Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education (9–1)

MATHEMATICS **0626/05**

Paper 5 **October/November 2018**

MARK SCHEME

Maximum Mark: 96

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the October/November 2018 series for most Cambridge IGCSE™, Cambridge International A and AS Level components and some Cambridge O Level components.

This syllabus is regulated for use in England as a Cambridge International Level 1/Level 2 (9–1) Certificate.

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Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

GENERIC MARKING PRINCIPLE 5:

Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).

GENERIC MARKING PRINCIPLE 6:

Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

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MARK SCHEME NOTES

The following notes are intended to aid interpretation of mark schemes in general, but individual mark schemes may include marks awarded for specific reasons outside the scope of these notes.

Types of mark

M Method marks, awarded for a valid method applied to the problem.

A Accuracy mark, awarded for a correct answer or intermediate step correctly obtained. For accuracy marks to be given, the associated Method mark must be earned or implied.

B Mark for a correct result or statement independent of Method marks.

When a part of a question has two or more 'method' steps, the M marks are in principle independent unless the scheme specifically says otherwise; and similarly where there are several B marks allocated. The notation '**dep**' is used to indicate that a particular M or B mark is dependent on an earlier mark in the scheme.

Abbreviations

awrt	answers which round to
cao	correct answer only
dep	dependent
FT	follow through after error
isw	ignore subsequent working
nfww	not from wrong working
oe	or equivalent
rot	rounded or truncated
SC	Special Case
soi	seen or implied

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Question	Answer	Marks	Partial Marks
1(a)	4	**3**	**M2** for $3 \times 2.95 + 1.95 + 2 \times 2.6$ oe or **M1** for 3×2.95 [= 8.85] or 2×2.6 [=5.2[0]] oe
1(b)	11.1 or 11.11[…] isw	**3**	**M2** for $\frac{1.50-1.35}{1.35}$ [×100] oe or **M1** for $\frac{1.50}{1.35}$ [×100] oe If 0 scored, **SC1** for an answer of 11 nfww
1(c)	8.75	**3**	**M2** for $\frac{16380}{39 \times 48}$ oe or **M1** for 39×48 [= 1872] or $\frac{16380}{48}$ [= 341.25] or $\frac{16380}{39}$ [= 420] soi
1(d)(i)	28	**3**	**M2** for 7.50 + 5.50 + 3k where k = 5 or 6 or **M1** for 7.50 + 5.50 or 3×5 or 3×6
1(d)(ii)	10 + 3n final answer	**3**	**M2** for 7.50 + 5.50 + 3×(n – 1) oe or **M1** for 3n or 3(n – 1) oe seen
2(a)	$\frac{144}{9}$ [=16]	**M1**	
	one of 16×15 or 16×8	**M1**	**dep**
	$16 \times 15 = 240$ and $16 \times 8 = 128$	**A1**	If 0/3 scored, **SC1** for $16 \times 15 = 240$ and $16 \times 8 = 128$ and $16 \times 9 = 144$ oe or $16 \times 15 = 240$ and $16 \times 8 = 128$ and $512 \div 32 = 16$ oe
2(b)	275 cao nfww	**4**	**M3** for $1\frac{1}{2} \times 144 + \frac{1}{5} \times 240 + \frac{1}{12} \times 128$ oe **M2** for $1\frac{1}{2} \times 144$ and $\frac{1}{5} \times 240$ and $\frac{1}{12} \times 128$ oe or **M1** for $1\frac{1}{2} \times 144$ or $\frac{1}{5} \times 240$ or $\frac{1}{12} \times 128$ oe

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Question	Answer	Marks	Partial Marks
2(c)	36.8	**2**	**M1** for 32×1.15 or 32×0.15 [= 0.048] oe
2(d)	959 or 960 cao	**3**	**M2** for $20500 \div \frac{7800}{365}$ oe or **M1** for $20500 \div 7800$ or 20500×365 or $7800 \div 365$ soi
3(a)	4 points correctly plotted	**2**	**B1** for 2 or 3 correctly plotted points
3(b)	positive	**1**	
3(c)	correct ruled line of best fit drawn	**1**	
3(d)	accept answer in range 34 to 44	**1**	or **FT** from *their* line provided it is ruled and has a positive gradient.
3(e)	Valid explanation e.g. Scatter diagram has no data below 10 °C or 8 °C not within range of data collected.	**1**	
4(a)	Rotation [centre] (4, 0) 90° clockwise oe	**3**	**B1** for each
4(b)	line is $x = 0$ not $y = 0$ oe	**1**	
4(c)	Translation $\begin{pmatrix} 3 \\ -7 \end{pmatrix}$	**2**	**B1** for each
4(d)(i)	R' marked at $(-11, -7)$ Semi-circle drawn centre $(-5, -7)$ radius 6 units	**2**	**B1** for each
4(d)(ii)	3 $(10, -7)$	**2**	**B1** for each
5(a)(i)	60	**1**	
5(a)(ii)	80 nfww	**3**	**FT** *their* $60 \div \frac{3}{4}$ oe **B1** for 45 mins soi and **M1** for $\frac{\textit{their}\ 60}{\textit{their}\ 45}[\times 60]$ oe
5(b)	Straight line from (1005, 0) to (1035, 30)	**2**	**M1** for a straight line with change in time 30 mins or one of the end points correct.

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Question	Answer	Marks	Partial Marks
5(c)(i)	11 40	**3**	**M1** for $\frac{30}{40}$ soi and **M1** for *their* $\frac{30}{40} \times 60$ soi
5(c)(ii)	Line with no positive gradient from (10 55, 30) to (*their* 11 40, 0)	**1**	**FT** *their* **(c)(i)** provided after 10 55
5(d)	any valid reason e.g. traffic is worse poor weather	**1**	
6(a)	3, 5, 7, 9	**1**	
6(b)	14 nfww	**2**	**M1** for 7 × 2 or 138 × 2 – 131 × 2 or **B1** for 276 or 262 seen
6(c)	49 = 13 + 36	**2**	**B1** for two of 13, 36, 49 identified
6(d)	2704	**2**	**M1** for 101 or 103 or 51 × 2 – 1 oe or 52 × 2 – 1 oe or $52^2 - 51^2$ or $51^2 - 50^2$ seen
7(a)	$x + x + 3 + x - 5 + 2(x - 5) + 0.5x = 65$	**M3**	**B1** for $x + 3$ or $x - 5$ seen and **B1** for $2(x - 5)$ or $2x - 10$ or $0.5x$
	for [$2(x - 5) =$] $2x - 10$ and clear collection of terms leading to correct answer	**A1**	
7(b)	Kurt 18	**4**	**M2** for $x = 14$ or **M1** for $11x = 24 + 130$ and **M1FT** for finding out correctly, with *their x*, the ages of at least 1 child Jenny = 17, Nathan = 9, Kurt = 18, Evan = 7
8(a)	090°	**1**	
8(b)	159	**2**	**M1** for 10.6 seen
8(c)	Correct position of *F* clearly marked on diagram	**2**	**M1** for a bearing of 033° from *L* or for a bearing of 123° from *B*
8(d)	115°	**2**	**M1** for 295 –180 oe seen or a correct sketch diagram shown
8(e)	arc centre *L,* radius 5cm drawn, cutting line *AB* twice with the two outer ends of line *AB* clearly indicated.	**3**	**B1** for 5[cm] **M1** for an arc from centre *L*, crossing *AB* twice oe

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Question	Answer	Marks	Partial Marks
9(a)(i)	660, 198 cao	**2**	**B1** for each.
9(a)(ii)	Sector of 72° drawn	**1**	
9(b)(i)	Overall cost in 2018 greater than overall cost in 2017 oe and $\frac{360}{1800} < \frac{300}{1200}$ oe	**2**	**B1** for either a correct numerical justification or a correct statement
9(b)(ii)	4 : 9 : 7	**2**	**M1** for 360 : 810 : 630 oe
9(b)(iii)	456 or 455.7 or 455.69 or 455.70	**2**	**M1** for $\frac{360}{0.79}$
10(a)	$(y + 2)(y – 7)$ isw	**1**	
10(b)	$(y + 2)(y – 7) = 136$	**M1**	equating *their* expression to 136
	$y^2 + 2y – 7y – 14$ [=136]	**M1**	expansion of *their* brackets, allow one error or omission
	completely correct solution leading to $y^2 - 5y - 150 = 0$	**A1**	
10(c)(i)	$(y – 15)(y + 10)$	**2**	**M1** for $(y + a)(y + b)$ where $b + a = –5$ or $ab = –150$
	15 , -10	**1**	**FT** from *their a* and *b* in *their* factorisation provided at least M1 scored.
10(c)(ii)	17 or 8	**1**	**FT** from a positive y value using $(y + 2)$ or $(y – 7)$ provided length > 0

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