OCR

Oxford Cambridge and RSA

F

Date – Morning/Afternoon

GCSE (9-1) Mathematics

J560/02   Paper 2 (Foundation Tier)

PRACTICE PAPER (SET 3) MARK SCHEME

Duration: 1 hour 30 minutes

MAXIMUM MARK   100

Final

Subject-Specific Marking Instructions

1. **M** marks are for <u>using a correct method</u> and are not lost for purely numerical errors.
   A marks are for an <u>accurate</u> answer and depend on preceding **M** (method) marks. Therefore **M0 A1** cannot be awarded.
   B marks are <u>independent</u> of **M** (method) marks and are for a correct final answer, a partially correct answer, or a correct intermediate stage.
   SC marks are for <u>special cases</u> 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 <u>not from wrong working</u> **full marks** should be awarded.

   Do <u>not</u> award the marks if the answer was obtained from an incorrect method, i.e. incorrect working is seen <u>and</u> 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 (i.e. **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.
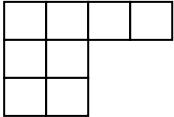
Question			Answer	Marks	Part marks and guidance	
1	(a)		$3\frac{5}{7}$ or $\frac{26}{7}$	1 1 AO1.3a		
	(b)		$\frac{2}{3}$	2 2 AO1.3a	**M1** for $\frac{3}{6}+\frac{1}{6}$ **soi**	
	(c)		$\frac{21}{40}$	1 1 AO1.3a		
2	(a)		10.6	1 1 AO1.3a		
	(b)		0.7	1 1 AO1.3a		
	(c)		10.3	2 2 AO1.3a	**M1** for at least 5 of the values in order of size	
3	(a)	(i)	A (0, 2) B (2, ⁻2)	2 2 AO1.3a	**B1** for each	
		(ii)	D plotted at (6, 5)	1 1 AO2.3a		
	(b)		(60, 3) and (60, ⁻1) or (52, 3) and (52, ⁻1) or (58, 1) and 54, 1)	2 1 AO2.1a 1 AO3.2	**M1** for *y* coordinates of 3 and ⁻1	Coordinates can be labelled R or S
4	(a)		250	1 1 AO2.3a		

Question			Answer	Marks	Part marks and guidance	
	(b)		$\dfrac{160[000]}{500[000]}$ = 32% No, 32% > 30%	M1 M1 A1 1 AO2.3a 1 AO2.4a 1 AO3.1c		
5	(a)	(i)	4.39	1 1 AO1.3a		
		(ii)	5.61	1 1 AO1.3a	**FT** from *their* 4.39	
	(b)		500 ÷ 100 = 5 1500 ÷ 150 and 500 ÷ 40 both > 5 5 × 16 = 80	M1 M1 A1 1 AO2.2 1 AO3.1c 1 AO3.3		
6	(a)		Vertically opposite [angles]	1 1 AO2.4a		
	(b)		74	3 2 AO1.3b 1 AO3.1b	**B1** for [angle CDF =] 67 **M1** for 180 − (39 + *their* 67)	May be seen on the diagram
7	(a)	(i)	121	1 1 AO1.2		
		(ii)	(±)20	1 1 AO1.2		
	(b)		m^8	1 1 AO1.3a		

Question			Answer	Marks	Part marks and guidance	
8	(a)		$\frac{9}{20}$ = 45% is bigger than $\frac{11}{25}$ = 44%	2 1 AO1.3a 1 AO2.4a	**M1** for $\frac{9}{20}$ = 45% or $\frac{11}{25}$ = 44%	
	(b)		720	3 3 AO1.3a	**M2** for 900 × 0.8 **oe** Or **M1** for 20% of 900 = 180	
9	(a)	(i)	11 further correct entries in the table with no extras or repeats	2 1 AO1.3a 1 AO2.3b	**M1** for at least 10 further correct entries in table, ignore extras or repeats	
		(ii)	$\frac{1}{12}$	1 1 AO2.1a	**FT** from part (a)(i)	
	(b)		Valid explanation	1 1 AO3.4a		e.g. there are 4 possible outcomes e.g. you can get a head and a tail 2 ways
10	(a)		1, 2, 4, 5, 10, 20	2 1 AO1.1 1 AO1.3a	**M1** for 4 or 5 correct	
	(b)	(i)	27	1 1 AO3.1a		
		(ii)	49	1 1 AO3.1a		
11	(a)		18	1 1 AO2.3b		
	(b)	(i)	320	3 1 AO1.3b 1 AO2.3b 1 AO3.1c	**M1** for [36 l =] 8 gallons **M1** for 40 × *their* 8	

Question			Answer	Marks	Part marks and guidance	
		(ii)	Valid explanation	1 1 AO3.5		e.g. she may run out of petrol e.g. she may use more petrol because of different driving conditions
12	(a)	(i)	3.027×10^4	2 1 AO1.2 1 AO1.3a	**M1** for 30 270 or 30 000 or 270 **seen**	
		(ii)	3.5×10^{15}	2 1 AO1.2 1 AO1.3a	**M1** for 35×10^{14}	
	(b)		$(\pm)4$	2 2 AO1.3a	**M1** for $\sqrt{\dfrac{0.6 \times 8}{0.3}}$ or better	Condone $\sqrt{\dfrac{1 \times 8}{0.3}}$ for **M1**
13	(a)	(i)	22	1 1 AO2.1a		
		(ii)	$3n + 7$ **oe**	2 2 AO2.3b	**M1** for $3n$	
		(iii)	127	1 1 AO1.3a	**FT** from *their* part(a)(ii)	
	(b)	(i)	26	1 1 AO2.1a		
		(ii)	Valid explanation	1 1 AO2.4a		e.g. it goes up by two more each time e.g. it is the square numbers add one

Question			Answer	Marks	Part marks and guidance	
14	(a)		7 : 9 : 14 **oe**	**3** 1 AO1.3a 1 AO3.1c 1 AO3.2	**M1** for $1 - \dfrac{3}{10} - \dfrac{7}{15}$ **soi** **M1** for $\dfrac{9}{30}$ and $\dfrac{14}{30}$ **oe soi** Or **SC2** for correct values in the wrong order	Can be implied by answers 9 and 14 in the correct position
	(b)		2 or 3 or 6 with reasons	**3** 1 AO1.3a 2 AO3.1c	**B2** for answer 2, 3, and 6 without reason Or **B1** for answer 2 or 3 or 6 (only) OR **M1** for attempt to factorise 42 and 90 **A1** for correct factors of 42 or 90	1, 2, 3, 6 only common factors of 42 and 90 so (2, 3, 6 only possible numbers in group) Condone inclusion/omission of '1' for all marks as this number of students does not form a group
15			No [correlation] Strong, negative [correlation]	**1** **2** 1 AO2.1a 1 AO2.3a 1 AO2.3b	Accept none, zero **B1** for negative Accept good	Do not accept 'nothing'
16			7	**3** 1 AO1.3b 1 AO3.1c 1 AO3.3	**B2** for $\dfrac{20}{3}$ **oe isw** Or **M1** for $10 \times \dfrac{2}{3}$	Implied by answer 6
17	(a)		48	**2** 2 AO1.3b	**M1** for 160 ÷ (2 + 5 + 3) [× 3] **oe**	
	(b)	(i)	She has calculated Rebecca's share as a percentage of her share **oe**	**1** 1 AO3.4a		Accept the fraction is upside down **oe**

Question			Answer	Marks	Part marks and guidance	
		(ii)	$\frac{5}{3}$ or $\frac{2}{3}$	**1**		
			66 to 67%	**1** **1 AO1.3a** **1 AO2.5a**		
18	**(a)**			**2** **2 AO2.1a**	Allow rotations of multiples of 90° Allow vertical and horizontal reflections **B1** for one error or addition	Condone interior lines not shown
	(b)		50	**2** **1 AO2.1a** **1 AO3.1a**	**M1** for 4 × 4 × 4 **oe soi**	
19	**(a)**		135	**2** **2 AO1.3a**	**M1** for 2×5 + ½×10×5×5 **soi**	
	(b)		$x^2 + 4x - 21$	**2** **2 AO1.3a**	**M1** for three correct from $x^2 + 7x + {}^-3x + {}^-21$	
	(c)		D	**1** **1 AO2.1a**		
20	**(a)**		$x = \frac{5y}{2}$ **oe** final answer	**2** **2 AO1.3a**	**M1** for correct first step **soi**	
	(b)		$\frac{19}{2}$ or $9\frac{1}{2}$ or 9.5	**3** **3 AO1.3a**	**M2** for $5x - 3x = 13 + 6$ **oe** Or **M1** for $5x - 3x = k$ or $mx = 13 + 6$	

Question			Answer	Marks	Part marks and guidance	
21			630	**5** 1 AO1.3b 2 AO3.1d 2 AO3.2	**B3** for 2100 [g] OR **M1** for $10 \times 4 \times 5$ **soi** **M1** for $10.5 \times$ *their* '$10 \times 4 \times 5$' **soi** AND **M1** for $30 \times$ *their* 2100 **soi**	
22			8 : 3 **nfww**	**5** 1 AO1.1 1 AO1.3b 2 AO3.1b 1 AO3.2	**B2** for CD = 8 cm Or **M1** for $CD^2 + 6^2 = 10^2$ **oe** AND **B2** for AC = 16 Or **M1** for $\sin 30 = \dfrac{their\ CD}{AC}$ **oe** Or **B1** for $\sin 30 = 0.5$ **oe**	Could be on diagram

Assessment Objectives (AO) Grid

Question	AO1	AO2	AO3	Total
1(a)	1	0	0	1
1(b)	2	0	0	2
1(c)	1	0	0	1
2(a)	1	0	0	1
2(b)	1	0	0	1
2(c)	2	0	0	2
3(a)(i)	2	0	0	2
3(a)(ii)	0	1	0	1
3(b)	0	1	1	2
4(a)	0	1	0	1
4(b)	0	2	1	3
5(a)(i)	1	0	0	1
5(a)(ii)	1	0	0	1
5(b)	0	1	2	3
6(a)	0	1	0	1
6(b)	2	0	1	3
7(a)(i)	1	0	0	1
7(a)(ii)	1	0	0	1
7(b)	1	0	0	1
8(a)	1	1	0	2
8(b)	3	0	0	3
9(a)(i)	1	1	0	2
9(a)(ii)	0	1	0	1
9(b)	0	0	1	1
10(a)	2	0	0	2
10(b)(i)	0	0	1	1
10(b)(ii)	0	0	1	1
11(a)	0	1	0	1
11(b)(i)	1	1	1	3
11(b)(ii)	0	0	1	1
12(a)(i)	2	0	0	2
12(a)(i)	2	0	0	2
12(b)	2	0	0	2
13(a)(i)	0	1	0	1
13(a)(ii)	0	2	0	2
13(a)(iii)	1	0	0	1
13(b)(i)	0	1	0	1
13(b)(ii)	0	1	0	1
14(a)	1	0	2	3
14(b)	1	0	2	3
15	0	3	0	3
16	1	0	2	3
17(a)	2	0	0	2
17(b)(i)	0	0	1	1
17(b)(ii)	1	1	0	2
18(a)	0	2	0	2
18(b)	0	1	1	2
19(a)	2	0	0	2
19(b)	2	0	0	2
19(c)	0	1	0	1

20(a)	2	0	0	2
20(b)	3	0	0	3
21	1	0	4	5
22	2	0	3	5
Totals	**50**	**25**	**25**	**100**