OCR
Oxford Cambridge and RSA

F

Date – Morning/Afternoon

GCSE (9–1) Mathematics

J560/01 Paper 1 (Foundation Tier)

SAMPLE MARK SCHEME

Duration: 1 hour 30 minutes

MAXIMUM MARK 100

DRAFT

Subject-Specific Marking Instructions

1. **M** marks are for using a correct method and are not lost for purely numerical errors.
   A marks are for an accurate answer and depend on preceding **M** (method) marks. Therefore **M0 A1** cannot be awarded.
   B marks are independent of **M** (method) marks and are for a correct final answer, a partially correct answer, or a correct intermediate stage.
   SC marks are for special cases that are worthy of some credit.

2. Unless the answer and marks columns of the mark scheme specify **M** and **A** marks etc, or the mark scheme is 'banded', then if the correct answer is clearly given and is not from wrong working **full marks** should be awarded.

   Do not award the marks if the answer was obtained from an incorrect method, ie incorrect working is seen and the correct answer clearly follows from it.

3. Where follow through (**FT**) is indicated in the mark scheme, marks can be awarded where the candidate's work follows correctly from a previous answer whether or not it was correct.

   Figures or expressions that are being followed through are sometimes encompassed by single quotation marks after the word *their* for clarity, e.g. FT 180 × (*their* '37' + 16), or FT 300 – √(*their* '$5^2 + 7^2$'). Answers to part questions which are being followed through are indicated by e.g. FT 3 × *their* (a).

   For questions with FT available you must ensure that you refer back to the relevant previous answer. You may find it easier to mark these questions candidate by candidate rather than question by question.

4. Where dependent (**dep**) marks are indicated in the mark scheme, you must check that the candidate has met all the criteria specified for the mark to be awarded.

5. The following abbreviations are commonly found in GCSE Mathematics mark schemes.

   - **figs 237**, for example, means any answer with only these digits. You should ignore leading or trailing zeros and any decimal point e.g. 237000, 2.37, 2.370, 0.00237 would be acceptable but 23070 or 2374 would not.
   - **isw** means **ignore subsequent working** after correct answer obtained and applies as a default.
   - **nfww** means **not from wrong working**.
   - **oe** means **or equivalent**.
   - **rot** means **rounded or truncated**.
   - **seen** means that you should award the mark if that number/expression is seen anywhere in the answer space, including the answer line, even if it is not in the method leading to the final answer.

- **soi** means **seen or implied**.

6. In questions with no final answer line, make no deductions for wrong work after an acceptable answer (ie **isw**) unless the mark scheme says otherwise, indicated by the instruction 'mark final answer'.

7. In questions with a final answer line following working space:

(i) If the correct answer is seen in the body of working and the answer given on the answer line is a clear transcription error allow full marks unless the mark scheme says 'mark final answer'. Place the annotation ✓ next to the correct answer.

(ii) If the correct answer is seen in the body of working but the answer line is blank, allow full marks. Place the annotation ✓ next to the correct answer.

(iii) If the correct answer is seen in the body of working but a completely different answer is seen on the answer line, then accuracy marks for the answer are lost. Method marks could still be awarded. Use the M0, M1, M2 annotations as appropriate and place the annotation ✗ next to the wrong answer.

8. In questions with a final answer line:

(i) If one answer is provided on the answer line, mark the method that leads to that answer.

(ii) If more than one answer is provided on the answer line and there is a single method provided, award method marks only.

(iii) If more than one answer is provided on the answer line and there is more than one method provided, award zero marks for the question unless the candidate has clearly indicated which method is to be marked.

9. In questions with no final answer line:

(i) If a single response is provided, mark as usual.

(ii) If more than one response is provided, award zero marks for the question unless the candidate has clearly indicated which response is to be marked.

10. When the data of a question is consistently misread in such a way as not to alter the nature or difficulty of the question, please follow the candidate's work and allow follow through for **A** and **B** marks. Deduct 1 mark from any **A** or **B** marks earned and record this by using the MR annotation. **M** marks are not deducted for misreads.

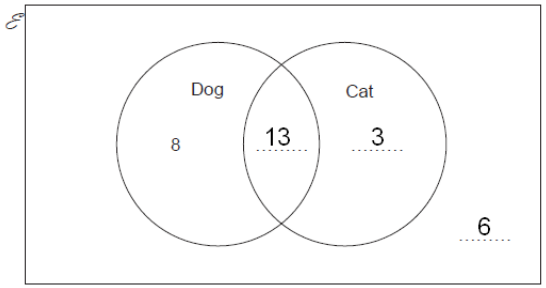
11. Unless the question asks for an answer to a specific degree of accuracy, always mark at the greatest number of significant figures even if this is rounded or truncated on the answer line. For example, an answer in the mark scheme is 15.75, which is seen in the working. The candidate then rounds or truncates this to 15.8, 15 or 16 on the answer line. Allow full marks for the 15.75.

12. Ranges of answers given in the mark scheme are always inclusive.

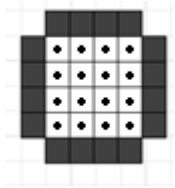
13. For methods not provided for in the mark scheme give as far as possible equivalent marks for equivalent work. If in doubt, consult your Team Leader.

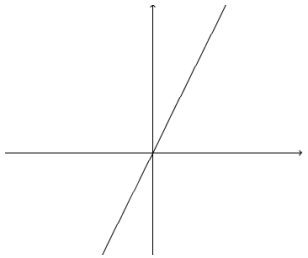
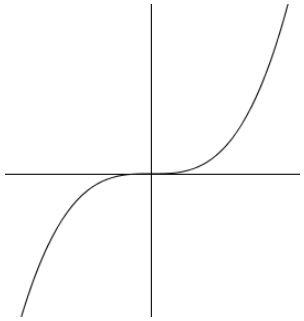
14. Anything in the mark scheme which is in square brackets […] is not required for the mark to be earned, but if present it must be correct.

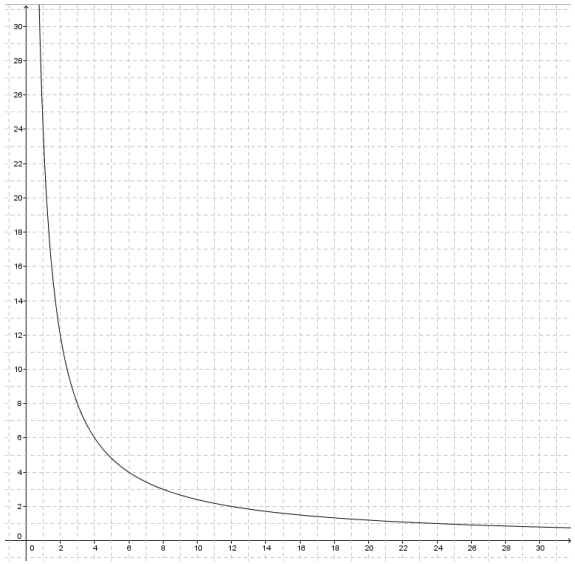
Question			Answer	Marks	Part marks and guidance	
1	(a)		1 : 50	**2** **2 AO1.3a**	**M1** shows a partial simplification	e.g. 4 : 200
	(b)		50 300	**2** **2 AO1.3a**	**M1** for 350 ÷ (1 + 6)	
	(c)		90	**2** **2 AO1.3a**	**M1** for 10% = 45 **soi** or **M1** for 450 × 0.2	
2			3.5%, $\frac{1}{3}$, 0.34	**2** **2 AO1.3a**	**B1** for $\frac{1}{3}$ = 0.33... or 33. ...% or **B1** for 0.34 = 34% or **B1** for changing 3.5% to 0.035 or **SC1** for $\frac{1}{3}$, 0.34, 3.5%	Accept correct order with equivalent values
3			£1.38 with working shown	**3** **1 AO1.3a** **1 AO3.1d** **1 AO3.3**	**M1** for $7 \times \frac{3}{8}$ **M1** for 89p + 49p or 3 × 49p or 2 × 49p > 89p OR **B1** for £1.38 without working	Condone 138p

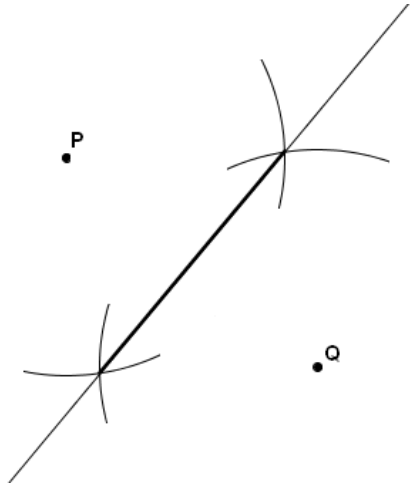
Question			Answer	Marks	Part marks and guidance	
4	(a)	(i)	5	**1** **1 AO1.1**		
		(ii)	1	**1** **1 AO1.1**		
		(iii)	Any number apart from 1, 3 or 5	**1** **1 AO1.1**		
	(b)		Three different numbers only 6 appears most More even numbers than odd	**3** **3 AO2.1a**	**B1** for each of the three properties	
5			48 (cm^2)	**3** **1 AO1.3a** **2 AO3.1b**	**M1** $\frac{1}{2} \times 8 \times 4 = 16$ **M1** *their* '16' × 3	
6				**3** **3 AO1.3b**	**B1** for 13 in 'intersection' **B1** for (16 – *their* '13') in 'Cat' **B1** for sum of 8 + *their* three numbers = 30	
7	(a)		60 50	**2** **1 AO1.3a** **1 AO3.1a**	**B1** for each	
	(b)		2	**2** **1 AO1.3a** **1 AO3.1a**	**M1** for 8 seen	

Question			Answer	Marks	Part marks and guidance	
8			70 The triangle is isosceles so the missing angle is *x* (may be on diagram) **oe** Angles in a triangle sum to 180° **oe** (may be indicated by summing of angles to 180 **oe**)	**3** **1 AO1.3a** **1 AO2.4a** **1 AO3.1b**	**B1** for each	
9	**(a)**		100	**1** **1 AO2.1a**		
	(b)		10	**1** **1 AO2.1a**		
	(c)		One and a quarter boxes drawn	**3** **1 AO1.3a** **1 AO2.3b** **1 AO3.1c**	**M2** for 50 or **M1** for 310 or **M1 FT** from subtraction	
10	**(a)**	**(i)**	>	**1** **1 AO1.2**		
		(ii)	<	**1** **1 AO1.2**		
		(iii)	>	**1** **1 AO1.2**		
	(b)		2500 **oe**	**2** **1 AO1.2** **1 AO1.3a**	**M1** for 25 or 100	
11			Correct reasoning	**2** **1 AO1.3a** **1 AO2.2**	**M1** for $4a + 12 - 3a \pm 6$	

Question			Answer	Marks	Part marks and guidance	
12	(a)			**2** **1 AO2.1a** **1 AO2.3b**	**B1** 4 × 4 dotted squares correct **B1** 4 blocks of 4 black squares correct	
	(b)		64	**2** **1 AO1.3a** **1 AO2.1a**	**M1** 8 × 8 or 8^2 or 8 squared	
	(c)		$4n$	**2** **1 AO1.3a** **1 AO2.3a**	**M1** 4 8 12 seen	
	(d)		Completely correct proof including reasoning	**6** **2 AO2.2** **4 AO2.4b**	**B1** "blacks always even" **+ B1** reason **B1** "dotteds alternate odd and even" **+ B1** reason **B1** even + even = even **B1** odd + even = odd If zero scored **B1** shows true for patterns 1, 2 and 3 **B1** shows true for at least two more patterns	Accept "because × 4" or "4 is even" Accept any reason that has explanatory value

Question			Answer	Marks	Part marks and guidance	
13	(a)	(i)	Any straight line through the origin e.g. 	**2** **1 AO1.1** **1 AO2.3b**	**B1** for a straight line	
		(ii)		**2** **1 AO1.1** **1 AO2.3b**	**B1** for a cubic with two turning points	
	(b)	(i)	At least one point plotted correctly	**1** **1 AO2.3b**		

Question			Answer	Marks	Part marks and guidance	
		(ii)		**3** **1 AO2.3b** **1 AO3.1b** **1 AO3.2**	**B2** for at least 5 points correctly plotted OR **B1** for at least 3 points correctly plotted AND **B1** for <u>curve</u> drawn through *their* points	
14	**(a)**		£20 000	**1** **1 AO1.3a**		
	(b)		£14 580 or £14 600	**2** **2 AO1.3a**	**M1** for $20\,000 \times 0.9^3$	
	(c)		7 years	**2** **1 AO1.3a** **1 AO3.1c**	**M1** for 2 trials shown	
15			25, 30, 17	**5** **2 AO1.3a** **2 AO3.1d** **1 AO3.3**	**M1** for any two consistent expressions, e.g. $x - 8$, x **M1** for $x - 8 + x + x + 5 = 72$ **oe** **A1** for $x = 25$ **B1** for Kieran 25 or Jermaine 30 or Chris 17	Accept equivalent correct equations

Question			Answer	Marks	Part marks and guidance	
16	(a)		140 – 160 (s)	**3** **1 AO1.3a** **1 AO3.1d** **1 AO3.2**	**B1** 300 ± 20 (m) **M1** for $\frac{\textit{their}\ '300'}{2}$	
	(b)		Correct location for F	**2** **1 AO1.3a** **1 AO3.1d**	**B1** angle 55° ± 2° **B1** distance 8 cm ± 0.2	
	(c)			**4** **1 AO1.3b** **1 AO2.3b** **2 AO3.1d**	**B1** perpendicular bisector of PQ drawn ± 2° **B1** for arcs seen **B1** arc centre P, radius 4 ± 0.2 cm **B1** correct line segment marked **FT** their constructions	Arcs must be fit for purpose May be the same arcs as used for perpendicular bisector as shown
17	(a)		E	**1** **1 AO1.3a**		
	(b)		C and D	**2** **2 AO1.3a**	**B1** for each	

Question			Answer	Marks	Part marks and guidance	
18			Average speed = $\frac{\text{Distance}}{\text{Time}} = \frac{x}{5}$ km/h $= \frac{1000x}{60^2 \times 5}$ m/s $= \frac{1000x}{18000}$ m/s **oe** $= \frac{x}{18}$ m/s	**4** **2 AO1.3a** **2 AO2.2**	**B1** for x km = 1000x m **B1** for 5 hours = $60^2 \times 5$ s **B1** for working to given answer without intermediate expression or statement of formula	
19			£25	**5** **2 AO1.3b** **3 AO3.1d**	**M1** for $10 \times \frac{2}{5}$ = 4 litres red or $10 \times \frac{3}{5}$ = 6 litres white **M1** for red costs £8 per litre or white costs £0.50 per litre **M1** for cost of one 10-litre can is *their* '4' × *their* '8' + *their* '6' × *their* '0.5' **M1** for 60 – *their* '35'	Alternative method: M1 for 2 : 3 = 20 litres red : 30 litres white M1 for 2 × £80 + 3 × £5 = £175 M1 for $\frac{\textit{their}\ '175'}{5} = 35$ M1 for 60 – *their* '35'
20			2.8(0…)	**3** **1 AO1.1** **2 AO1.3a**	**B1** for $\tan\theta = \frac{\text{opp}}{\text{adj}}$ **M1** for 4 × tan 35	

Question			Answer	Marks	Part marks and guidance	
21			0.82 **oe**	**4** **1 AO1.3a** **3 AO3.1d**	**M3** for $0.7 \times 0.4 + 0.7 \times 0.6 + 0.3 \times 0.4$ or $1 - 0.18$ Or **M2** for two correct products Or **M1** for one correct product or 0.3 and 0.6 seen (may be on a tree diagram or equivalent)	

Assessment Objectives (AO) Grid

Question	AO1	AO2	AO3	Total
1(a)	2			**2**
1(b)	2			**2**
1(c)	2			**2**
2	2			**2**
3	1		2	**3**
4(a)(i)	1			**1**
4(a)(ii)	1			**1**
4(a)(iii)	1			**1**
4(b)		3		**3**
5	1		2	**3**
6	3			**3**
7(a)	1		1	**2**
7(b)	1		1	**2**
8	1	1	1	**3**
9(a)		1		**1**
9(b)		1		**1**
9(c)	1	1	1	**3**
10(a)(i)	1			**1**
10(a)(ii)	1			**1**
10(a)(iii)	1			**1**
10(b)	2			**2**
11	1	1		**2**
12(a)		2		**2**
12(b)	1	1		**2**
12(c)	1	1		**2**
12d		6		**6**
13(a)(i)	1	1		**2**
13(a)(ii)	1	1		**2**
13(b)(i)		1		**1**
13(b)(ii)		1	2	**3**
14(a)	1			**1**
14(b)	2			**2**
14(c)	1		1	**2**
15	2		3	**5**
16(a)	1		2	**3**
16(b)	1		1	**2**
16(c)	1	1	2	**4**
17(a)	1			**1**
17(b)	2			**2**
18	2	2		**4**
19	2		3	**5**
20	3			**3**
21	1		3	**4**
Totals	**50**	**25**	**25**	**100**