CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the October/November 2012 series

0607 CAMBRIDGE INTERNATIONAL MATHEMATICS

0607/05 Paper 5 (Core), maximum raw mark 24

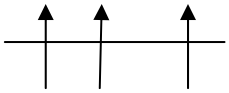
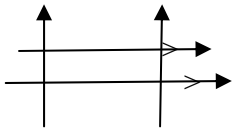
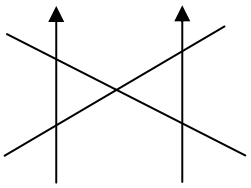
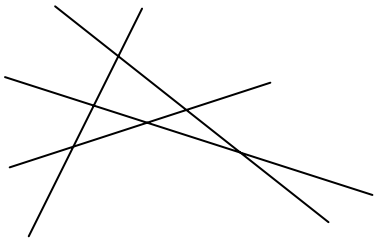
This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began,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

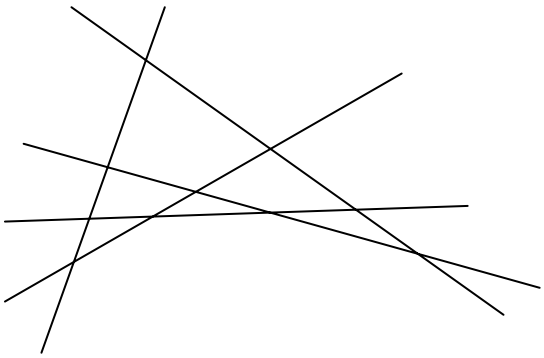
Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

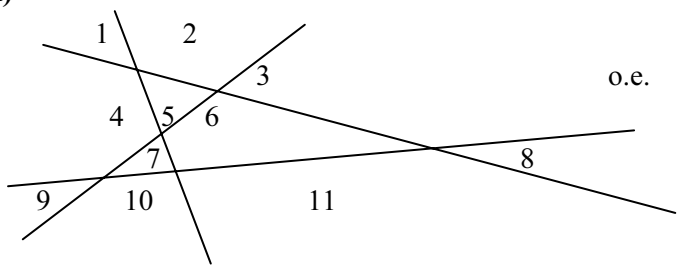
Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the October/November 2012 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

INVESTIGATION STRAIGHT LINES

1	parallel	**1**		
2	**(a)**  o.e.	**1**	4 lines and 3 points **C**	If arrows on parallels condone non-parallel lines once, otherwise 'parallel' lines must not meet inside the answer space. If arrows on non-parallels condone once. Allow diagrams where crossing points coincide Communication opportunity for parallel arrows drawn correctly on any one diagram
	(b)  o.e.	**1**	4 lines and 4 points **C**	
	(c) 	**1**	4 lines and 5 points **C**	
	(d) 	**1**	4 lines and 6 points	

3	**(a)** cross all lines o.e.	**1**	'other lines' 'through all lines' 'cuts at 4 (distinct) points' 'not parallel to any if the others'	Ignore extra s Statements about triangles are insufficient distinct points, if not indicated here must be shown on diagram in (b)(i)
	(b) 	**1**	5 lines and 10 points	Allow freehand lines but must not imply another intersection
	(c) 10	**1FT**	**FT** for 5 lines only	
4	<table><tr><td>Number of lines</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td></tr><tr><td>Maximum number of crossing points</td><td>0</td><td>**1**</td><td>3</td><td>6</td><td>**10**</td><td>15</td><td>**21**</td><td>28</td><td>**36**</td></tr></table>	**4**	**B1** for each	
5	**(a)** number of lines	**1**		
	(b) $\frac{1}{2}\times 8(8-1)=28$	**1**		Must see all of this at any stage
	(c) 16	**1**	**C** opportunity	C for $n^2 - n - 240 = 0$ o.e. OR 45, 55, 66, 78, 91, 105, 120

6	**(a)** **(i)**  o.e.	**1**	4 lines and 11 regions	
	(ii) 11	**1FT**	**FT** for 4 lines only	
	(b) <table><tr><td>Number of lines</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr><tr><td>Maximum number of regions</td><td>2</td><td>4</td><td>7</td><td>**11**</td><td>16</td><td>22</td><td>**29**</td></tr></table>	**2**	**B1** **B1**	
	(c) 232 + 22 OR sequence extended = 254	**1** **1**		
	(d) **(i)** ½(*n*)(*n* – 1) + *n* + 1 o.e. e.g. ½*n*(*n* + 1) + 1 or ½n^2 + ½*n* + 1	**1**		
	(ii) ½(6)(6 – 1) + 6 + 1 o.e. leading to 22	**1**		Substitution of 6 in correct formula
		1	**C1** for one opportunity taken	Communication seen in one of 2(a),(b), (c) or 5(c)
				[Total: 24]