Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

MATHEMATICS **0580/02**

Paper 2 (Extended) **For Examination from 2015**

SPECIMEN MARK SCHEME

1 hour 30 minutes

MAXIMUM MARK: 70

The syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

This document consists of **4** printed pages.

CAMBRIDGE International Examinations

[Turn over

Types of mark
M marks are given for a correct method.
A marks are given for an accurate answer following a correct method.
B marks are given for a correct statement or step.
D marks are given for a clear and appropriately accurate drawing.
P marks are given for accurate plotting of points.
E marks are given for correctly explaining or establishing a given result.
SC marks are given for special cases that are worthy of some credit.

Abbreviations
cao correct answer only
cso correct solution only
dep dependent
ft follow through after error
isw ignore subsequent working
oe or equivalent
SC Special Case
www without wrong working
art anything rounding to
soi seen or implied

Qu.	Answers	Mark	Part Marks
1	7.5(0) cao	**2**	**M1** for $\frac{258.75}{4.6}$
2	3×10^{27}	**2**	**M1** for $6 \div (2 \times 10^{-27})$
3	cos38 sin38 sin158 cos158	**2**	**M1** correct decimals seen 0.7(88..) 0.6(15..) 0.3(74..) –0.9(271..)
4	$\frac{41}{333}$	**3**	**B2** for $\frac{123}{999}$ oe fraction or **M1** for $1000[x] = 123.123\ldots$ oe
5	**(a)** 7853 to 7855 or 7850 or 7860 www **(b)** 0.7853 to 0.7855 or 0.785 or 0.786	**2** **1ft**	**M1** for $\pi \times 50^2$ Their **(a)** ÷ 10 000 evaluated
6	135 cao	**3**	**M1** for 720 or $(6 - 2) \times 180$ oe seen in working and **M1** for equation $180 + 4x =$ their 720 or **M1** for $(360 - 180) \div 4$ (= 45) oe seen in working and **M1** dep for 180 – their 45
7	**(a)** (y =) 80 **(b)** (z =) 40 **(c)** (t =) 10	**1** **1** **1ft**	 Follow through 90 – their y or 50 – their z

8	$y = -\frac{1}{2}x + 10$ oe	**3**	**M2** for $-\frac{1}{2}x + 10$ or **M1** for gradient identified as $-\frac{1}{2}$ or intercept as 10 (not on diagram) e.g. $y = mx + 10$ **or** $y = -\frac{1}{2}x + c$
9	**(a)** Correct perpendicular bisector with arcs **(b)** 60°	**2** **1**	**B1** correct line **B1** correct construction arcs
10	0.38 or $\frac{19}{50}$	**4**	**B1** 0.8, 0.6 or 0.55 then **M1** 0.45 × their 0.6 **M1** 0.2 × their 0.55 **or M2** 1 – (0.45 × 0.4 + 0.55 × their 0.8)
11	**(a)** $\begin{pmatrix} 8 & 5 \\ 20 & 13 \end{pmatrix}$ **(b)** $\begin{pmatrix} 1\frac{1}{2} & -\frac{1}{2} \\ -2 & 1 \end{pmatrix}$ oe	**2** **2**	**B1** two or three entries correct **B1** $\frac{1}{2}\begin{pmatrix} a & c \\ b & d \end{pmatrix}$ **B1** $(k)\begin{pmatrix} 3 & -1 \\ -4 & 2 \end{pmatrix}$
12	**(a)** Negative **(b)** Correct point **(c)** **(i)** Accurate ruled line **(ii)** English mark	**1** **1** **1** **1ft**	Ignore embellishments Follow through their **(c)(i)**
13	**(a)** $\frac{1}{2}\mathbf{a} + \frac{1}{2}\mathbf{b}$ oe **(b)** $-1\frac{1}{2}\mathbf{a} + 1\frac{1}{2}\mathbf{b}$ oe	**2** **2**	**M1** unsimplified or any correct route e.g $\mathbf{a} + \frac{1}{2}$ **(b – a)** or **OA + AC** **M1** unsimplified or any correct route e.g. **CD** = $1\frac{1}{2}$**AB** or **b** – **a** + $\frac{1}{2}$ **(b** – **a)**
14	**(a)** 2.84 **(b)** $\frac{4\pi^2\ell}{T^2}$ oe	**2** **3**	**M1** correct substitution of g and ℓ seen **M1** each correct move but third move marked on answer line
15	**(a)** 156 **(b)** 12	**4** **1ft**	**M1** intention to find area under graph **B2** completely correct area statement or **B1** two areas found correctly (or one trapezium area) Their **(a)**/13

16	**(a)** 500, 405, 364–365, 295 (…)	**2**	**B2**
	(b) 5 points plotted within correct square	**1**	**P1** ft from table
	correct curve drawn within 1 mm of points plotted	**1**	**C1**
	(c) **(i)** 3.3–3.4	**1**	**B1** ft from their curve or line reading at 350 g
	(ii) Never oe	**1**	
17	**(a)** $\frac{1}{2}$	**2**	**B1** f(–2) seen
	(b) $\sqrt[3]{(x-1)}$ or $\sqrt[3]{x-1}$	**2**	**M1** $x - 1 = y^3$ or $\sqrt[3]{(y-1)}$
	(c) 1 2	**3**	**M2** $(x-1)(x-2) = 0$ or **M1** $(x+a)(x+b) = 0$ where $ab = 2$ or $a + b = -3$ If 0 scored give **M1** for $x^2 - 3x + 2 = 0$
18	**(a)** 4324 cao	**2**	**M1** $\frac{1}{6} \times 23 \times 24 \times 47$ or better
	(b) **(i)** 4, 9	**2**	**B1** either correct
	(ii) $(n+1)^2$ or $n^2 + 2n + 1$	**1**	
	(c) $\frac{2}{3}n(n+1)(2n+1)$ oe	**2**	**M1** recognising $V_n = 4T_n$