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General Certificate of Secondary Education
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Applications of Mathematics (Pilot)   9370

Unit 1 Foundation Tier 93701F

Final

Mark Scheme

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all examiners participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for standardisation each examiner analyses a number of students' scripts: alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, examiners encounter unusual answers which have not been raised they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Glossary for Mark Schemes

GCSE examinations are marked in such a way as to award positive achievement wherever possible. Thus, for GCSE Mathematics papers, marks are awarded under various categories.

M	Method marks are awarded for a correct method which could lead to a correct answer.
M dep	A method mark dependent on a previous method mark being awarded.
A	Accuracy marks are awarded when following on from a correct method. It is not necessary to always see the method. This can be implied.
B	Marks awarded independent of method.
B dep	A mark that can only be awarded if a previous independent mark has been awarded.
Q	Marks awarded for quality of written communication.
ft	Follow through marks. Marks awarded for correct working following a mistake in an earlier step.
SC	Special case. Marks awarded for a common misinterpretation which has some mathematical worth.
oe	Or equivalent. Accept answers that are equivalent. eg accept 0.5 as well as $\frac{1}{2}$
[*a, b*]	Accept values between *a* and *b* inclusive.
25.3…	Allow answers which begin 25.3 e.g. 25.3, 25.31, 25.378.
Use of brackets	It is not necessary to see the bracketed work to award the marks.

A1 Foundation Tier

Q	Answer	Mark	Comments
1(a)	2 × 0.80 + 1.35	M1	
	2.95	A1	
1(b)	(£) 7.05	B1 ft	ft 10 – their 2.95
1(c)	80 (p) × 3 (= 2.4(0)) or (£) 1.20 × 3 (= 3.6(0))	M1	
	Their 2.4(0) + their 3.6(0)	M1	
	(£) 6 and No	A1	Accept No, she is £1 short
1(c)	**Alternative 1**		
	80 (p) + 1.20	M1	
	Their £ 2 × 3	M1	
	(£) 6 and No	A1	Accept No, she is £1 short
1(c)	**Alternative 2**		
	80 (p) × 3 (= 2.40) or (£) 1.20 × 3 (= 3.60)	M1	
	(£) 5 – their 2.4(0) (= 2.6(0)) or (£) 5 – their 3.6(0) (= 1.4(0))	M1	
	No and (£)2.6(0) and (£)3.6(0) or No and (£)1.4(0) and (£)2.4(0)	A1	Accept No, she is £1 short

Q	Answer	Mark	Comments
2(a)	28	B1	
2(b)	4	B2	B1 for 27 or 23 or attempt to count up on graph eg line across 10A at 23
2(c)	Monday	B1	
2(d)	Both bars at correct height and width	B3	B2 for one bar at correct height and width or both correct heights but width incorrect or both bars correct but reversed B1 for (43 – 3) ÷ 2 or 20 or 23 seen or 2 bars drawn with heights total 43 or 2 bars drawn with 10B 3 higher than 10A

Q	Answer	Mark	Comments
3(a)	83	B1	
3(b)	75 or 160 seen	B1	
	Their 83 + 75 + 160	M1	ft their (a)
	318	A1	
3(c)	35 × 1.48	M1	
	51.80	Q1	Correct money notation QWC Strand (i)

Q	Answer	Mark	Comments
4(a)	$\frac{36}{12}$ (× 50) or 3 (× 50)	M1	
	150	A1	SC1 for use of a different item.
4(b)	200 → 24 or 50 → 6	M1	
	12 + 12 + 6	M1	
	30	A1	
4(b)	**Alternative 1**		
	250 ÷ 100 (= 2.5)	M1	
	Their 2.5 ×12	M1	
	30	A1	
4(b)	**Alternative 2**		
	100 ÷ 12 (= 8.3 ...)	M1	
	250 ÷ their 8.3 ...	M1	
	30	A1	
4(c)	24 ÷ 3 (= 8) or 24 × 2 (= 48)	M1	M2 for diagram split $\frac{1}{3}$ and $\frac{2}{3}$ in some way, circled, shaded, etc
	Their 8 × 2 (= 16) or their 48 ÷ 3 (= 16)	M1	
	(24 − their 16) ÷ 2	M1	or half of their remaining biscuits shaded
	4	A1	
4(c)	**Alternative**		
	$1 - \frac{2}{3} (= \frac{1}{3})$	M1	
	Their $\frac{1}{3}$ × 24 (= 8)	M1	
	Their 8 ÷ 2	M1	
	4	A1	

Q	Answer	Mark	Comments
5(a)	Tallies correct	B1	
	Frequencies correct 1, 1, 3, 6, 3, 2	B1	Correct or ft. Do not award if tallies are 0, 1, 2, 3, 4, 5
	Using tallies, including 5 bar gate and frequencies written	Q1	QWC strand (ii) Allow at most one error Do not award if tallies and frequencies are reversed.
5(b)	3	B1	
5(c)	Mode is 1 for boys	B1	
	Yes (3 > 1)	B1 ft	ft their mode in part (b)

Q	Answer	Mark	Comments
6	30 ÷ 6 = 5 minutes	M1	
	30 ÷ 10 = 3 minutes	M1	
	2	A1	

Q	Answer	Mark	Comments
7	23	B1	
	28 ÷ 4 or 0.25 × 28	M1	oe
	Their 23 + their 7	M1	
	30	A1ft	ft their 23 SC3: (Spent) 44 (unsupported)
7	**Alternative**		
	23	B1	
	0.75 × 28 (= 21)	M1	
	(Amount spent) their 23 + their 21 (= 44)	M1	
	(Amount saved) (46 + 28) – (their 23 - their 21) 30	A1 ft	ft their 23

Q	Answer	Mark	Comments
8	2 ice-creams and 3 lollies	B3	Award B2 for a combination giving a total price between £6 and £8 inclusive. E.g. 6 ice-lollies(£7.20) 5 ice-lollies(£6) 1 ice-cream and 5 ice-lollies (£7.70) 1 ice-cream and 4 ice-lollies (£6.50) 3 ice-creams and 2 ice-lollies (£7.50) 3 ice-creams and 1 ice-lolly (£6.30) 4 ice-creams and 1 ice-lolly (£8) 4 ice-creams (£ 6.80) or 7 ÷ 2.9 = 2.4 **and** 2 lollies + 2 ice creams cost £ 5.80 or subtracting at least 4 items from £7 Award B1 for any attempt at a combination of at least one ice lolly and 1 ice-cream or a multiple of either lollies or ice-creams with totals outside range £6 to £8 or 7 ÷ 2.9 or attempt to start subtracting costs from £7(at least 2 items subtracted)

Q	Answer	Mark	Comments
9	900 ÷ 300 **×** 30 or 3 **×** 30 mins or 90 mins	M1	
	2 hrs + their 90	M1	
	3 hours 30 or 3.5 hours or $3\frac{1}{2}$ hours or 210 minutes	A1	

Q	Answer	Mark	Comments
10(a)	4295	B1	
10(b)	Their 4295 **×** 0.2	M1	oe
	859	A1 ft	ft their part (a)

Q	Answer	Mark	Comments
11(a)	$\dfrac{18}{360}$	M1	
	$\dfrac{1}{20}$	A1	
11(b)	360 – (168 + 54 + 18) or 120 seen	M1	
	$\dfrac{360}{120}$ × 940 or 3 × 940	M1	or $\dfrac{940}{120}$ × 360 oe
	2820	A1	

Q	Answer	Mark	Comments
12(a)	$216 \div 4 = 54$ or $4 \times 54 = 216$ or $216 \div 54 = 4$	B1	
12(b)	$x - 5$ or $x + 8$	B1	
	$x + x - 5 + x + 8 = 54$	M1	oe eg all multiplied by 4 condone one error or omission.
	$3x = 51$ or $x + 1 = 18$	M1	Simplifying their linear equation
	$x = 17$	A1	
	£68	B1 ft	ft their 17 × 4 where their 17 is a number of hours.
12(b)	**Alternative 1 (hours)**		
	Two numbers (hours) with a difference of 5 or 8 seen	B1	
	A set of 3 numbers fitting x, $x - 5$ and $x + 8$	M1	$x \neq 54$
	Their 3 numbers tested against 54	M1 dep	Dep on previous M1 Total must be seen
	17	A1	
	£68	B1 ft	ft their 17 × 4 where their 17 is a number of hours.
12(b)	**Alternative 2 (money)**		
	Two amounts with a difference of 20 or 32 seen	B1	
	A set of 3 amounts fitting x, $x - 20$ and $x + 32$	M1	
	Their 3 amounts tested against 216	M1 dep	Dep on previous M1 Totals must be seen
	An improved set of three numbers (closer to total of 216)	M1	Totals must be seen
	£68	A1	

Q	Answer	Mark	Comments
12(b)	**Alternative 3 (combined hours and money)**		
	Two numbers (hours) with a difference of 5 or 8 seen	B1	
	A set of 3 numbers fitting x, $x - 5$ and $x + 8$	M1	$x \neq 54$
	Their hours each multiplied by 4 and total tested against 216	M1 dep	Dep on previous M1 Totals must be seen
	An improved set of three numbers (closer to total of 216)	M1	Totals must be seen
	£68	A1	

Q	Answer	Mark	Comments
13(a)	14	B1	
13(b)	3 (+) 1 (+) 5 (+) 2 (+) 8 (+) 1	M1	Allow one error or omission Accept clear indication on the diagram.
	20	A1	

Q	Answer	Mark	Comments
14	A – 3 (observation) B – 1 (questionnaire) C – 2 (controlled experiment)	B2	B1 for one correct

Q	Answer	Mark	Comments
15(a)	All 3 points correctly plotted	B1	$\pm \dfrac{1}{2}$ sq Ignore extras
15(b)	Negative correlation or As the time spent learning words increased, the number of incorrect words decreased	B1	oe
15(c)	Line of best fit drawn	M1	Between (3,5) to (3,6) to between (7,1) and (7, 3) And at least from 3 to 7 horizontally
	4	A1	ft a correct lobf. Accept integer answers only SC1 for 3 or 4 if no lobf or incorrect lobf
15(d)	No line of best fit may change or No Line of best fit cannot continue in the same way (becomes negative) Not possible to be sure mistake is not made in test/pressure of test/human error/different individuals Cannot say as 12 is beyond the range of the data	B1	oe

Q	Answer	Mark	Comments
16	$160 \times \dfrac{3}{4}$ or $160 \times \dfrac{2}{5}$	M1	
	$160 \times \dfrac{3}{4} = 120$	M1	
	$160 \times \dfrac{2}{5} = 64$	M1	$(120 - 56) \div 2 \ (=32)$
	Their 120 – their 64 (= 56) Or 120 – 56 = 64	A1	$32 \times 5 \ (=160)$
16	**Alternative 1**		
	$\dfrac{3}{4} - \dfrac{2}{5} \ (= \dfrac{7}{20})$	M1	or $0.75 - 0.4$
	$\dfrac{7}{20} = 56$	M1	$0.35 = 56$
	$56 \div 7 \ (= 8)$	M1	
	8×20	A1	
16	**Alternative 2**		
	$\dfrac{75}{100} - \dfrac{40}{100}$	M1	
	$\dfrac{35}{100}$ or 35%	M1	
	$56 \div 160 \ (=0.35)$	M1	
	35%	A1	
16	**Alternative 3**		
	$\dfrac{3}{4}x - 56 = \dfrac{2x}{5}$	M1	
	$15x - 1120 = 8x$	M1	
	$7x = 1120$	M1	
	$1120 \div 7 \ (= 160)$	A1	

Q	Answer	Mark	Comments
17	784 ÷ 5600 (= 0.14)	M1	
	Their 0.14 × 1.15	M1	
	Their 0.161 × 4900	M1	
	[788,790]	A1	
	Clearly communicated answer and a conclusion	Q1	Working shown with all method marks gained and a total shown QWC strand (iii)
17	**Alternative 1**		
	$\dfrac{4900}{5600}$ or 1/8 or 12.5% seen or 7/8 or 87.5% seen	M1	Or 5600 ÷ 784 (=7.14...)
	Their 7/8 × 784 (= 686)	M1	4900 ÷ their 7.14.... (=686) For lefthand scheme their 7/8 must be from an attempt to proportion 4900 and 5600
	Their 686 × 1.15	M1	
	[788,790]	A1	
	Clearly communicated answer and a conclusion	Q1	Working shown with all method marks gained and a total shown QWC strand (iii)
17	**Alternative 2**		
	784 × 1.15 (= 901.6)	M1	
	$\dfrac{4900}{5600}$ or 1/8 or 12.5% seen or 7/8 or 87.5% seen	M1	their 901.6 ÷ 8 (= 112.7)
	901.6 × their 7/8	M1	901.6 – their 112.7 For lefthand scheme their 7/8 must be from an attempt to proportion 4900 and 5600
	[788,790]	A1	
	Clearly communicated answer and a conclusion	Q1	Working shown with all method marks gained and a total shown QWC strand (iii)