

**MARK SCHEME for the May/June 2013 series**

<b>0581 MATHEMATICS</b>	
<b>0581/21</b>	Paper 2 (Extended), maximum raw mark 70

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.

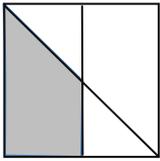
Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2013 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

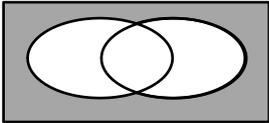
Page 2	Mark Scheme	Syllabus
	IGCSE – May/June 2013	0581

**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
- soi seen or implied

Qu.	Answers	Mark	Part Marks
1	11 or -11	1	
2 (a)	1.32656...	1	
(b)	1.327	1ft	
3	72	2	M1 for $84 \div 7$
4	105	2	M1 for $180 - 55 - 50$ or B1 for 55 or 75 seen in the correct angle inside the triangle
5	correct working; e.g. $\frac{3k}{2k} \times \frac{16n}{3n} = 8$	2	M1 for $\frac{3k}{2k}$ and A1 for $\frac{3k}{2k} \times \frac{16n}{3n} = 8$
6	$3x(4y - x)$ final answer	2	B1 for $3(4xy - x^2)$ or $x(12y - 3x)$
7 (a)	Equidistant from A and B (or C and D or AD and BC)	1	
(b)		1	
8	$x \geq -\frac{3}{8}$ oe	2	M1 for $-3 \leq 8x$ oe If 0 then SC1 for $-\frac{3}{8}$ with incorrect inequality.
9	48.15, 48.45 cao	2	B1 B1 If 0 then M1 for 16.0 and 16.15 soi
10	$(a + b)(p - 2)$	2	B1 $p(a + b) - 2(a + b)$ or $a(p - 2) + b(p - 2)$
11	$3x^4$	2	B1 for $kx^4$ or $3x^k$

Page 3	Mark Scheme	Syllabus
	IGCSE – May/June 2013	0581

12 (a)	$\frac{3}{11}$	1	
(b)		1	
13	175 cao final answer	3	<b>B2</b> for 175.4 ... or <b>M1</b> for $200 \div 1.14$
14	454.27 cao final answer	3	<b>M1</b> for $420 \times (1 + \frac{4}{100})^2$ oe and <b>A1</b> for 454 or 454.2 to 454.3 or <b>SC2</b> for answer 34.27 or <b>SC1</b> for answer 34.2 to 34.3
15	2.67 or 2.672 to 2.67301	3	<b>M2</b> for $\sqrt[3]{(80 \div \frac{4}{3}\pi)}$ oe or <b>M1</b> for $80 \div (\frac{4}{3}\pi)$ oe
16	35.4 or 35.36 to 35.37	3	<b>M2</b> for $1000 \div (\pi \times 0.75^2 \times 16)$ oe or <b>M1</b> for $\pi \times 0.75^2 \times 16$ oe or $1000 \div (\pi \times 0.75^2)$
17	$y = 2x - 1$	3	<b>B2</b> for $y = mx - 1$ or $y = 2x + c$ or $2x - 1$ or <b>B1</b> for gradient = 2, <b>B1</b> for $c = -1$ or <b>SC1</b> for $\frac{6}{3}$ or $\frac{5 - -1}{3[-0]}$
18 (a)	$(x + 6)(x - 5)$	2	<b>SC1</b> for $(x + a)(x + b)$ where $ab = -30$ or $a + b$
(b)	$\frac{x + 4}{x + 6}$ final answer	1	
19	$\frac{6}{7}$ or 0.857[1...]	3	<b>M1</b> for $t = \frac{k}{\sqrt{u}}$ oe <b>A1</b> for $k = 6$
20 (a) (i)	$p + \frac{1}{2}r$	1	
(ii)	$2p + r$	1ft	$2 \times \text{their (i)}$
(b)	Midpoint of RQ	1	

<b>Page 4</b>	<b>Mark Scheme</b>	<b>Syllabus</b>
	<b>IGCSE – May/June 2013</b>	<b>0581</b>

<b>21</b>	52.3 or 52.27 to 52.28	<b>3</b>	<b>SC2</b> for 28.3 or 28.7 to 28.8 If 0, <b>M2</b> for $\frac{135}{360} \times \pi \times 24 + 2 \times 12$ or <b>M1</b> for $\frac{135}{360} \times \pi \times 24$
<b>22</b>	$\frac{5x+13}{(x+3)(x+2)}$ oe final answer	<b>3</b>	<b>B1</b> for common denominator $(x+3)(x+2)$ seen <b>M1</b> for $2(x+2) + 3(x+3)$ soi
<b>23</b>	24.8 or 24.77 to 24.78	<b>4</b>	<b>M1</b> for recognition of angle <i>CEA</i> <b>M1</b> for $\sqrt{12^2 + 5^2}$ <b>M1</b> for $\tan = \frac{6}{\text{their } AE}$ oe
<b>24 (a)</b>	$\begin{pmatrix} 6 & 7 \\ 16 & 17 \end{pmatrix}$	<b>2</b>	<b>B1</b> for 1 correct row or 1 correct column
<b>(b)</b>	$\frac{1}{5} \begin{pmatrix} 2 & -3 \\ -1 & 4 \end{pmatrix}$	<b>2</b>	<b>B1</b> for $k \begin{pmatrix} 2 & -3 \\ -1 & 4 \end{pmatrix}$ or $\frac{1}{5} \begin{pmatrix} a & b \\ c & d \end{pmatrix}$
<b>25 (a)</b>	2.8 oe	<b>1</b>	
<b>(b)</b>	700	<b>3</b>	<b>M2</b> for $\frac{1}{2}(20+30) \times 28$ oe or <b>M1</b> for a correct area statement
<b>26</b>	420	<b>5</b>	<b>M1</b> for $[CB =] \sqrt{4^2 + (9-6)^2}$ <b>M1</b> for <i>their CB</i> from Pythagoras $\times 15$ <b>M1</b> for $[2 \times] \frac{1}{2}(6+9) \times 4$ <b>M1</b> for $4 \times 15, 9 \times 15, 6 \times 15$ with intention to add