mark:** Correct mode, ie 61	.	US	23b
Question 5	Method to find median	2	**1 mark:** Valid method to find median, eg 52.7 + 43.9 = 96.6 AND 96.6 ÷ 2 = (48.3)		US	23a
	Completes calculation to find median		**1 mark:** Correct median, ie 48.3		US	23a
Question 6	Calculates income	5	**1 mark:** 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		**1 mark:** Method to calculate 6 months expenses eg, 1467.26 x 6 = (8803.56)		PS	2
	Method to find total income after expenses		**1 mark:** Method to find total income minus expenses, eg 205605 – 8803.56 = (196,801.44)		PS	2
	Correct amount raised in August		**1 mark:** 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		**1 mark:** 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	Any valid reason which indicates need to raise more money. Only award f 53198.56 OR 248801.44 seen.	PS	2
Question 7	Correct total distance for Carmel	4	**1 mark:** Calculate distance for Carmel, ie $\frac{10}{3}$ OR $3\frac{1}{3}$		PS	7b
	Method to add fractions		**1 mark:** Valid method to add fractions and mixed numbers, eg $1\frac{3}{6}+1\frac{1}{6}+1\frac{1}{6}+\frac{2}{6}=(4\frac{1}{6})$ OR $\frac{9}{6}+\frac{7}{6}+\frac{7}{6}+\frac{2}{6}=(\frac{25}{6})$ Any other valid method		PS	7b
	Correct addition of fractions		**1 mark:** Correct total miles for Fiona, ie $4\frac{1}{6}$ OR $\frac{25}{6}$		PS	7b
	Correct number of miles left to walk		**1 mark:** Correct subtraction of fractions, ie (7 – 3 1/3) = 3 2/3 AND (7 – 4 1/6) = 2 5/6	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	**1 mark:** Correct answer, ie 24.93		US	9b
Question 9	Correct probability as a percentage	1	**1 mark:** Correct percentage, ie (1 ÷ 6 x 100) = 16.667%	Accept truncated or rounded figure % sign needed	US	27c
Question 10	Correct fraction	1	1 mark: Correct fraction in simplest form, ie (25/350) = 1/14		US	8
Question 11	Method to find number of staff per room	4	**1 mark:** Method to find number of staff needed for each room, eg 20 ÷ 2 = (10) OR 22 ÷ 4 = (5.5) OR 22 ÷ 8 = (2.75)		PS	11a
	Correct number of staff		**1 mark:** Correct number of staff per room, ie 10, 6 AND 3	May be seen in calculations	PS	11a
	Method to find income		**1 mark:** Method to calculate income for 17 staff, eg (16 + 22 + 22) x 38.50 = (£2,310) OR (20 + 22 + 8) x 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		**1 mark:** Correct maximum amount, ie £2310		PS	11a
Question 12	Method to calculate reverse percentage	2	**1 mark:** Method to calculate reverse %, eg. 29 ÷ 66 x 100 OR Any other valid method	Award if 44 or 43.93 seen	PS	6
	Correct number of children		**1 mark:** 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	**1 mark:** Method to find number of ml/litres per week, ie 250 x 37 x 5 = (46,250ml OR 46.25 litres) OR Per day, ie		PS	14c

			250 x 37 = (9250ml OR 92.5l)			
	Conversion of litres to pints		**1 mark:** 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		**1 mark:** 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		**1 mark:** Correct increase in cost, ie (23 x 0.10) = (£)2.30		PS	14c
Question 14	Correct number of overtime hours worked	3	**1 mark:** 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.		**1 mark:** Method to calculate total overtime pay, eg 383.24 – (35 x 8.58) = (82.94)		PS	15c
	Correct overtime rate of pay per hour		**1 mark:** Correct overtime rate, ie (82.94 ÷ 7.25) = (£)11.44		PS	15c
	Process (Task description)	**Total mark**	**Mark allocation**	**Comments**	**PS or US**	**Subject content**
Question 15	Calculate missing length	3	**1 mark:** Correct height of triangle, ie (57 – 24) = 33 (cm)	Award if 1296 seen	US	16b
	Method to find area		**1 mark:** Method to calculate area of shape eg	Award if 1296 seen	US	16b

			(32 x 24) + ½ (32 x 33)			
	Correct area of shape		**1 mark:** Correct area, ie 1,296 (cm²)		US	16b
Question 16	Method for finding surface area of sides Correct surface area of side of vase Method to find number of vases rejected Correct total number of vases remaining Method to find number of blue vases Method to find probability Correct probability	7	**1 mark:** Method to find surface area, ie 3.142 x 18.3 x 32.3 = (1,857.204….) 2 x 3.142 x 9.15 x 32.3 = (1857.204…)	Award if 1857.204… seen	PS	17b
			1 mark: Correct surface area, ie 1,857.204….(cm²)		PS	17b
			1 mark: Method to find 12.5%, eg 0.125 x 600 (=75) OR Any other valid method	Award if 525 seen	PS	5a
			1 mark: Correct number of vases left, ie (600 – 75) = 525		PS	5a
			1 mark: Method to find number of vases painted blue, eg 800000 ÷ 1857.204.. = (430.754…)		PS	17b
			1 mark: Method to find probability of picking blue vase, ie 430/525 OR 430 ÷ 525	Allow FT for incorrect figures	PS	27b
			1 mark: Correct probability, ie 0.819…. OR 0.82	Do not award if answer shown as a fraction Accept 0.8	PS	27b
Question 17	Method to find number of lbs Use of conversion graph to convert lbs to kg Method to find cost of required number	4	**1 mark**: Correct number of lbs needed, eg (6 ÷ 0.5) = 12 lbs		PS	14b
			1 mark: Use of graph to find number of kg needed, ie 5.5kg	Allow FT for valid attempt for MP1	PS	14b
			1 mark: Method to find cost of glaze, eg 5.5 ÷ 0.25 = 22 x 9.86 = (£216.92) OR 5.5 ÷ 0.75 ≈ 8 x 24.96= (£199.76) OR		PS	11b

	of kg Correct decision		5.5 ÷ 1 ≈ 6 x 33.98 = (£203.88) **1 mark**: Cheapest pack size identified, ie. 0.75kg OR £199.76	 Do not award unless all three costs calculated	 PS	 11b

	Process (Task description)	Total mark				
Question 18	Choose correct diagram	1	**1 mark:** Correctly identifies front elevation, ie C		US	20
Question 19	Correct substitution into formula	2	**1 mark:** Correct substitution into formula, ie $5(2.5 – 1.96)^2$		US	3
	Correct calculation		**1 mark:** Correct calculation, ie 1.458		US	3
Question 20	Method to find volume of ball	5	**1 mark:** Method to calculate volume of one ball, ie $4 \div 3 \times 3.142 \times 3.5^3$ (=179.6176….cm³) OR $4 \div 3 \times 3.142 \times 3^3$ (=113.112cm³)		PS	17a
	Correct volume of both balls		**1 mark:** Correct volume of both balls, ie 179.6176….(cm³) AND 113.112(cm³)		PS	17a
	Method to calculate density		**1 mark:** Correct method to calculate density, ie 1.742 ÷179.6176..(=0.0097…) OR 1.040 ÷ 113.112 = (0.00919..)	May use g or kg Allow FT for incorrect volume	PS	15b
	Correct density of both balls calculated		**1 mark:** Correct density of both balls, ie 0.00919 (kg/cm³) OR 9.2 (g/cm³) AND 0.0097…(kg/cm³) OR 9.7 (g/cm³)			15b
	Correct ball chosen		**1 mark:** Correct ball chosen, ie Ball B			15b
Question 21	Finds mean for A and B for comparison	4	**1 mark:** Correct mean for teams A and B, ie Team A (405.15 ÷ 6) = 67.525 Team B (410.17 ÷ 6) = 68.36…		PS	25
	Method to calculate medians for both teams		**1 mark:** Method to find median for teams A and B Team A- 67.01 + 69.00= 136.01 ÷2 = (68.005) Team B- 67.21+ 68.21= 135.45 ÷2 = (67.725)		PS	25
	Correct median for A and B		**1 mark:** Correct median for teams A and B. Team A= 68.005 Team B = 67.725		PS	25

	Valid explanation given					
			1 mark: 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
Question 22	Method to find total original cost or amount of profit per tracksuit. Method to find percentage Correct % profit	3	**1 mark:** Method to find amount to compare, eg 135 ÷ 20 = (£6.75) OR 15.98 x 20 = (£319.60)		PS	5b
			1 mark: Method to find percentage of original price, eg 6.75 ÷ 15.98 x 100 = (42.240….%) OR 135 ÷ 319.60 x 100 = (42.240….%)		PS	5b
			1 mark: 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 **Underpinning skills (US) maximum marks**	**9** **6**		**36** **9**		**Total no of sub-elements mapped = 27**	
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						
Total: Number and number system					**28**	
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	
Total: Measure, shape and space					**22**	
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						
Total: Handling data					**10**	
Total Mark PS/US Total %	9	6	36	9	60	

Problem solving and decision making requirements: Indicate the question numbers where this is required	Section A	Section 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	