
MATHEMATICS (SYLLABUS D)

4024/01

Paper 1

For Examination from 2018

SPECIMEN MARK SCHEME

2 hours

MAXIMUM MARK: 80

This document consists of **6** printed pages.

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 are given for a correct method.

A – Accuracy marks are given for an accurate answer following a correct method.

B – B marks are given for a correct statement or step, independent of method marks.

Abbreviations

ag	answer given
art	answer rounds to
cao	correct answer only
dep	dependent
ft	follow through after error
isw	ignore subsequent working
oe	or equivalent
sc	special case
soi	seen or implied
www	without wrong working

Question	Answer	Marks	Part marks
1(a)	$\frac{11}{35}$	1	
1(b)	$\frac{18}{35}$	1	

Question	Answer	Marks	Part marks
2(a)	42	1	
2(b)	4	1	

Question	Answer	Marks	Part marks
3(a)	14	1	
3(b)	0.3 oe	1	

Question	Answer	Marks	Part marks
4(a)	4.8×10^7 cao	1	
4(b)	9.3×10^6 oe	2	M1 for $1.85 \times 10^7 - 9.2 \times 10^6$ oe
4(c)	5.1×10^8 cao	1	After 0 in (a) and (c), allow 1 for a correct (c) in any form

Question	Answer	Marks	Part marks
5(a)	$4p(4 + p)$	1	
5(b)	$(x + 2a)(y + 3a)$	2	B1 for any partial factorisation
5(c)	$(2x - 5)(x + 4)$	2	B1 for $(2x + 5)(x - 4)$ or $(2x - 5)(x - 4)$ or $(2x + 5)(x + 4)$

Question	Answer	Marks	Part marks
6(a)	$\frac{4}{9}$ oe	1	
6(b)	840	1	

Question	Answer	Marks	Part marks
7(a)	$2p + 3q$	1	
7(b)	$2p + 2q$	1	
7(c)	$-2p + q$ ft	1	Accept $3q$ – their (b) ft

Question	Answer	Marks	Part marks
8(a)	4 16 30 52 70 80	1	
8(b)	Correct ft curve	2	B1 for at least 5 correct ft points
8(c)	16 to 19 ft	2	B1 for their cumulative frequency (CF) at $m = 45$ ft After 0, allow B1 for 80 – their CF at $m = 44$

Question	Answer	Marks	Part marks
9(a)	81	1	
9(b)	8	1	
9(c)	$\sqrt{2}$	1	

Question	Answer	Marks	Part marks
10(a)	$\begin{pmatrix} 11 & -6 \\ -1 & -2 \end{pmatrix}$	2	B1 for 3 or 2 correct elements
10(b)	$\begin{pmatrix} \frac{1}{2} & 1 \\ \frac{1}{2} & 2 \end{pmatrix}$ or $\frac{1}{2}\begin{pmatrix} 1 & 2 \\ 1 & 4 \end{pmatrix}$	2	B1 for determinant $A = 2$, or for $k\begin{pmatrix} 1 & 2 \\ 1 & 4 \end{pmatrix}$ oe

Question	Answer	Marks	Part marks
11	$-1, -\frac{17}{20}, -\frac{4}{5}, 0, \frac{3}{4}$	2	B1 for 4 correct when one is covered or B1 for reversed answer

Question	Answer	Marks	Part marks
12(a)	F	1	
12(b)	E	1	

Question	Answer	Marks	Part marks
13	$(a =) 8.75$ oe $(b =) 6$ oe	3	B2 for one correct www or B1 for $\frac{4}{7}$ or $\frac{7}{4}$ oe seen


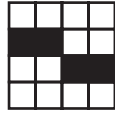
Question	Answer	Marks	Part marks
14(a)	$-\frac{5}{8}$, or -0.625 , cao	1	
14(b)	$\frac{7}{2x+3}$ oe	2	B1 for $2x'y' + 3x = 7$ oe (condone swaps of x and y') with both variables on the same side.

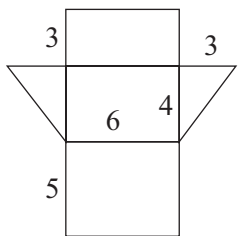
Question	Answer	Marks	Part marks
15(a)	$(R =) 3p^3$ seen	1	
15(b)	4	2	M1 for $192 = 3p^3$ oe
15(c)	(Diagram) 2	1	

Question	Answer	Marks	Part marks
16(a)	[0]8 18	1	
16(b)	33	1	

Question	Answer	Marks	Part marks
17(a)	79 cao	1	
17(b)	$n(n + 1) + (n + 2)^2$ oe	1	
17(c)	(A =) 2, (B =) 5, (C =) 4	2	B1 for two of these or M1 for comparison with <i>their</i> (b)

Question	Answer	Marks	Part marks
18(a)	$\frac{9}{25}$	1	
18(b)	$\frac{3}{t^3}$ or $3t^{-3}$	1	
18(c)	$\frac{x^2}{3y}$ or $\frac{1}{3}x^2y^{-1}$	1	

Question	Answer	Marks	Part marks
19(a)	The correct diagram 	1	
19(b)	The correct diagram 	1	

Question	Answer	Marks	Part marks
20	Completely correct net  (labelling not required)	3	M1 for 2 correct rectangular faces M1 for another correct triangular face

Question	Answer	Marks	Part marks
21(a)	0.4 oe	1	
21(b)	12 or <i>their</i> (a) $\times 30$ ft	1	
21(c)	0.83	1	

Question	Answer	Marks	Part marks
22(a)	264° to 268° inclusive	1	
22(b)	Acceptable quadrilateral $ABCD$	1	
22(c)(i)	Acceptable perpendicular bisector of AB	1	
22(c)(ii)	Acceptable bisector of angle ABC	1	
22(d)	Correct region (top left-hand corner) shaded	1	dep on two reasonably accurate intersecting lines

Question	Answer	Marks	Part marks
23	Any number between 4 and 5	2	B1 for $x < 5$, or for $5 > x$ seen This may appear as, e.g. $4 < x < 5$

Question	Answer	Marks	Part marks
24(a)	18	1	
24(b)	4	1	

Question	Answer	Marks	Part marks
25(a)	48°	1	
25(b)	66°	1	
25(c)	24°	1	
25(d)	35° or <i>their</i> $\frac{(a)}{2}$ ft	1	

Question	Answer	Marks	Part marks
26(a)	(-)-2	1	
26(b)	20	1	
26(c)	600	1	
26(d)	40 or $10 + 30 \times \left \frac{\text{their } (a)}{2} \right $ ft	1	