

Sample Paper - 2022/2023

Foundation

Mark Scheme

Guidance on the use of abbreviations within this mark scheme

M	method mark awarded for a correct method or partial method
P	process mark awarded for a correct process as part of a problem solving question
A	accuracy mark (awarded after a correct method or process; if no method or process is seen then full marks for the question are implied but see individual mark schemes for more details)
C	communication mark awarded for a fully correct statement(s) with no contradiction or ambiguity
B	unconditional accuracy mark (no method needed)
oe	or equivalent
cao	correct answer only
ft	follow through (when appropriate as per mark scheme)
sc	special case
dep	dependent (on a previous mark)
indep	independent
awrt	answer which rounds to
isw	ignore subsequent working

Paper 1

Question	Answer	Mark	Mark scheme	Additional guidance
1	7000	B1	cao	
2	1.64, 1.46, 1.406, 1.046	B1	Accept reverse order if correct	Accept any additional zeros
3	$\frac{60}{100}$	B1	$\frac{60}{100}$ oe, e.g. $\frac{6}{10}$ or $\frac{3}{5}$	
4	$\frac{14}{22}$	B1	For $\frac{14}{22}$, accept $\frac{7}{11}$	
5	$3t$	B1	$3t$	Accept $t3$ or $3 \times t$ or $t \times 3$
6(a)	G	B1	cao	
6(b)	F	B1	cao	
7	Tangent	B1	cao	
8	154	P1 P1 A1	For a start to the process e.g. $550 + 262 + 112 (= 924)$ or $550 \div 6$ or $262 \div 6$ or $112 \div 6$ For full process to find cost per friend e.g. "924" $\div 6$ cao	
9(a)	7	B1	cao	
9(b)	45	M1 M1 A1	For reading at least 3 of the required figures from the graph e.g. 3 of 12, 8, 6, 5, 14 (dep) for adding their 5 readings For 45 or ft their answer to part (a).	Figures may be seen on graph
10	7	P1 P1 A1	For a start to the process e.g. $380 - (2 \times 35) (= 310)$ For complete process e.g. $310 \div 40 (= 7.75)$ cao	

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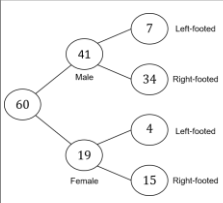
Question	Answer	Mark	Mark scheme	Additional guidance
11	Chris (supported)	P1 P1 A1 C1	For process to work with $\frac{7}{10}$ e.g. $1 - \frac{7}{10} (= \frac{3}{10})$ oe, e.g. 30% For process to work with ratio 1 : 4 e.g. $\frac{1}{1+4}$ oe For 27%, 30%, 20% or 73%, 70%, 80% or 0.27, 0.3, 0.2 (dep P2) for Chris or ft their comparative values	Chris alone without supported evidence, gets 0 marks.
12	36	M1 A1	For method to find 20% of 180, e.g. $180 \times \frac{20}{100}$ oe(=36) Or $10\% = 180 \div 10 (= 18)$, $20\% = 18 \times 2 = 36$ cao	
13(a)	8	M1 A1	For 9×4 and 4×-7 cao	
13(b)	$n = 9$	M1 A1	For correct first step e.g. $8 \times n + 8 \times -5$ oe or $n - 5 = 32 \div 8 (= 4)$ oe cao	
14(a)	28, 30, 32, 34, 35, 36, 38, 40	M1 A1	For listing either set e.g. 30, 35, 40 or 28, 30, 32, 34, 36, 38, 40 with no incorrect numbers 28, 30, 32, 34, 35, 36, 38, 40 with no repeats	May be shown in a Venn diagram.
14(b)	30 and 40	B1	cao	
15	$\frac{73}{35}$	M1 A1	For a method to subtract using common denominators with at least one fraction correct (matching numerator with common denominator) e.g. $\frac{115}{35} - \frac{42}{35}$ or $3\frac{10}{35} - 1\frac{7}{35}$ cao	

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Question	Answer	Mark	Mark scheme	Additional guidance
16	24	P1	For beginning to solve the problem e.g. $27 \div 9 \times 14 (= 42)$ or $8 : 14 : 9$ oe or $8 : 14$ and $14 : 9$ oe (linked)	42 may be seen in the ratio $42 : 27$ If 24 clearly identified as cows in working award full marks
		P1	For a full process to solve the problem e.g. " 42 " $\div 7 \times 4$ or $\frac{27}{9} \times 14$ or $24 : 42 : 27$	
		A1	cao	
17	Estimated value	P1	For using a rounded value in a correct process e.g. $4200 \div 70$ or 70×12 or 70×10	Their rounded value must be used in a calculation Rounding may appear after correct process
		P1	For a full process to find the number of days e.g. " 4200 " \div " 70 " \div $12 (= 5)$ " 4200 " \div " 70 " \div " 10 " $(= 6)$ or	
		A1	For a correct answer following through their rounded values	
18(a)	C	B2	cao	
18(b)	384 cm ²	M1	For a method to find the area of a triangular face e.g. $\frac{1}{2} \times 10 \times 12 (= 60)$	
		M1	(dep) for finding the total surface area e.g. $4 \times "60" + 12 \times 12$	
		A1	For a numerical answer of 384	
		B1	cm ²	
19	C	M1	For finding two points that lie on the line Or finding the x and y intercept.	
		B2	cao	
20	$\begin{pmatrix} 31 \\ 8 \end{pmatrix}$	M1	For $\begin{pmatrix} 2 \times 5 \\ 2 \times -2 \end{pmatrix} + \begin{pmatrix} 3 \times 7 \\ 3 \times 4 \end{pmatrix}$ oe	
		A1	cao	

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Paper 2

Question	Answer	Mark	Mark scheme	Additional guidance
1	35%	B1	cao	
2	7.5	B1	cao	
3	32	B1	cao	
4	3450	B1	cao	
5	9 and 27	P1 A2 A1	For starting to list factors of 54 or multiples of 9 or odd numbers. cao For one correct answer	
6	852, 825, 582, 528, 285, 258	M1 A1	For at least 3 correct different combinations Fully correct ordered list, with no extras or repeats.	
7(a)	31 and 37	B2 B1	For 31 and 37 and no extras For one correct and no more than one incorrect.	
7(b)	Explanation	C1	For decision and explanation e.g. No, because 2 is a prime number and is even.	
8(a)	$m = 35$	B1	cao	
8(b)	$p = 6$	B1	cao	
9	$\frac{121}{179}$	M1 A1	For $179 - 58 (=121)$ or $\frac{y}{179}$ oe where $y < 179$ and $y \neq 58$ or $1 - \frac{58}{179}$ oe oe	For the method mark probability fractions can be expressed as equivalent expressions, even if not correct probability notation.
10	 <p>(Zoom in)</p>	C1 C1 C1	For correctly placing at least one piece of data (41 or 15) or finding at least one unknown piece of data (19, 7, 34, 4) For correctly placing at least one piece of data (41 or 15) and for finding at least one unknown piece of data (19, 7, 34, 4). For all correct answers	

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Question	Answer	Mark	Mark scheme	Additional guidance
11	6	P1 P1 A1	For start to process e.g. $4 \times 19 (= 76)$ and $1 \times 20 (= 20)$ or $(4 \times 19) + (1 \times 20) + (2 \times 21)$ $+ (3 \times 22) (= 204)$ For a complete process to find the missing frequency e.g. $(342 - "204") \div 23$ or $342 - "204" = (138)$ and $"138" \div 23$ cao	
12	48	P1 P1 A1	For process to find the number of batches for at least 2 ingredients, e.g. $850 \div 225 (= 3.7 \dots)$ or $1100 \div 250 (= 4.4)$ or $325 \div 75 (= 4.3 \dots)$ or $1500 \div 275 (= 5.45 \dots)$ Or a full method to find the maximum number of flapjacks for 1 ingredient Or Amount required for 1 flapjack for at least 2 ingredients Or amount required for 3 batches for at least 2 ingredients (dep P1) for a complete process to find the maximum number of biscuits after considering at least 3 different ingredients (dep P2) cao from fully correct working	48 without working award no marks
13	Correct description	B2 (B1)	Translation and by $\begin{pmatrix} 3 \\ -4 \end{pmatrix}$ Translation or $\begin{pmatrix} 3 \\ -4 \end{pmatrix}$	If more than 1 transformation given award B0.
14(a)	$27x^9y^{12}$	B2 (B1)	cao for 2 of 3 terms correct in a single product)	
14(b)	$4s^2t^2$	B2 (B1)	cao for 2 of 3 terms correct in a single product)	
15(a)	224	M1 A1	For listing at least 3 multiples of both 14 and 32 OR finds the prime factors of both 14 and 32 cao	
15(b)	28	B1	28 or $2^2 \times 7$ oe	

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Question	Answer	Mark	Mark scheme	Additional guidance
16	$y = -\frac{1}{2}x - 4$	M1 M1 A1	For a correct method to find the gradient of the line, or $m = -\frac{1}{2}$ OR identifies -4 as the intercept in words or in a partial equation OR $y - b - m(x - a)$ where $m \neq -\frac{1}{2}$ and (a, b) is a correct coordinate For $y = -\frac{1}{2}x + c$ or $(A =) -\frac{1}{2}x - 4$ or $y = -\frac{1}{2}x - 4$ OR $y - y_1 = m(x - x_1)$ or $y - b = -\frac{1}{2}(x - a)$ where (a, b) is a correct coordinate Accept $y = -\frac{1}{2}x + -4$ oe	
17	2 : 7	P1 P1 P1 P1 A1	For process to find 10% or 90% of the cost, e.g. $7000 \times 0.1 (= 700)$ oe or $7000 \times 0.9 (= 6300)$ oe For process to find total cost of payments, e.g. $16 \times 306.25 (= 4900)$ For complete process to find value of deposit e.g. " $6300 - 4900 (= 1400)$ " or $7000 - 4900 (= 2100)$ and " $2100 - 700 (= 1400)$ " OR the deposit as a proportion of the total cost e.g. $1 - \frac{4900}{6300} (= \frac{7}{9})$ For finding a correct un-simplified ratio, e.g. $1400 : 4900$ oe Accept $1 : 3.5, 1 : \frac{7}{2}$	
18	Yes (supported)	P1 P1 A1	For a process to calculate the initial or new pressure, e.g. $(350 + 50) \div (20 + 5) (= 16)$ or $400 \div 25$ or $350 \div 20 (= 17.5)$ For a complete process to make a comparison e.g. $0.9 \times "17.5" (= 15.75)$ or $\frac{17.5-16}{17.5} \times 100 (= 8.57 \dots)$ or any other method to compare For a complete conclusion supported by accurate figures	

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Question	Answer	Mark	Mark scheme	Additional guidance
19	234	P1 P1 P1 P1 A1	<p>For starting to use Pythagoras to find the missing side e.g. $11.7^2 - 5.2^2 (= 109.85)$</p> <p>For a complete process to find the missing side e.g. $\sqrt{11.7^2 - 5.2^2}$ or $\sqrt{109.85}$ (= 10.48 ...)</p> <p>(dep P1) for a process to find the area of the triangular face e.g. $(“10.48 \dots” \times 5.2) \div 2 (= 27.24 \dots)$ OR the volume of the cuboid e.g. $“10.48” \times 5.2 \times 8.6 (= 468.6 \dots)$</p> <p>For a complete process to find the volume of the prism e.g. $“27.24 \dots” \times 8.6$ or $“468.6 \dots” \div 2$</p> <p>Answer in the range 233 - 235</p>	<p>Award P1 for a correct Pythagoras statement.</p> <p>If answer is in the range 233 – 235 but then incorrectly given to 3 sig fig this mark can still be awarded.</p>

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