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## LEVEL 1 & 2 EXAMS

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# LEVEL 2 FUNCTIONAL SKILLS QUALIFICATION IN MATHEMATICS

## PRACTICE ASSESSMENT 2 (FSM209P)

## MARK SCHEME

| Section A | Process (Task description) | Total mark | Mark allocation | Comments | PS or US | Subject content |
|---|---|---|---|---|---|---|
| **Question 1** | Express one number as fraction of another | 1 | **1 mark**: Correct answer shown, ie $\frac{1}{8}$ | | US | 8 |
| **Question 2** | Method to calculate Pressure | 2 | **1 mark:** Method to calculate pressure, eg 8000 ÷ 25 | May be implied | US | 15d |
| | Correct pressure calculated | | **1 mark:** 320 | | US | 15d |
| **Question 3** | Put fractions in order of size | 1 | **1 mark:** Correct order shown, ie $\frac{3}{7}$ $\frac{5}{9}$ $\frac{7}{10}$ $\frac{4}{5}$ $\frac{7}{3}$ | Accept largest to smallest<br>Accept use of mixed number | US | 7a |
| **Question 4** | Correct number of red or purple pens out of total number of pens | 2 | **1 mark:** Probability of pen being red or purple, eg, $\frac{10}{16}$ or $\frac{5}{8}$, OR "10 out of 16" | Accept 0.625 | US | 27c |
| | Probability expressed as a percentage | | **1 mark:** Probability expressed as a percentage, ie = 62.5(%) | | US | 27c |
| **Question 5** | Calculates scale from diagram | 3 | **1 mark:** Correctly calculates scale, eg<br>(9 ÷ 18) = 0.5m per square OR<br>(6.5 ÷ 13) = 0.5m per square OR<br>50cm per square OR<br>1m = 2 squares | May be seen on diagram | PS | 18b |
| | Method to calculate one dimension | | **1 mark:** Method to calculate at least one scale measurement, eg<br>3.9 ÷ 0.5 = (7.8 squares) OR<br>9 ÷ 0.5 = (9 squares) OR<br>0.75 ÷ 0.5 = (1.5 squares) OR<br>Any other valid method | May be seen on diagram | PS | 18b |
| | Correct diagram drawn of workshop | | **1 mark:** Correctly draws workshop in appropriate position on plan, ie<br>9 squares by 7.8 squares at least 1.5 squares from | Allow tolerance +/-1mm<br>Do not accept 8 squares for width | PS | 18b |

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|---|---|---|---|---|---|---|
| | | | edges. | | | |
| **Question 6** | Method to convert currency | 3 | **1 mark**: Method to convert £ to $ or $ to £, eg<br>260 ÷ 0.80 = ($325) OR<br>310 × 0.80 = (£248) | Award if ($)325 OR<br>(£)248 seen | PS | 11b |
| | Correct conversion in $ or £ | | **1 mark:** Correct converted cost of either phone, ie<br>($)325 OR (£)248 | | PS | 11b |
| | Correct decision with reason | | **1 mark:** Correct decision and reason, eg<br>No because Rana's phone was equivalent to $325<br>No, because the phone Rana's uncle found was £12 cheaper.<br>Any valid reason with supporting calculations | | PS | 11b |
| **Question 7** | Method to calculate call charges | 3 | **1 mark:** Method to add all call charges, eg<br>0.195 + 0.074 + 0.126 + 0.030 + 0.210 + 0.814 + 0.123 = (1.572) | Award if one error<br>Award if 0.29 or 1.57 seen<br>Accept alternative method<br>1.862 – 0.195 – 0.074 – 0.126 – 0.030 – 0.210 – 0.814 – 0.123 = (0.29) | PS | 10a |
| | Correct subtotal for call charges | | **1 mark:** Correctly adds all values, ie<br>1.572 | Award if 0.29 seen<br>Accept 1.57 | PS | 10a |
| | Correct extra charge | | **1 mark:** Correct extra charge), ie<br>**(**1.862 – 1.572) = 0.29 | | PS | 10b |

| Section B | Process (Task description) | Total mark | Mark allocation | Comments | PS or US | Subject content |
|---|---|---|---|---|---|---|
| **Question 8** | Method to express one amount as a percentage of another | 2 | **1 mark:** Method to calculate percentage of students who fail, eg<br>19 ÷ 463 × 100 = (4.1%) OR<br>100 ÷ 463 × 19 = (4.1%) OR<br>Other valid method | Award for correct method for percentage of students who pass,<br>444 ÷ 463 × 100 | US | 5b |
| | Correct percentage of students who fail | | **1 mark:** Correct percentage calculated, ie<br>4.1(%) | Accept 4% | US | 5b |
| **Question 9** | Puts decimals in order of size | 1 | **1 mark:** Correct order shown, ie<br>2.112, 2.122, 2.962, 22.36, 22.8 | Accept largest to smallest | US | 9a |
| **Question 10** | Method to calculate median property rental income | 5 | **1 mark:** Method to calculate median, eg<br>10200 + 10500 ÷ 2 = (10350) OR<br>Any other valid method | | PS | 23a |
| | Correct median property rental income | | **1 mark:** Correct median calculated, ie<br>(£)10350 | | PS | 23a |
| | Correct yearly income calculated | | **1 mark:** Correct calculation of yearly income, ie<br>(795 × 12) = 9540 | Accept if calculates monthly income rate from median, ie 10350 ÷ 12 = 862.50 | PS | 15c |
| | Method to calculate property rent as a % below median | | **1 mark:** Method to calculate percentage difference, eg<br>(10350 - 9540) = 810 ÷ 10350 × 100 = (7.826…) | Accept if calculates percentage difference based on monthly values, eg 67.5 ÷ 862.5 × 100 =7.826…)<br>Allow FT for their median and yearly income | PS | 6 |
| | Correct % below median average calculated | | **1 mark:** Correct percentage below median calculated, ie 7.8(%) | Accept 8%, 7.826…% | PS | 6 |
| **Question 11** | Correct interest for 1 year of saving | 3 | **1 mark:** Correct amount of interest for 1 year, ie<br>(0.024 × 5000) = (£)120 | Award if 5242.88 seen<br>May be implied | PS | 13a |

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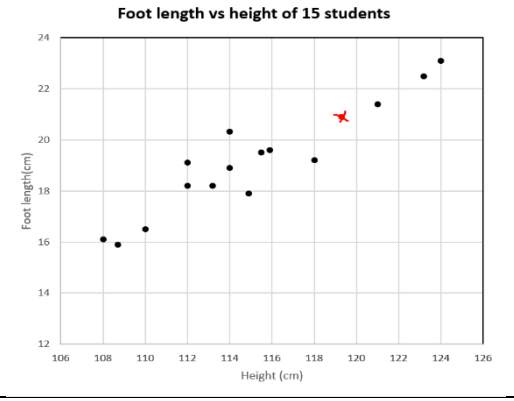
| | Correct method to calculate compound interest at 2.4% per annum<br>Correct total amount saved after 2 years | | **1 mark:** Correct method to calculate compound interest, eg (5000 + 120) × 0.024 = (122.88) OR 5000 × $1.024^2$ = (5242.88) | Award if 122.88 OR 5242.88 seen | PS | 13a |
| | | | **1 mark:** Correct total amount saved, ie (£)5242.88 | | PS | 13a |
| **Question 12** | Calculates figures for formula<br><br>Substitutes figures into formula<br>Correct LTV calculated<br><br>Correct decision | 4 | **1 mark:** Correct amount borrowed, ie (192300 – 61500) = 130800 | | PS | 2 |
| | | | **1 mark:** Substitutes values into formula, ie 130800 ÷ 192300 × 100 = ( 68.018…) | Allow FT for incorrect loan amount | PS | 3 |
| | | | **1 mark:** Correct LTV calculated, ie 68.018% | Accept rounded or truncated answers | PS | 3 |
| | | | **1 mark**: Correct decision and reason, eg Yes, because the LTV is 7% below the limit | DO not accept "yes" without valid reason | PS | 3 |
| **Question 13** | Draw point in correct position on graph | 1 | **1 mark**: Point drawn correctly at 119.3,20.9<br>  | Allow tolerance +/- 1mm | US | 28a |
| **Question 14** | Correct multiplication of decimals | 1 | **1 mark:** Correct answer shown, ie 26.490165 | Accept 26.49 or 26.5 | US | 10c |
| **Question 15** | Converts fraction into decimal | 1 | **1 mark:** Correct answer shown, ie 1.75 | | US | 4 |

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| **Question 16** | Calculate frequency from given values<br><br>Calculate midpoint<br><br>Use correct method to calculate estimated total of grouped discrete data<br><br>Correct total<br><br>Use correct method for calculating the estimated mean number of races entered<br><br>Correct estimated mean calculated | 6 | **1 mark:** Correct frequencies, ie 4, 6, 8, 1 | | PS | 24 |
| | | | **1 mark:** Correct midpoint, ie 2, 7, 12, 17, 22, 27 | | PS | 24 |
| | | | **1 mark:** Method to find estimated total number of gym visits, ie<br>(6 × 2) + (5 × 7) + (4 ×12) + (6 × 17) + (8 × 22) + (1 × 27) = (400) | Allow FT using their answers to mark point 1 and 2<br>Award if 400 seen | PS | 24 |
| | | | **1 mark:** Correct estimated total number of gym visits, ie 400 | | PS | 24 |
| | | | **1 mark:** Correct method for calculating the estimated mean number of gym visits<br>400 ÷ 30 = (13.33…) | Allow FT | PS | 24 |
| | | | **1 mark:** Correct estimated mean number of gym visits, ie 13 | Allow 13.33…<br>Must have calculations to back up answer | PS | 24 |
| **Question 17** | Diameter to outside edge calculated<br><br>Method to calculate perimeter of track<br><br>Correct perimeter calculated<br><br>Method to calculate number of laps needed to run 1200m | 6 | **1 mark:** Calculates total diameter, ie<br>(1.22 × 12 + 73) = 87.64(m) | | PS | 16a |
| | | | **1 mark:** Method to calculate distance around perimeter of track, eg<br>2 × 84.39 + 3.142 × 87.64 = (444.14488)<br>168.78 + 275.36488 = (444.14488) | Allow FT for their diameter | PS | 16a |
| | | | **1 mark:** Correct perimeter calculated, ie 444.14488(m) | Allow truncated answers | PS | 16a |
| | | | **1 mark:** Method to calculate number of laps, eg<br>1200 ÷ 444.14 = (2.70…) OR<br>Any other method | Accept 444.14 × 3 = (1332.42)<br>Allow FT for their perimeter | PS | 16a |

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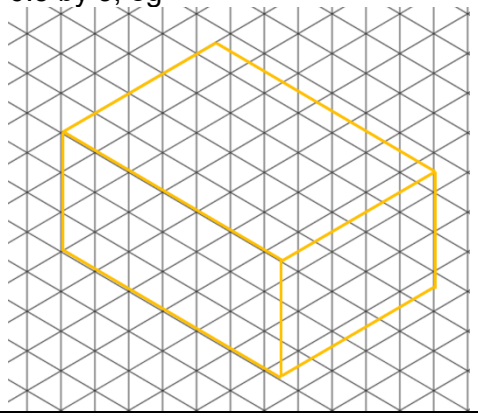
| | Correct number of laps calculated | | **1 mark:** Correct number of laps around the perimeter, eg 2.7… | Allow correct distance in m for 3 x around the edge of the track, ie 1332(m)<br>Do not allow FT | PS | 16a |
| | Correct decision and explanation | | **1 mark:** Yes, and valid explanation, eg<br>Holly will complete 1332 m if she runs 3 times around the edge of the track.<br>Holly only needs to do 2.7 times around the track to run 1200m. | | PS | 16a |
| **Question 18** | Cuboid drawn correctly | 2 | **2 marks:** Cuboid drawn with correct dimensions- 4.5 by 6.5 by 3, eg  | Award 1 mark for two correct dimensions<br>Allow tolerance +/-1mm<br>Do not award for correct dimensions on a 2d shape | US | 21a |
| **Question 19** | Correct calculation | 1 | **1 mark:** Correct percentage found, ie<br>(0.37 × 108) = 39.96 | | US | 5a |
| **Question 20** | Use conversion chart to convert inch to mm | 5 | **1 mark:** Uses chart to convert inches into mm eg 190(mm) | May be implied<br>Award for 189-191mm | PS | 14a |
| | Method to calculate number of beads needed for each | | **1 mark:** Method to calculate number of beads per bracelet, eg<br>190 ÷ 4 = (47.5) OR | Award if 47, 47.5 or 48 (beads) seen<br>Allow FT | PS | 14a |

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| | bracelet<br><br>Correct number of beads per bracelet<br><br>Method to calculate number of bracelets per pack<br><br>Correct number of bracelets calculated | | Any other valid method | May be implied by final answer | | |
| | | | **1 mark:** Correct number of beads needed, ie 48<br>Accept 47. | May be implied by final answer | PS | 14a |
| | | | **1 mark:** Method to calculate number of bracelets, eg<br>800 ÷ 47 = (17. 021…) OR<br>800 ÷ 48 = (16.666…) | Allow FT | PS | 14a |
| | | | **1 mark:** Correct number of bracelets, ie<br>(800 ÷ 47) = 17 bracelets OR<br>(800 ÷ 48) = 16 bracelets | Do not accept decimal answer | PS | 14a |
| **Question 21** | Method to calculate 18% discount | 4 | **1 mark:** Method to calculate discount, eg<br>0.18 × 59.99 = (10.7982) OR<br>0.82 × 59.99 = (49.1918) OR<br>Any other valid method | Award if 10.7982 OR 49.1918 seen<br>Award alternative method based on cost per bead,<br>59.99 / 800 = 0.074…<br>0.074 x 0.82 = (£0.0614…) | PS | 13b |
| | Correct discount calculated | | **1 mark:** Correct cost including discount, ie<br>(59.99 – 10.7982) = (£)49.19 | Award if 0.06, 6p seen | PS | 13b |
| | Correct cost per bead calculated | | **1 mark**: Correct cost per bead, ie<br>(49.19 ÷ 800) = 0.0614875 | Award for truncated answers | PS | 13b |
| | Correct cost to nearest whole pence | | **1 mark:** (£)0.06 | Accept 6(p)<br>Money notation not required | PS | 9b |
| **Question 22** | Method to convert weight of parcel into kg/grams | 3 | **1 mark:** Method to convert lbs to kg or oz to grams eg<br>1 ÷ 2.2 = (0.454…) OR<br>2 × 28.35g = (56.7g) OR<br>18 × 28.35 = (510.3g) | Award if 0.454, 56.7 or 455g seen | PS | 14b |
| | Correct weight of parcel calculated | | **1 mark:** Correct weight of parcel (0.455 × 1000 + 56.7 ) = 511.7g | Accept 510.7, 506.7, 510.3 | PS | 14b |

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|---|---|---|---|---|---|---|
| | Correct postage cost chosen | | **1 mark:** Correct cost for postage<br>choice of 750g parcel, second class, ie £2.33 | | PS | 14b |

**Annotation notes:**

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

| Paper number | FSMO209 (Practice Set 2) | | | | | |
|---|---|---|---|---|---|---|
| **Paper Section** | **Section A** | | **Section B** | | **Total** | **%** |
| **Total number of marks per task** | **15** | | **45** | | | |
| **Problem Solving (PS) maximum marks**<br>**Underpinning skills (US) maximum marks** | **9**<br>**6** | | **36**<br>**9** | | **Total no of sub-elements mapped = 27** | |
| Tick the box to confirm that Section B contains at least three 5-8 mark questions: | | | ✓✓✓ | | | |
| **Level 2 Subject Content** | **PS** | **US** | **PS** | **US** | | |
| 1. Read and write 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 | | | 1(Q12) | | 1 | |
| 3. Evaluate expressions and make substitutions in given formulae in words and symbols | | | 3(Q12) | | 3 | |
| 4. Identify the equivalence between fractions, decimals and percentages | | | | 1(Q15) | 1 | |
| 5a. Work out percentages of amounts | | | | 1(Q19) | 1 | |
| 5b. Express one amount as a percentage of another | | | | 2(Q8) | 2 | |
| 6. Calculate percentage change (any size increase and decrease), and original value after percentage change | | | 2(Q10) | | 2 | |
| 7a. Order and compare amounts or quantities using proper and improper fractions and mixed numbers | | 1(Q3) | | | 1 | |
| 7b. Add amounts or quantities using proper and improper fractions and mixed numbers | | | | | | |
| 7c. Subtract amounts or quantities using proper and improper fractions and mixed numbers | | | | | | |
| 8. Express one number as a fraction of another | | 1(Q1) | | | 1 | |
| 9a. Order and compare decimals | | | | 1(Q9) | 1 | |
| 9b. Approximate decimals | | | 1(Q22) | | 1 | |
| 10a. Add decimals up to three decimal places | 2(Q7) | | | | 2 | |
| 10b. Subtract decimals up to three decimal places | 1(Q7) | | | | 1 | |
| 10c. Multiply decimals up to three decimal places | | | | 1(Q14) | 1 | |
| 10d. Divide decimals up to three decimal places | | | | | | |
| 11a. Calculate using ratios | | | | | | |
| 11b. Calculate using direct proportion | 3(Q6) | | | | 3 | |
| 11c. Calculate using inverse proportion | | | | | | |
| 12. Follow the order of precedence of operators, including | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| indices | | | | | | |
| **Total: Number and number system** | **PS** | **US** | **PS** | **US** | **21** | |
| 13a. Calculate compound interest | | | 3(Q11) | | 3 | |
| 13b. Calculate percentage increases, decreases and discounts including tax and simple budgeting | | | 3(Q21) | | 3 | |
| 14a. Convert between metric and imperial units of length, using<br>i) a conversion factor<br>ii) a conversion graph | | | 5(Q20) | | 5 | |
| 14b. Convert between metric and imperial units of weight using<br>i) a conversion factor<br>ii) a conversion graph | | | 3(Q22) | | 3 | |
| 14c. Convert between metric and imperial units of capacity using<br>i) a conversion factor<br>ii) a conversion graph | | | | | | |
| 15a. Calculate using compound measures including speed | | | | | | |
| 15b. Calculate using compound measures including density | | | | | | |
| 15c. Calculate using compound measures including rates of pay | | | 1(Q10) | | 1 | |
| 15d. Calculate using compound measures excluding rates of pay | | 2(Q2) | | | 2 | |
| 16a. Calculate perimeters including triangles and circles and composite shapes including non-rectangular shapes (formulae given except for triangles and circles) | | | 6(Q17) | | 6 | |
| 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) | | | | | | |
| 17a. Use formulae to find volumes of 3-D shapes including cylinders (formulae to be given for 3-D shapes other than cylinders) | | | | | | |
| 17b. Use formulae to find surface areas of 3-D shapes including cylinders (formulae to be given for 3-D shapes other than cylinders) | | | | | | |
| 18a. Calculate actual dimensions from scale drawings | | | | | | |
| 18b. Create a scale diagram given actual measurements | 3(Q5) | | | | 3 | |
| 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 | | | | | | |
| 21. Draw 3-D shapes to include plans and elevations | | | | 2(Q18) | 2 | |
| 22. Calculate values of angles and/or coordinates with 2-D and 3-D shapes | | | | | | |

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|---|---|---|---|---|---|---|
| **Total: Measure, shape and space** | | | 2(Q10) | | **28** | |
| 23b. Calculate the mode of a set of quantities | | | | | | |
| 24. Estimate the mean of a grouped frequency distribution from discrete data | | | 6(Q16) | | 6 | |
| 25. Use the mean, median, mode and range to compare two sets of data | | | | | | |
| 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 | | | | | | |
| 27c. Express probabilities as percentages | | 2(Q4) | | | 2 | |
| 28a. Draw scatter diagrams | | | | 1(Q13) | 1 | |
| 28b. Interpret scatter diagrams | | | | | | |
| 28c. Recognise positive and negative correlation | | | | | | |
| **Total: Handling data** | | | | | **11** | |
| **Total Mark PS/US Total %** | 9 | 6 | 36 | 9 | 60 | 100 |

| 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 | Q5, Q6, Q7 | Q10, Q11, Q12, Q16, Q17 , Q20, Q21, Q22 | |
| 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. | | Q10, Q21 | |
| Use mathematical information and terms in a problem | Q5, Q6, Q7 | Q10, Q11, Q12 Q16, Q17, Q20, Q21, Q22 | |
| Use knowledge and understanding to a required level of accuracy | Q5, Q6, Q7 | Q10, Q11, Q12, Q16, Q17, Q20, Q21, Q22 | |
| Identify suitable operations and calculations to generate results | Q5, Q6, Q7 | Q10, Q11, Q12, Q16, Q17, Q20, Q21, Q22 | |
| Analyse and interpret answers in the context of the original problem | Q6 | Q10, Q11, Q12, Q16, Q17, Q20, Q21, Q22 | |
| Check the sense and reasonableness of answers | Q5, Q6, Q7 | Q10, Q11, Q12, Q16, Q17, Q20, Q21, Q22 | |
| Present and explain results clearly and accurately demonstrating reasoning to support the process and show consistency with the evidence presented. | Q6 | Q12, Q17 | |

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