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From the June 2007 session, as part of CIE's continual commitment to maintaining best practice in assessment, CIE has begun to use different variants of some question papers for our most popular assessments with extremely large and widespread candidature, The question papers are closely related and the relationships between them have been thoroughly established using our assessment expertise. All versions of the paper give assessment of equal standard.

The content assessed by the examination papers and the type of questions are unchanged.

This change means that for this component there are now two variant Question Papers, Mark Schemes and Principal Examiner's Reports where previously there was only one. For any individual country, it is intended that only one variant is used. This document contains both variants which will give all Centres access to even more past examination material than is usually the case.

The diagram shows the relationship between the Question Papers, Mark Schemes and Principal Examiner's Reports.

Question Paper

Introduction First variant Question Paper Second variant Question Paper

Mark Scheme

Introduction
First variant Mark Scheme
Second variant Mark Scheme

Principal Examiner's Report

Introduction
First variant Principal Examiner's Report
Second variant Principal Examiner's Report

Who can I contact for further information on these changes?

Please direct any questions about this to CIE's Customer Services team at: international@cie.org.uk

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UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2007 question paper

0580/0581 MATHEMATICS

0580/01 and 0581/01 Paper 1 (Core), maximum raw mark 56

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.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes must be read in conjunction with the question papers and the report on the examination.

• CIE will not enter into discussions or correspondence in connection with these mark schemes.

CIE is publishing the mark schemes for the May/June 2007 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

First variant Mark Scheme

Page 2	Mark Scheme	Syllabus
	IGCSE – May/June 2007	0580/0581

•		Mark Scheme Syllabus			
		IGCSE – May/Jun	e 2007		0580/0581
1		-2	B1		
2		$0.58 < \frac{3}{5} < 62(\%)$	B1		Syllabus 0580/0581 aswer in alternative form equivalence is clear.
3		7 (h) 55 (min)	B1		
4		24	B1		
5		Negative	B1		
6	(a)	Jan	B1	Not just -	10.2 but ignore if included
	(b)	26(.0)	B1	Allow –2	6
7		145 + 180 or	M1		
		360 – their acute angle at L			learly indicated in working
				or diagrar	n.
		325	A1		
8	(a)	$\left(-1\right)$	B1		oth answers with
					nts of (a) and coordinates of
	<i>a</i> >	$ \begin{pmatrix} -1 \\ 3 \end{pmatrix} $ (-2, -1)	D1	(b) revers	
	(b)	(-2, -1)	B1	i.e. $\begin{pmatrix} 3 \\ -1 \end{pmatrix}$	for (a) and $(-1, -2)$ for (b)
9		$2x^2 + 3xy$ or $x(2x + 3y)$	B2	B1 for 3 <i>x</i>	$x^2 - x^2 + 3xy$ or
				x(3x-x+	-3y) seen.
					$nswer 2x^2 - 3xy oe$
				or $2x^2$ see	n in final answer of 2 term
10		75°	B2		° or 50° seen on diagram o
					orking that angle BCD is
					gle DCE is 50° .
1 1	(-)	E mail at a mail	D1		- arc seen in diagram.
11	(a)	Equilateral (Triangular) prigm	B1 B1	Not equal	
	(b)	(Triangular) prism	BI	(or triang	ed must be triangular
				(or urang.	io <i>)</i> .
		1		1	

First variant Mark Scheme

Page 3	Mark Scheme	Syllabus
	IGCSE – May/June 2007	0580/0581

age 3 Mark Scheme			Syllabus
	IGCSE – May/J	une 2007	0580/0581
2	(y =) 3x - 1	B2	Syllabus 0580/0581 B1 for $mx - 1$ or $3x + c$ where m and c are integers with $m \ne 0$ and $c \ne 5$. SC2 for 4^{10} , 2^3 and 5^{-2} . SC1 for two of the above
3 (a) (b) (c)	10 3 -2	B1 B1 B1	SC2 for 4 ¹⁰ , 2 ³ and 5 ⁻² . SC1 for two of the above
4 (a)	250 ÷ 1.19886 208 to 210.084	M1 A1	Allow division by 1.19 to 1.2
(b)	1.20	B1	One and only one zero is essential
	$180 - \frac{360}{6}$ (x =) 120 (y =) 150	M1 A1 B1ft	Alt. $(2 \times 6 - 4) \times 90 \div 6$ oe $360 - (90 + \text{their } x) \text{ ft if positive}$ ww. reversed answers 2 marks. Alt. $(y \text{ first}) \frac{360}{6} + 90 \text{ M1 150 A1}$ $(x=) 120 \text{ B1ft}$
` ′	$15 \times 5.40 + 5 \times 3 - 80$ 16	M1 A1	
(b)	20	B1ft	ft their (a) ÷ 80 × 100 (provided profit >0) If 0 scored in parts (a) and (b) allow SC1 for 96 seen

First variant Mark Scheme

age	4	Mark Scheme			Syllabus
		IGCSE – May/June 2	2007		0580/0581
					Syllabus 0580/0581 5.1 ×10 ⁿ where n is an intege than 1 tor form; penalise 1 mark rm. vert to given value.
17	(a)	5.1 ×10 ⁸	B2	B1 for 5	5.1×10^n where <i>n</i> is an integer
				greater	than 1
					tor form; penalise 1 mark
	(b)	20.4 v. their (a) / 100		each for	rm. vert to given value.
	(6)	$29.4 \times \text{their (a)} / 100$ art 1.5×10^8 oe	M1		does not need to be in
		art 1.5 × 10 0C	A1cao		d form. (e.g. 149940000)
					SC1 for 3.6×10^8
18	(a)	$(AB^2 =) 1200^2 + 900^2$	M1		ed by 2250000 seen
		1500	A1		art 1500 if sin or cos used and
		tan (=) 900/1200 oe	M1		e before (a). or cos method allow their (a)
	(b)	art 36.9	Alcao	for M1	
	(a)	263	B1	54 14	
	(b)	Correct construction with arcs	B2		nout arcs, accuracy 2mm c'correct' mirror image with
				arcs.	correct mirror image with
	(c)	109.5	B1		
					[12
20	(a) (i)	50	B1		[12]
	(a) (ii)	Sum divided by 15	M1	Indicate	ed by answer of 43 to 45 or
	. , . ,	•			tion shown.
		42.07		(Total =	= 659)
	(a) (;;)	43.9(3)	A1	Must be	a at least 7 values
	(a) (iii)	Attempt to order estimates 47	M1 A1	iviust be	e at least 7 values
	(b)	(Low) Extreme values oe	B1	Two ve	ry low values etc.
					ot refer to extreme high
				values.	
21	(a)	30 + 60 (seconds)	M1	SC1 for	30 or 60 seen.
		90 (seconds)	A1		
	(b)	D to E	B1		ear indication of section
	(c) (i) (c) (ii)	1280(m) 400 used	B1 B1		1270 to 1280 dicated by
	(c) (II)	100 uscu	DI		(400 – their (a)).
		their (c)(i) divided by 400 (only)	M1		(· · · · · · · (· · // · · · · · · · ·
		3.2			
			A1ft	ft corre	ct to 3 significant figures.
	_				[13

Second variant Mark Scheme

Page 5	Mark Scheme	Syllabus
	IGCSE – May/June 2007	0580/0581

Solution	IGCSE – May/June 2007 0580/0581
5NegativeB16(a)JanB1Not just -10.2 but ignore if included.(b) 13.2 B1Allow -13.2 7 $125 + 180$ or $360 - \text{their}$ acute angle at L 305 M1Must be clearly indicated in working or diagram.8(a) $\begin{pmatrix} -1\\3 \end{pmatrix}$ B1SC1 for both answers with components of (a) and co-ordinates of (b) reversed.(b) $(-2, -1)$ B1i.e. $\begin{pmatrix} 3\\-1 \end{pmatrix}$ for (a) and $(-1, -2)$ for (b)9 $3x^2 + 2xy$ or $x(3x + 2y)$ B2B1 for $4x^2 - x^2 + 2xy$ or $x(4x - x + 2y)$ seen. SC1 for answer $3x^2 - 2xy$ oe or $3x^2$ seen in final answer of 2 terms.10 80° B2B1 for 35° or 45° seen on diagram or clear in working that angle BCD is 35° or angle DCE is 45° . Minimum - arc seen in diagram.11(a)Equilateral (b)B1Not equal.If qualified must be triangular	
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5NegativeB16(a)JanB1Not just -10.2 but ignore if included.(b) 13.2 B1Allow -13.2 7 $125 + 180$ or $360 - \text{their}$ acute angle at L 305 M1Must be clearly indicated in working or diagram.8(a) $\begin{pmatrix} -1\\3 \end{pmatrix}$ B1SC1 for both answers with components of (a) and co-ordinates of (b) reversed.(b) $(-2, -1)$ B1i.e. $\begin{pmatrix} 3\\-1 \end{pmatrix}$ for (a) and $(-1, -2)$ for (b)9 $3x^2 + 2xy$ or $x(3x + 2y)$ B2B1 for $4x^2 - x^2 + 2xy$ or $x(4x - x + 2y)$ seen. SC1 for answer $3x^2 - 2xy$ oe or $3x^2$ seen in final answer of 2 terms.10 80° B2B1 for 35° or 45° seen on diagram or clear in working that angle BCD is 35° or angle DCE is 45° . Minimum - arc seen in diagram.11(a)Equilateral (b)B1Not equal.If qualified must be triangular	$0.79 < \frac{4}{5} < 81\%$ B1 Accept answer in alternative form provided equivalence is clear.
5NegativeB16(a)JanB1Not just -10.2 but ignore if included.(b) 13.2 B1Allow -13.2 7 $125 + 180$ or $360 - $ their acute angle at L 305 M1Must be clearly indicated in working or diagram.8(a) $\begin{pmatrix} -1 \\ 3 \end{pmatrix}$ B1SC1 for both answers with components of (a) and co-ordinates of (b) reversed.(b) $(-2, -1)$ B1i.e. $\begin{pmatrix} 3 \\ -1 \end{pmatrix}$ for (a) and $(-1, -2)$ for (b)9 $3x^2 + 2xy$ or $x(3x + 2y)$ B2B1 for $4x^2 - x^2 + 2xy$ or $x(4x - x + 2y)$ seen. SC1 for answer $3x^2 - 2xy$ oe or $3x^2$ seen in final answer of 2 terms.10 80° B2B1 for 35° or 45° seen on diagram or clear in working that angle BCD is 35° or angle DCE is 45° . Minimum - arc seen in diagram.11(a)Equilateral (b)B1Not equal. If qualified must be triangular	7 (h) 45 (min) B1
6(a)JanB1Not just -10.2 but ignore if included.(b) 13.2 B1Allow -13.2 7 $125 + 180$ or $360 -$ their acute angle at L 305 Must be clearly indicated in working or diagram.8(a) $\begin{pmatrix} -1\\3 \end{pmatrix}$ B1SC1 for both answers with components of (a) and co-ordinates of (b) reversed.(b) $(-2, -1)$ B1E1For (a) and $(-1, -2)$ for (b)9 $3x^2 + 2xy$ or $x(3x + 2y)$ B2B1 for $4x^2 - x^2 + 2xy$ or $x(4x - x + 2y)$ seen. SC1 for answer $3x^2 - 2xy$ oe or $3x^2$ seen in final answer of 2 terms.1080°B2B1 for 35° or 45° seen on diagram or clear in working that angle BCD is 35° or angle DCE is 45° . Minimum - arc seen in diagram.11(a)Equilateral (b)B1Not equal. If qualified must be triangular	24 B1
(b) 13.2 B1 Allow -13.2 Must be clearly indicated in working or diagram. [9] 8 (a) $\begin{bmatrix} -1 \\ 3 \end{bmatrix}$ (b) $\begin{bmatrix} -2 \\ -1 \end{bmatrix}$ B1 SC1 for both answers with components of (a) and co-ordinates of (b) reversed. i.e. $\begin{bmatrix} 3 \\ -1 \end{bmatrix}$ for (a) and $\begin{bmatrix} -1 \\ -1 \end{bmatrix}$ for (b) 9 $\begin{bmatrix} 3x^2 + 2xy \text{ or } x(3x + 2y) \end{bmatrix}$ B2 B1 for $4x^2 - x^2 + 2xy \text{ or } x(4x - x + 2y)$ seen. SC1 for answer $3x^2 - 2xy$ oe or $3x^2$ seen in final answer of 2 terms. 10 B2 B1 for 35° or 35° or angle 35° or	Negative B1
The second of	(a) Jan B1 Not just -10.2 but ignore if included
360 - their acute angle at L 305 A1 Must be clearly indicated in working or diagram. [9] 8	
305 A1 or diagram.	
8 (a) $\begin{bmatrix} -1 \\ 3 \end{bmatrix}$ B1 SC1 for both answers with components of (a) and co-ordinates of (b) reversed. 9 $\begin{bmatrix} 3x^2 + 2xy \text{ or } x(3x + 2y) \end{bmatrix}$ B2 B1 for $4x^2 - x^2 + 2xy \text{ or } x(4x - x + 2y)\text{seen.}$ SC1 for answer $3x^2 - 2xy \text{ oe or } 3x^2 \text{ seen in final answer of 2 terms.}$ 80° B2 B1 for 35° or 35° or 35° or angle	
8 (a) $\begin{bmatrix} -1 \\ 3 \end{bmatrix}$ (b) $\begin{bmatrix} -2, -1 \end{bmatrix}$ (c) B1 SC1 for both answers with components of (a) and co-ordinates of (b) reversed. 1. i.e. $\begin{bmatrix} 3 \\ -1 \end{bmatrix}$ for (a) and $\begin{bmatrix} -1, -2 \end{bmatrix}$ for (b) 9 $\begin{bmatrix} 3x^2 + 2xy \text{ or } x(3x + 2y) \end{bmatrix}$ B2 B1 for $4x^2 - x^2 + 2xy \text{ or } x(4x - x + 2y)$ seen. SC1 for answer $3x^2 - 2xy$ oe or $3x^2$ seen in final answer of 2 terms. 10 80° B2 B1 for 35° or 45° seen on diagram or clear in working that angle BCD is 35° or angle DCE is 45° . Minimum - arc seen in diagram. 11 (a) Equilateral B1 Not equal. (b) (Triangular) prism B1 If qualified must be triangular	
8(a) $\begin{pmatrix} -1 \\ 3 \end{pmatrix}$ B1SC1 for both answers with components of (a) and co-ordinates of (b) reversed.(b) $(-2,-1)$ B1i.e. $\begin{pmatrix} 3 \\ -1 \end{pmatrix}$ for (a) and $(-1,-2)$ for (b)9 $3x^2 + 2xy$ or $x(3x + 2y)$ B2B1 for $4x^2 - x^2 + 2xy$ or $x(4x - x + 2y)$ seen. SC1 for answer $3x^2 - 2xy$ oe or $3x^2$ seen in final answer of 2 terms.1080°B2B1 for 35° or 45° seen on diagram or clear in working that angle BCD is 35° or angle DCE is 45° . Minimum - arc seen in diagram.11(a)Equilateral (Triangular) prismB1Not equal. If qualified must be triangular	305 A1
components of (a) and co-ordinates of (b) reversed. B1 $(-2,-1)$ B1 $3x^2 + 2xy \text{ or } x(3x+2y)$ B2 B1 for $4x^2 - x^2 + 2xy \text{ or } x(4x-x+2y)$ seen. SC1 for answer $3x^2 - 2xy$ oe or $3x^2$ seen in final answer of 2 terms. B2 B3 for $3x^2 + 2xy + 2xy + 2xy + 3xy $	
(b) $(-2,-1)$ B1 i.e. $\begin{pmatrix} 3 \\ -1 \end{pmatrix}$ for (a) and $(-1,-2)$ for (b) $3x^2 + 2xy \text{ or } x(3x+2y)$ B2 B1 for $4x^2 - x^2 + 2xy$ or $x(4x-x+2y)$ seen. SC1 for answer $3x^2 - 2xy$ oe or $3x^2$ seen in final answer of 2 terms. B2 B1 for 35° or 45° seen on diagram or clear in working that angle BCD is 35° or angle DCE is 45° . Minimum - arc seen in diagram. B1 (a) Equilateral (b) Equilateral (Triangular) prism B1 Not equal. B1 If qualified must be triangular	(a) $\begin{pmatrix} -1 \end{pmatrix}$ B1 SC1 for both answers with
(b) $(-2,-1)$ B1 i.e. $\begin{pmatrix} 3 \\ -1 \end{pmatrix}$ for (a) and $(-1,-2)$ for (b) $3x^2 + 2xy \text{ or } x(3x+2y)$ B2 B1 for $4x^2 - x^2 + 2xy$ or $x(4x-x+2y)$ seen. SC1 for answer $3x^2 - 2xy$ oe or $3x^2$ seen in final answer of 2 terms. B2 B3 for 35° or 45° seen on diagram or clear in working that angle BCD is 35° or angle DCE is 45° . Minimum - arc seen in diagram. B1 (a) Equilateral (b) Equilateral (Triangular) prism B1 Not equal. B1 If qualified must be triangular	$\begin{bmatrix} & & & \\ & & & \end{bmatrix}$ components of (a) and co-ordinates
1.e. $\begin{bmatrix} -1 \end{bmatrix}$ for (a) and $(-1, -2)$ for (b) 9 $3x^2 + 2xy$ or $x(3x + 2y)$ B2 B1 for $4x^2 - x^2 + 2xy$ or $x(4x - x + 2y)$ seen. SC1 for answer $3x^2 - 2xy$ oe or $3x^2$ seen in final answer of 2 terms. B2 B1 for 35° or 45° seen on diagram or clear in working that angle BCD is 35° or angle DCE is 45° . Minimum - arc seen in diagram. B1 (a) Equilateral (b) Equilateral B1 Not equal. B1 If qualified must be triangular	(c) reversed.
$x(4x - x + 2y) \text{seen.}$ SC1 for answer $3x^2 - 2xy$ oe or $3x^2$ seen in final answer of 2 terms. B2 B1 for 35° or 45° seen on diagram or clear in working that angle BCD is 35° or angle DCE is 45° . Minimum - arc seen in diagram. B1 Not equal. (Triangular) prism B1 If qualified must be triangular	(b) $\begin{bmatrix} (-2,-1) \\ \end{bmatrix}$ i.e. $\begin{bmatrix} 3 \\ -1 \end{bmatrix}$ for (a) and $(-1,-2)$ for (b)
$x(4x - x + 2y) \text{seen.}$ SC1 for answer $3x^2 - 2xy$ oe or $3x^2$ seen in final answer of 2 terms. B2 B1 for 35° or 45° seen on diagram or clear in working that angle BCD is 35° or angle DCE is 45° . Minimum - arc seen in diagram. B1 Not equal. (Triangular) prism B1 If qualified must be triangular	$3x^2 + 2xy$ or $x(3x + 2y)$ B2 B1 for $4x^2 - x^2 + 2xy$ or
SC1 for answer $3x^2 - 2xy$ oe or $3x^2$ seen in final answer of 2 terms. B2 B1 for 35° or 45° seen on diagram or clear in working that angle BCD is 35° or angle DCE is 45° . Minimum - arc seen in diagram. B1 Not equal. (b) Equilateral B1 Not equal. B1 If qualified must be triangular	
B2 B1 for 35° or 45° seen on diagram or clear in working that angle BCD is 35° or angle DCE is 45°. Minimum - arc seen in diagram. B1 Not equal. (Triangular) prism B1 If qualified must be triangular	SC1 for answer $3x^2 - 2xy$ oe or
clear in working that angle BCD is 35° or angle DCE is 45°. Minimum - arc seen in diagram. 11 (a) Equilateral (b) (Triangular) prism B1 Not equal. B1 If qualified must be triangular	$3x^2$ seen in final answer of 2 terms.
35° or angle DCE is 45°. Minimum - arc seen in diagram. 11 (a) Equilateral B1 Not equal. (Triangular) prism B1 If qualified must be triangular	
Minimum - arc seen in diagram. 11 (a) Equilateral B1 Not equal. (b) (Triangular) prism B1 If qualified must be triangular	
11 (a) Equilateral B1 Not equal. (b) (Triangular) prism B1 If qualified must be triangular	
(b) (Triangular) prism B1 If qualified must be triangular	
(or triangle).	
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Second variant Mark Scheme

Page 6	Mark Scheme	Syllabus	
	IGCSE – May/June 2007	0580/0581	

age 6	Mark Sche		Syllabus er 0580/0581
			SCAN,
12	(y =) 2x - 3 oe	B2	Syllabus 0580/0581 B1 for $mx - 3$ or $2x + c$ where m and c are integers with $m \ne 0$ and $c \ne 3$ SC2 for 3^9 , 2^5 and 6^{-2} . SC1 for two of the above
13 (a) (b) (c)	9 5 -2	B1 B1 B1	SC2 for 3 ⁹ , 2 ⁵ and 6 ⁻² . SC1 for two of the above
14 (a)	270 ÷ 1.19886 225 to 226.891	M1 A1	Allow division by 1.19 to 1.2
(b)	1.20	B1	One and only one zero is essential.
15	$180 - \frac{360}{6}$ (x =) 120 (y =) 150	M1 A1 B1ft	Alt. $(2 \times 6 - 4) \times 90 \div 6$ 360 - (90 + their x) ft if positive ww. reversed answers 2 marks. Alt. $(y \text{ first}) \frac{360}{6} + 90 \text{ M1 150 A1}$ (x=) 120 B1ft
(a) (b)	15 × 5.80 + 5 × 3 – 90 12 13(.3)	M1 A1 B1ft	ft their (a) ÷ 90 × 100 (provided profit >0) If 0 scored in parts (a) and (b) allow SC1 for 102 seen.
1	1		[14]

Second variant Mark Scheme

Page 7		Mark Scheme			Syllabus
		IGCSE – May/June	2007		0580/0581
15	()	T 1 108	D2	D1 6 5	1 10" 1
17	(a) (b)	5.1 ×10 ⁸ 29.4 × their (a)/ 100	B2 M1	greater the Calculate form. May reven	or form; penalise 1 mark eachert to given value.
		art 1.5×10^8 oe	Alcao	standard	does not need to be in form. (e.g. 149940000) C1 for 3.6×10^8
18	(a)	$(AB^2 =) 1100^2 + 800^2$ art 1360	M1 A1	Indicated	d by 1850000 seen.
	(b)	tan (=) (800/1100) oe 36 to 36.03	M1 A1cao	For sin of for M1 of	or cos method allow their (a) only.
19	(a)	276	B1		
	(b)	Correct construction with arcs	B2		out arcs, accuracy 2mm 'correct' mirror image with
	(c)	119.5	B1	ares.	
			I	1	[12
20	(a) (i) (a) (ii)	Sum divided by 15	B1 M1		d by answer of 43 to 45 or on shown.
	(a)(iii)	44.1(3) Attempt to order estimates	A1 M1	Must be	at least 7 values
	(b)	(Low) Extreme values oe	A1 B1		y low values etc. t refer to extreme high values
21	(a)	30 + 60 (seconds) 90 (seconds)	M1 A1	SC1 for	30 or 60 seen.
	(b)	D to E	B1	Any clea	ar indication of section.
	(c) (i)	1280 (m)	B1	Allow 12	270 to 1280
	(c) (ii)	400 used	B1		icated by 400 – their (a)).
		their (c)(i) divided by 400(only) 3.2	M1		· · · · · · · · · · · · · · · · · · ·
			A1ft	ft correct	t to 3 significant figures.