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General Certificate Secondary of Education
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Methods in Mathematics (Pilot) 9365

Unit 1 Foundation Tier 93651F

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 meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting 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 candidates' 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.

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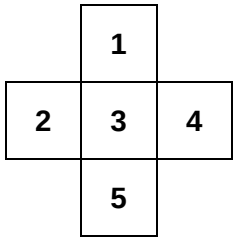
Glossary for Mark Schemes

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.
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.
Q	Marks awarded for quality of written communication. (QWC)
M Dep	A method mark dependent on a previous method mark being awarded.
B Dep	A mark that can only be awarded if a previous independent mark has been awarded.
ft	Follow through marks. Marks awarded following a mistake in an earlier step.
SC	Special case. Marks awarded within the scheme for a common misinterpretation which has some mathematical worth.
oe	Or equivalent. Accept answers that are equivalent. eg, accept 0.5 as well as $\frac{1}{2}$

M1 Foundation Tier

Q	Answer	Mark	Comments
1(a)	15	B1	
1(b)	1440	B1	
1(c)	365 ÷ 7 or 366 ÷ 7	M1	
	52.1 (…) or 52.2 (…) or 52.3	A1	Accept 52 *r* 1 or 52 *r* 2
	365 (days) gives 52.1 (weeks) **and** 366 (days) gives 52.2 or 52.3 (weeks)	Q1	QWC - Strand (ii) - Method shown and correct explanation
1(c) **Alt 1**	52 × 7	M1	
	364	A1	
	364 is 52 weeks	Q1	QWC - Strand (ii) - Method shown and correct explanation
1(c) **Alt 2**	365 ÷ 52 or 366 ÷ 52	M1	
	7.01 (…) or 7.02 or 7.03 (…) or 7.04	A1	Accept 7 *r* 1 or 7 *r* 2
	365 gives 7.01 (…) or 7.02 (days per week) **and** 366 gives 7.03 (…) or 7.04 (days per week)	Q1	QWC - Strand (ii) - Method shown and correct explanation
2(a)	15 × 42 (= 630)	M1	oe 15 × 0.42 (= 6.30)
	4 × 2 (= 8) – their 6.30	M1 Dep	800 – their 630
	1.70	A1	1.7 is A0
2(b)	10 ÷ 0.42 (= 23.8 …)	M1	oe 1000 ÷ 42 Allow a build up to at least 20
	23	A1	

Q	Answer	Mark	Comments
3		B2	Row and column interchangeable 1 and 5 interchangeable 2 and 4 interchangeable B1 Row and column have equal sum using the numbers 1 to 5 or Row or column add up to 9 using the numbers 1 to 5 with no repeats in the row or column
4	Cannot tell False Cannot tell True	B3	B2 3 correct B1 2 correct
5	$4 + 2$ (= 6)	M1	
	Their $6 + 4$	M1 Dep	
	10	A1	
Alt 5	6×3 (= 18)	M1	
	Their $18 - 6 - 2$	M1 Dep	or $18 - 8$
	10	A1	
6(a)	$x + 2$	B1	
6(b)	$x - 4$	B1	
6(c)	$3x$	B1	
6(d)	$\frac{x}{2}$	B1	
7	4×2 (= 8) or 4×3	M1	P (black) or P(4) = $\frac{1}{3}$
	12	A1	

Q	Answer	Mark	Comments
8(a)	0	B1	
8(b)	At least 5 correct points plotted correctly	M1	ft From their table
	Correct line drawn	A1	
9(a)	$5x + 7y$	B2	B1 For either term correct
9(b)	$5a - 10$	B1	
10	$x + x + 4 + x + 8 + x + 12$ (= 100)	M1	Any letter
	$4x + 24 = 100$	M1	Correct simplification of their four algebraic terms
	19	A1	
10 Alt 1	Trial with four numbers in correct pattern with correct total	M1	eg 10 + 14 + 18 + 22 = 64
	Trial with a different four numbers in correct pattern with correct total, which is closer to 100	M1	eg having tried 10 + 14 + 18 + 22 = 64, tries 20 + 24 + 28 + 32 = 104
	19	A1	
10 Alt 2	4 + 8 + 12 (= 24)	M1	6 × 4 (= 24)
	(100 – their 24) ÷ 4	M1	76 ÷ 4
	19	A1	
10 Alt 3	(100 ÷ 4 =) 25	M1	
	Their 25 – 6	M1	
	19	A1	
10 Alt 4	Trial with four numbers in correct pattern with correct total	M1	eg 10 + 14 + 18 + 22 = 64
	(100 – sum of their four numbers) ÷ 4 + their lowest number	M1	eg (100 – 64) ÷ 4 + 10
	19	A1	

Q	Answer	Mark	Comments
11	2200 – 1600 (= 600)	M1	
	$\frac{\text{their } 600}{1600} \times 100$	M1 Dep	
	37.5	A1	
Alt 11	$\frac{2200}{1600}$ (= 1.375)	M1	
	(Their 1.375 – 1) × 100	M1 Dep	(Their 1.375 × 100) – 100
	37.5	A1	
12(a)(i)	16	B1	
12(a)(ii)	–8	B1	
12(b)	Any expression including r, s and t (and a constant) which equals 18	M1	eg $7r – 2s + 2(r + t)$ $4(r + t) – \frac{1}{4}(7r – 2s)$ $7r – 2s + r + t + 5$
	Any simplified expression including r, s and t (and a constant) which equals 18	A1	eg $9r – 2s + 2t$ $9r – 2(s – t)$ $\frac{9r}{4} + 4t + \frac{s}{2}$ $8r – 2s + t + 5$
13(a)(i)	33 (and) 67	B1	
13(a)(ii)	24 (and) 74	B1	
13(a)(iii)	84 ÷ 4	M1	oe
	21	A1	SC1 63
13(b)	400 – (21 + 24 + 33 + 63 + 67 + 74) or 400 – 282	M1	Allow 1 error in the addition of the numbers
	118	A1	
	Two numbers with a total of their 118	A1 ft	ft Provided M1 has been awarded
14(a)	(1, 2)	B1	
14(b)	C marked at (5, 4)	B2	B1 A point plotted on the line $x = 5$ or $y = 4$

Q	Answer	Mark	Comments
15	Attempt to multiply 274 by 30 and 1 or attempt to multiply 31 by 200 and 70 and 4	M1	eg 274 31 × 8220 274 |	200 | 70 | 4 | | 30 | 6000 | 2100 | 120 | | 1 | 200 | 70 | 4 |
	Adding	M1 Dep	
	8494	A1	
16	$50 \div 5 \times 2$ (= 20)	M1	
	$90 \div 10$ (= 9)	M1	oe $\frac{10}{100} \times 90$ (= 9)
	20 and 9	A1	
	Shows that 20 is more than 2×9 and says 'Yes'	Q1	Strand (ii) - Full and correct method, even if some calculations are wrong
17(a)	$\sqrt{81}$	B1	
17(b)	$2^5 = 32$ or $5^2 = 25$	B1	
	$2 \times 2 \times 2 \times 2 \times 2 = 32$ and $5 \times 5 + 2 + 5 = 32$	B1	

Q	Answer	Mark	Comments
18(a)(i)	<table><tr><td></td><td>9</td><td>10</td></tr><tr><td>9</td><td>12</td><td>13</td></tr><tr><td>10</td><td>13</td><td>14</td></tr></table>	B1	
18(a)(ii)	$\frac{\text{their } 4}{9}$	B1ft	
18(b)	1, 2, 4 or 1, 1, 2	B2	B1 For lowest number is 1 or highest score is a single digit number or $P(4) = \frac{1}{9}$
19	$9 \times \frac{5}{11}$	M1	
	$\frac{45}{11}$	A1	oe fraction
	$4\frac{1}{11}$	B1 ft	Correctly changes their improper fraction to a mixed number
20	(4 small =) 3 large	M1	4 : 3 $8 \times \frac{3}{4}$ $9 \times \frac{2}{3}$ $9 \div 1.5$
	6	A1	
21(a)	5	B1	
21(b)	$4y = 17 + 11$	M1	$4y = 28$
	7	A1	SC1 For 1.5
21(c)	Substitutes $x = 5$ into equation	M1	$2a$ (=) $20 - b$
	A correct pair of values	A1	eg, (0, 20) (1, 18) (2, 16) (3, 14) etc Allow negative integers for either value
	A second pair of correct values	A1	

Q	Answer	Mark	Comments
22(a)	1 – (0.15 + 0.1 + 0.1 + 0.3 + 0.15) (= 0.2)	M1	
	200 × their 0.2	M1 Dep	oe
	40	A1	
Alt 22(a)	200 × 0.15 (+) 200 × 0.1 (+) 200 × 0.1 (+) 200 × 0.3 (+) 200 × 0.15	M1	30 (+) 20 (+) 20 (+) 60 (+) 30 (= 160) Allow one arithmetic error or incorrect value, which may be repeated for equal values
	200 – their 160	M1 Dep	Can be implied by correct evaluation
	40	A1	
22(b)	Ticks 'No' with correct explanation eg, different experiments usually lead to different results	B1	Explains that the outcome is just chance, or that it is (very) unlikely that the results would be the same
22(c)	Ticks 'Yes' with idea that increasing number of trials leads to better results	B1	