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General Certificate Secondary of Education
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Mathematics 4306/1F

Paper 1 Foundation Tier

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 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.
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 $\frac{1}{2}$

Q	Answer	Mark	Comments
1(a)(i)	14 523	B1	
1(a)(ii)	Fifty thousand	B1	
1(b)	700	B1	oe eg, in words allow 'hundreds'
1(c)(i)	5280	B1	
1(c)(ii)	5300	B1	
1(d)	10^3	B1	Do not accept 3 **or** 10 × 10 × 10
2	Very unlikely	B1	
	Likely	B1	
	Certain	B1	
3(a)	Radius drawn	B1	
	Arc drawn	B1	
3(b)	Sector	B1	
	Chord	B1	
4	49 125 4 10 36 30	B4	B3 For 4 **or** 5 correct B2 For 2 **or** 3 correct B1 For 1 correct
5(a)(i)	7	B1	
5(a)(ii)	19	B1	
5(b)	100 × 2 – 1	B1	oe Accept 199 **or** $2n - 1$
6	22 × 10 **or** 220	M1	10 × 8 or 80 **or** 8 × 22 **or** 176
	Their 220 × 8	M1 Dep	Their 80 × 22 **or** their 176 × 10
	1760	A1	
7	6 × 12 **or** 72	B1	
	5 × 13 **or** 65	B1	Either order
	7	B1	Accept – 7

Q	Answer	Mark	Comments
8(a)	20 × 40 (= 800)	B1	
8(b)	600 ÷ 30	M1	Allow 60 ÷ 3
	20	A1	SC1 20 with no working
9(a)(i)	100 – (10 + 20 + 25)	M1	
	45	A1	
9(a)(ii)	$\frac{20}{100}$ × 300	M1	oe eg, 0.2 × 300 **or** 300 ÷ 5 **or** $\frac{72}{360}$ × 300 (±2°)
	60	A1	
9(b)	Sixth Form	B1	
9(c)	One change	B1	eg, more stay on in the Sixth Form
	A different change	B1	eg, fewer go into Employment
10(a)	72	B1	
10(b)	17	B1	
10(c)	Both numbers correct	B1	eg, 2 and 7
	Both numbers correct	B1	eg, 13 and 2 **or** 90 and 9
11(a)(i)	11	B1	Accept range [10.8, 11.2]
11(a)(ii)	6.4	B1	Accept range [6.3, 6.5]
11(b)	4 × 22	M1	oe eg, their 11 × 8
	88	A1	SC1 88 with no working shown
12(a)(i)	6 × 2 (± 1 mm)	M1	
	12	A1	Accept range [11.4,12.6]
12(a)(ii)	All 6 lines of symmetry drawn	B2	Need not be ruled B1 For at least 3 correct lines drawn
12(b)	360 ÷ 3	M1	
	120	A1	

Q	Answer	Mark	Comments
13(a)(i)	Angles on a line = 180(°)	B1	
13(a)(ii)	80	B1	
13(b)	180 – (65 + 90) **or** 90 – 65	M1	
	25	A1	
14	1.65 ÷ 3 or 165 ÷ 3 **or** 0.55 **or** 55	M1	**or** 1.65 × 5 **or** 165 × 5 **or** 8.25 **or** 825
	Their 0.55 × 5 **or** their 55 × 5	M1Dep	**or** their 8.25 ÷ 3 **or** their 825 ÷ 3
	2.75	A1	
15(a)	Red	B1	
15(b)(ii)	0	B1	oe
15(b)(i)	1 – (0.6 + 0.1 + 0.1)	M1	oe
	0.2	A1	oe
15(c)	0.6 × 100 (= 60) **or** 0.6 = $\frac{60}{100}$ **or** 0.1 =10 (discs) **or** 0.6 = 60(discs) **or** 10(B) + 10(Y) + 20(G) + 60(R) =100 **or** 0.6 in/out of 100 = 60	M1	oe eg, $\frac{6}{10}$ of 100 = 60 **or** 0.6 = 60% These represent the minimal acceptance for M1
	Yes, with working shown	A1	
16	600 ÷ 4 **or** 600 ÷ 3	M1	Any fraction with any multiple of 12 as a denominator
	150 **or** 200	A1	$\frac{3}{12}$ **or** $\frac{4}{12}$ oe
	600 – (150 + 200)	M1	1 – $\frac{7}{12}$
	250	A1	

Q	Answer	Mark	Comments
17	Area rectangle 6 × 12 (**or** 72)	M1	**or** area of enclosed rectangle 12 × (6 + 3) (or 108)
	Area trapezium $\frac{1}{2}$ × (12 + 8) × 3 **or** 8 × 3 + 2 × 0.5 × 2 × 3 **or** 12 × 3 – 2 × 0.5 × 2 × 3 **or** 30	M1	Area of two extra triangles 2 × 0.5 × 2 × 3 (or 6)
	Total area 102	A1	
	cm^2	B1	Units mark
18(a)	$\frac{1}{2}$ × 10 (–) 3 × 2 **or** 5 (–) 6	M1	oe
	–1	A1	
18(b)	0	B1	
18(c)(i)	6	B1	
18(c)(ii)	$7x – 3x = 8 + 2$ **or** $–2 – 8 = 3x – 7x$	M1	Allow one sign error $7x + 3x = 8 + 2 \rightarrow 10x = 10$ $7x – 3x = 8 – 2 \rightarrow 4x = 6$ $–2 – 8 = 3x + 7x \rightarrow –10 = 10x$ $–2 + 8 = 3x – 7x \rightarrow 6 = –4x$
	$4x = 10$	A1	oe
	$2\frac{1}{2}$ or 2.5 **or** $\frac{10}{4}$ oe	A1ft	ft $x = 1$ from $10x = 10$ **or** $x = 1.5$ from $4x = 6$ **or** $x = –1$ from $–10 = 10x$ **or** $x = –1.5$ from $6 = –4x$ **or** from M1 awarded
18(c)(iii)	$3y + 11 = 2 \times 4$	M1	$0.75y + 2.75 = 2$ oe
	$3y = 8 – 11$	M1 Dep	$0.75y = 2 – 2.75$ **or** –0.75 oe
	–1	A1	

Q	Answer	Mark	Comments
19(a)	Enlargement drawn SF2 **or** sight of factor 4	M1	**or** 5 × 4
	20	A1	
19(b)	90° rotation	M1	
	90° rotation clockwise	A1	
	Correct centre of rotation for their diagram	B1ft	
20(a)	$180 - 105 = x + 2x$	M1	oe eg 75 ÷ 3
	25	A1	
20(b)	50	B1ft	ft From their 25
	Alternate (angles)	B1 Dep	
21	How many hours of homework did you do (last week)?	B1	Must refer to hours and imply week Not a question asking for how many hours each day
	Boxes must be mutually exclusive exhaustive include '0 hours' have an open ended upper limit	B1	**At least** 3 boxes with no overlap and no gaps
22	140 – 112 **or** 28	M1	$\frac{112}{140} \times 100$ or 80
	$\frac{\text{Their } 28}{140}$	M1 Dep	100 – their 80
	20	A1	
23(a)	7	B1	
	–2	B1	

Q	Answer	Mark	Comments
23(b)	correct curve from $x = -1$ to $x = 5$ $\pm$ 1 mm from integer points	B2	B1 5 points plotted correctly from Their (–1, 7), (0, 2), (1, –1), their (2, –2) (3, –1), (4, 2) and (5, 7) $\pm$ 1 mm from integer points
23(c)	0.5 to 0.7 and 3.3 to 3.5	B1ft	Both values needed, ft from their graph