Cambridge IGCSE

MATHEMATICS **0626/05**

Paper 5 (Core) **For Examination from 2017**

SPECIMEN MARK SCHEME

2 hours

MAXIMUM MARK: 96

This document consists of **8** printed pages.

CAMBRIDGE
International Examinations

Marking instructions

MARKING - GENERAL

1.   Where a candidate has crossed out a complete part of a question, it should be marked provided that it has not been replaced.

2.   If two or more methods are offered, mark the method that leads to the answer on the answer line.

3.   Method marks are for a full correct method but may be lost if subsequent incorrect method is shown.

4.   Unless a particular method has been specified in the question, full marks may be awarded for any correct method. However, if a calculation is required then no marks will be awarded for a scale drawing.

5.   Where the answer in the answer space is incorrect because of a clear transcription error, then marks may be awarded.

6.   Occasionally a candidate will misread a number in a question and use that value consistently throughout. Provided that number does not alter the difficulty or method required, award all marks earned and penalise 1 mark. **M** marks are still awarded in any case. Record this by using the **MR** annotation.

7.   Unless specified in the question, answers may be given as fractions, decimals or in standard form. Ignore superfluous zeros provided that the degree of accuracy is not affected.

8.   Allow any sensible notation. Watch out for commas being used for decimal points and dots being used for products. Brackets may be seen to represent inequalities.

9.   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.

10. FT – A correct answer will score or follow through after an error.
     Strict FT – you must follow through from their error. These will be indicated in the mark scheme.

ABBREVIATIONS IN MARK SCHEME

Abbreviation	Meaning
M	Method marks – for a correct method applied to appropriate numbers
A	Accuracy marks – depend on M marks. Hence M0 A1 is not possible
B	Independent of method marks – for a correct final answer or intermediate stage
SC	Marks given in special cases only when indicated in mark scheme
FT	Work can be followed through after an error
isw	Ignore subsequent working (after correct answer obtained)
cao	Correct answer only
nfww	Not from wrong working
oe	Or equivalent
soi	Seen or implied
eeo	Each error or omission
dep	Dependent on the previous mark(s)

ACCURACY

1. If a question asks for a particular level of accuracy then the mark scheme will include specific details.

2. In other cases, the following apply:
    *   More than 3 sf in the answer but correct (either rounded or truncated to 4 or more figure accuracy) – allow full marks.
    *   Less than 3 sf in the answer but correct to 3 or more sf seen in the working – allow full marks even if rounded incorrectly.
    *   3 sf incorrect in the answer but 3 or more correct seen in the working – allow full marks.
    *   If the third sf is zero after the decimal point (e.g. 15.0) then allow marks for 2 sf answers providing no wrong working is seen.

3. General principles are:
    *   2 sf answers will not imply method in most cases.
    *   If the final answer on the answer line has clearly been spoiled from the 3 sf or more answer seen in the working (more than just rounding errors) don't allow the marks.
    *   Mark at most accurate which is usually where the answer is first seen.
    *   If the most accurate answer is incorrect then it scores zero, even if it has been correctly rounded into a correct answer.
    *   If this answer is then used in another part of the question then any **M** marks are available.
    *   If an accuracy FT is also available in the new part, then give the FT mark for a correct follow through from a value which has lost the accuracy mark in the first part.
    *   However, a correct value from the first part may have been given the accuracy mark but has then been rounded incorrectly and this has been condoned. If the wrongly rounded value is used in the new part and leads to an incorrect answer, even if correctly followed through, then this should not receive the accuracy mark here and should not be treated as a FT case.

4. **Exact answers involving π and $\sqrt{}$**

- Exact answer 2.345 π | Unless question is set in context (where some appreciation of appropriate accuracy is required),
allow **A1** for 2.345 π on the answer line,
allow **A0** for 2.35 π.
Mark scheme will indicate in final column if marks to be allowed.

- Exact answer $\sqrt{23}$ | Scores **A1** if the question is not set in context and the √(prime number) is given on the answer line.
Scores **A0** if the question is set in context (where some appreciation of appropriate accuracy is required).
Surd answers which simplify need not be implied e.g. $\sqrt{12}$ or $2\sqrt{3}$ are acceptable but not irrational denominators – if simplified, mark the simplified answer i.e. not isw.
Mark scheme will indicate in final column if marks to be allowed.

Qu.		Answers	Mark	Part Marks	Notes
1	**(a)** **(i)**	5 and 9 cao	1		
	(ii)	4 and 9 cao	1		
	(iii)	2 and 5 cao	1		
	(b)	$<$ $=$ $<$ $>$	2	**B1** for 3 correct	
	(c) **(i)**	$(16 + 8) \div 4 - 2 = 4$	1		
	(ii)	$16 + 8 \div (4 - 2) = 4$	1		
2	**(a)**	0	1		
	(b)	1	1		
	(c)	1.6	3	**M1** for Σfx **M1 dep** for *their* $24 \div 15$	Condone 1 error in Σfx
	(d)	Correct bar chart with correctly scaled axes	4	**B1** for linear vertical scale to at least 5 **B1** for horizontal axis numbered correctly **B2** for all bars correct height and equal width, with equal (or no) gaps or **B1** for 4 bars correct height	

6

Qu.		Answers	Mark	Part Marks	Notes
3	**(a) (i)**	$\frac{5}{9}$	2	**B1** for $\frac{80}{144}$ or better **SC1** for $\frac{4}{9}$	
	(ii)	60	2	**M1** for $144 \div 12 \times 5$	
	(b)	1080	3	**M1** for $2 \div 5 \times 5200$ **M1** for *their* $2080 + 24 \times 175 - 5200$	
	(c)	0.85×3450 or $3450 - 0.15 \times 3450$	M2	**B1** for 0.85 seen or **M1** for 0.15×3450	
	(d)	44089.92	3	**M2** for 35000×1.08^3 oe or **M1** for 35000×1.08^2 oe	Accept 44090 for 3 marks
4	**(a)**	(0)700 or 7am	2	**M1** $100 - (5 \times their\ (22 - 6) + their\ (13 - 8))$ or better soi	
	(b)	1700 or 5pm	1		
5	**(a) (i)**	6 cao	2	**M1** for $735 \div 120$ oe If 0 scored **SC1** for figs 61...	Implied by 6.125
	(ii)	47.5	1		
	(b) (i)	20	3	**B2** for fully correct method or **B1** for $6.6 - 5.5$ or better or $6.6\ [- 5.5] \div 5.5$	
	(ii)	[0].80	2	**M1** for $6.6 \div 8.25$	
6	**(a)**	Reject B as over £100 oe Convert rates for A, C and D to litres per minute D identified	1 2 1dep	**B1** for one correct conversion dep on complete correct method	Accept rates in other units if consistent
	(b) (i)	60×24 oe	1		Accept number of minutes in a day
	(ii)	[x =] 20500 [y =] 1.42	1 1		Accept 1 day

Qu.		Answers	Mark	Part Marks	Notes
7	(a)	14, [8], 4, [2], 2, [4], 8, 14	3	**B2** for 4 correct or **B1** for 2 correct	
	(b)	Fully correct curve	4	**B3FT** for 8 points plotted correctly or **B2FT** for 6 or 7 points plotted correctly or **B1FT** for 4 or 5 points plotted correctly **B1** for correct curve	Tolerance within $\frac{1}{2}$ small square
	(c)	$x = 0.5$	1		
	(d)	-2.25 to -2.15 cao and 3.15 to 3.25 cao	3	**B2** for one correct solution or **M1** for evidence of $y = 9$	Answers $-2.1925...$ and $3.1925...$
8	(a)	PT is a tangent to the circle at Q oe	1		
	(b)	8	3	**M2** for $\sqrt{17^2 - 15^2}$ or better Or **M1** for $17^2 = OQ^2 + 15^2$ oe or better	Implied by correct Pythagoras statement seen
	(c)	$\text{Cos}(...) = \frac{15}{17}$ or $\text{Sin}(...) = \frac{'8'}{17}$ or $\text{Tan}(...) = \frac{'8'}{15}$ or better	M1		
		$28.07...$ or 28.1	A1		
	(d)	$\angle POQ = \angle ROS = 90 - 28\ [= 62]$ $\angle ORS = (180 - 62) \div 2 = 59$	M1 A1		
		Any two correct reasons seen	B1		From angles in triangle = 180, isosceles, vertically opposite
9	(a) (i)	$\frac{1}{4}$ or 0.25	1		
		Halve or divide by 2	1		
	(ii)	80	1		
		Multiply by -2 oe	1		
	(b) (i)	37, 45	2	**B1** for each	
	(ii)	$8n - 3$	2	**B1** for $8n + a$ $(a \neq -3)$ or $bn - 3$ $(b \neq 8$ or $0)$	
	(iii)	797	1FT	FT *their* linear expression in **(ii)**	

Qu.		Answers	Mark	Part Marks	Notes
10	(a) (i)	Translation $\begin{pmatrix} -7 \\ -8 \end{pmatrix}$	1 1		Accept 7 left and 8 down
	(ii)	Enlargement [Scale factor] 0.5 [Centre] (0, 0) oe	1 1 1		
	(b)	Shape at (−2, 4), (−4, 4), (−3, 6)	1		
11		She did not include the 3 + 1 combination oe	M1		Allow alternative methods.
		There are more than 12 possible combinations oe	M1		
		Draws table or lists all the possible combinations	M2	**M1** for partial list of combinations with at least 15 different pairs listed OR for table but with up to 2 errors	
		$\dfrac{3}{36}$ oe	B1		
12	(a)	185 or 185.3 to 185.4...	5	**M1** for 120 ÷ (10 or 20) oe **A1** for [radius =] 6 cm **M1** for π × *their* 6² oe soi by 113 **M1** for 4 × *their* 6 × *their* 6 − 6 × *their* 113	Accept 864 − 216π as final answer
	(b)	$\dfrac{1}{3} \times \pi \times 9^2 \times 24$	M1		
		2040 or 2035.7... to 2036.0...	A1		Accept 648π for **A1**
		$\dfrac{1}{3} \times \pi \times 3^2 \times 8$	M1		
		75.4 or 75.39 to 75.41	A1		Accept 24π for **A1**
		1960.3 to 1960.61	A1		624π implies **M1A1M1A1**