

Maths Paper 1

Mark Scheme



Functional Skills in Mathematics Level 2 – Mark scheme

Paper 1

Task 1 (non-calculator)	Process	Total mark	Mark allocation	Comments	P or U	Subject content
Question 1	Correct order	1	1 mark: 3.02, 3.2, 3.27, 3.702, 3.72	Do not accept largest to smallest	U	9
Question 2	Correct division	1	1 mark: $12028 \div 8 = 1503.5$		U	2
Question 3	Convert fractions to have the same denominator Fractions correctly subtracted	2	1 mark: $\frac{5}{7} - \frac{1}{3} = \frac{15}{21} - \frac{7}{21}$		U	7
			1 mark: $\frac{15}{21} - \frac{7}{21} = \frac{8}{21}$	Accept equivalent fractions e.g. $\frac{16}{42}$	U	7
Question 4	List in order of size	2	1 mark: Correct order i.e.: 11, 13, 14, 14, 17, 18, 19, 23, 25, 27	May be implied if 17.5 seen	U	23
	Correct median		1 mark: $(17 + 18) \div 2 = 17.5$ (pages)	Units not required	U	23
Question 5	Ratio of the cost of pages	3	1 mark: Ratio of the cost of black and white pages in pence i.e. $4 \times 10p : 1 \times 15p = 40p : 15p$		P	11
	Finding 1 part of the ratio		1 mark: Finding the amount of pages for 1 part i.e. $550 \div 55 = 10$ (pages)		P	11
	Total number of pages		1 mark: Total number of pages i.e. $5 \times 10 = 50$ (pages)	Units not required	P	11
Question 6	Calculate hours for 1 worker	4	1 mark: $6 \times 16 = 96$ hours for 1 worker	Allow alternate methods	P	11
	Calculate hours for 4 workers		1 mark: $96 \div 4 = 24$ hours for 4 workers	Allow alternate methods	P	11
	Amount paid for 6 workers and 4 workers		1 mark: $16 \times 10.50 = (£)168$ and $24 \times 10.50 = (£)252$	Allow method of finding difference in hours first	P	2
	Difference between amounts paid		1 mark: $252 - 168 = (£)84$	Allow FT for their previous calculations	P	2
Question 7	Number of students with one sibling \div Total number of students	2	1 mark: $\frac{12}{4+12+8+3+1+2} = \frac{12}{30}$		P	27
	Simplifying fraction		1 mark: $\frac{12}{30} = \frac{2}{5}$	Only accept $\frac{2}{5}$ for 2 marks	P	27

Task 2	Process	Total mark	Mark allocation	Comments	P or U	Subject content
Question 8	Finding the radius	4	1 mark: $r = 12 \div 2 = 6$ (inches)	May be implied if 6 seen	P	16
	Calculating the area		1 mark: Area = $3.14 \times 6^2 = 113.04$ (inches ²)		P	16
	Area of individual slice		1 mark: $113.04 \div 8 = 14.13$		P	16
	Correct units		1 mark: inches ²	Units required for full marks	P	16
Question 9	Find the midpoints	3	1 mark: 5.5, 15.5 and 25.5		P	24
	Sum of midpoints \times frequencies		1 mark: $(5.5 \times 12) + (15.5 \times 14) + (25.5 \times 9) = 512.5$		P	24
	Divide by total number of workers		1 mark: $512.5 \div 35 = 14.642 \dots = 15$ (miles)	Units not required	P	24
Question 10	Plot coordinate on grid	1	1 mark: Point plotted correctly on graph	See figure 1	U	19
Question 11	Calculate the decimal	2	1 mark: Correct calculation, i.e. $(133 \div 380 = 0.35)$ converted to $\frac{35}{100}$		U	8
	Convert to fraction in simplest form		1 mark: $\frac{7}{20}$		U	8
Question 12	Start process to find cost per litre for one person	5	1 mark: Start of correct process. i.e. $(4 \times 1) + (5 \times 0.5) + (9 \times 0.75) = 13.25$ litres or $(8 \times 1) + (10 \times 0.5) = 13$ litres or $(9 \times 1) + (9 \times 0.5) + (5 \times 0.75) = 17.25$ litres		P	15
	Finding price per litre for Jack		1 mark: $\frac{8.96}{13.25} = \text{£}0.676$ per litre	Allow FT for their cost	P	15
	Finding price per litre for Sophie		1 mark: $\frac{8.92}{13} = \text{£}0.686$ per litre	Allow FT for their cost	P	15
	Finding price per litre for Kabira		1 mark: $\frac{11.77}{17.25} = \text{£}0.682$ per litre	Allow FT for their cost	P	15
	Stating who got the cheapest water per litre		1 mark: Jack bought the cheapest water per litre.		P	15

Task 3	Process	Total mark	Mark allocation	Comments	P or U	Subject content
Question 13	Finding the radius of the sphere	4	1 mark: $r = \frac{d}{2} = \frac{8}{2} = 4$ (cm)	May be implied if 4 seen	P	17
	Calculating the volume of the sphere		1 mark: Volume of the sphere, i.e. Volume = $\frac{4}{3} \times 3.14 \times 4^3$ = 267.9466667 (cm ³)		P	17
	Correct density formula		1 mark: Density = $\frac{\text{Mass}}{\text{Volume}}$		P	15
	Calculating the mass of the paperweight		1 mark: Mass = $8.23 \times 267.9466667 = 2205$ g	Answer to nearest whole number Allow FT from their rounded figures Units required	P	15
Question 14	Correct plan drawn	1	1 mark: Correct plan, i.e.	See figure 2	U	21
Question 15	Calculate population after 1 year	3	1 mark: Year 1: $120000 \times 1.05 = 126000$	May be implied if 126000 seen	P	6
	Calculate population after 2 years		1 mark: Year 2: $126000 \times 1.05 = 132300$	May be implied if 132300 seen Allow FT for their figure for population after 1 year	P	6
	Population of children		1 mark: $\frac{1}{3} \times 132300 = 44100$		P	6
Question 16	Calculate perimeter	2	1 mark: Perimeter = $5.6 + 5.6 + 11.5 = 22.7$ cm	May be implied if 22.7 seen	U	16
	Convert to inches.		1 mark: $22.7 \times 0.394 = 8.9438$ inches	Accept correctly rounded values, i.e. 8.9, 8.94, 8.944 Allow FT for their perimeter Units required	U	14
Question 17	Area of wall in centimetres	5	1 mark: $4 \text{ m}^2 = 40000 \text{ cm}^2$	May be implied if 40000 cm ² seen	P	14
	Area of a single tile and box of tiles		1 mark: $10 \times 20 = 200 \text{ cm}^2$ and $0.32 \text{ m}^2 = 3200 \text{ cm}^2$	May be implied if 200 cm ² and 3200 cm ² seen	P	16
	Process to find amount of single tiles or full boxes needed		1 mark: $\frac{40000}{200} = 200$ single tiles or $\frac{40000}{3200} = 12.5$ boxes = 13 full boxes	Allow FT for their figures for Area	P	2
	Cost of buying single tiles or cost of buying boxes of tiles		1 mark: $200 \times 0.49 = (\text{£})98$ or $13 \times 7.99 = (\text{£})103.87$	Allow FT for their figures for single tiles / full boxes needed	P	13
	Cheapest option chosen		1 mark: Single tiles are better value	£98 and £103.87 must be seen for full marks Allow FT if incorrect costs	P	13

Task 4	Process	Total mark	Mark allocation	Comments	P or U	Subject content
Question 18	Correct correlation described	1	1 mark: Positive correlation	Allow as one increases the other increases, or alternate wording	U	28
Question 19	Calculate mean of both classes	4	1 mark: Class 1A: $864 \div 12 = 72$ Class 1B: $796 \div 12 = 66.33$		P	25
	Calculate range of both classes		1 mark: Class 1A: $91 - 52 = 39$ Class 1B: $82 - 52 = 30$		P	25
	Comment on which class performed better and which class was more consistent		2 marks: Class 1A performed better, as the mean score was greater Class 1B were more consistent, as the range was smaller	Allow converses 1 mark for each statement Allow FT for incorrect mean or range calculations	P	25
Question 20	Substitute original and new personal allowance into formula given	2	1 mark: $T = \frac{27500 - 12570}{5} = (\pounds)2986$ and $T = \frac{27500 - 12850}{5} = (\pounds)2930$	Both calculations required	P	3
	Calculate difference between tax		1 mark: $2986 - 2930 = (\pounds)56$		P	3
Question 21	Angles around a point = 360°	2	1 mark: $x = 360 \div 8$		U	22
	Correct division		1 mark: $x = 45^\circ$	Units not required	U	22
Question 22	Use map scale to calculate distance between Manchester and Newcastle.	6	1 mark: Distance = $7.5 \times 30.8 \text{ km} = 231 \text{ km}$	Allow any valid method to convert distance	P	18
	Convert to miles		1 mark: Distance in miles there an back: $= (231 \div 1.6) \times 2 = 288.75 \text{ miles}$	Calculation can be done in either order	P	14
	Work out how many gallons of fuel needed		1 mark: $288.75 \div 50.3 = 5.74 \text{ gallons}$	Allow FT for their distance in miles	P	10
	Convert to litres		1 mark: $5.74 \times 4.5 = 25.83 \text{ litres}$	Allow FT for their figure for gallons of fuel needed	P	14
	Calculate litres of fuel bought		1 mark: $\pounds32.01 \div \pounds1.65 = 19.4 \text{ litres}$	Accept alternate method of calculating how many gallons was already in the car, i.e. $19.4 \div 5.74$	P	10
	Compare amount of fuel needed with amount in the car		1 mark: Marcus does not have enough fuel – he needs 25.83 litres, but only has $19.4 + 6 = 25.4 \text{ litres}$	Both figures must be seen for final mark Reasoning required Accept sensible alternative methods Allow FT for their calculations	P	10

Figure 1

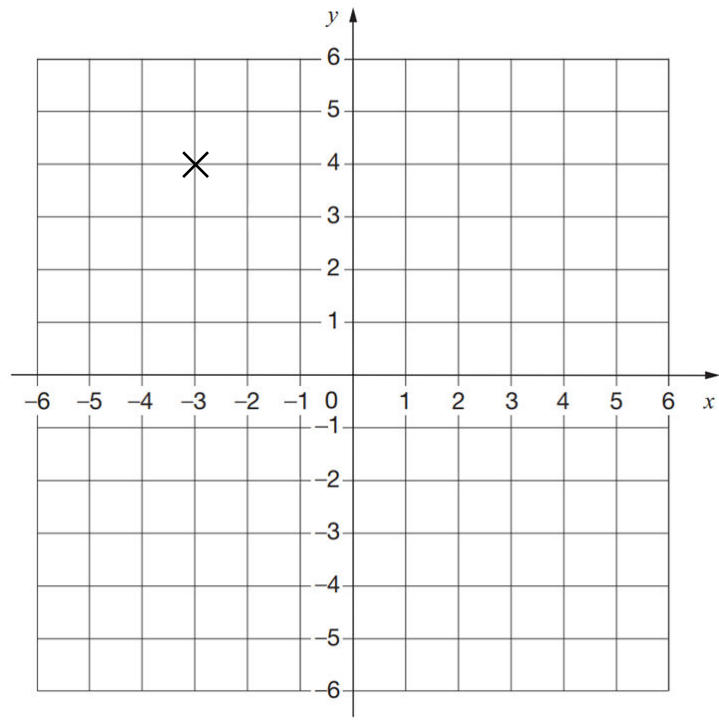


Figure 2

