

**Annual Examinations for Secondary Schools 2014**

**FORM 2**

**MATHEMATICS**

**MARKING SCHEME**

**Notes for Marking of Scripts**

*Types of Marks*

- **M**(ethod) marks are awarded for knowing a correct method of solution and attempting to apply it. Method marks cannot be lost for arithmetic mistakes. They can only be awarded if the method used would have led to the correct answer had not an arithmetic mistake been made. In general a correct method is implied by a correct answer and therefore **when a correct answer is given and no work is shown, no method marks are lost.**
- **A**(ccuracy) marks are given for correct answer only (c.a.o.) Incorrect answers, even though nearly correct, score no marks. Accuracy marks are also awarded for incorrect answers which are correctly followed through (f.t.) from an incorrect previous answer, **provided that f.t. is indicated in the marking scheme.** No method (M) or accuracy (A) marks are awarded when a wrong method leads to a correct answer.
- **B** marks are accuracy marks awarded for specific results or statements independent of the method used.

*Misreading*

M marks can still be earned (unless that part of the question is trivialized) but the final A marks are lost.

*Crossed out working*

An answer or working that is crossed out and not replaced is marked as if it was not crossed out. If the answer or working is replaced, then the crossed out answer or working is ignored and should not be considered for marking.

*Units*

In general, missing or inaccurate units are not penalised unless otherwise indicated in the marking scheme.

*Other*

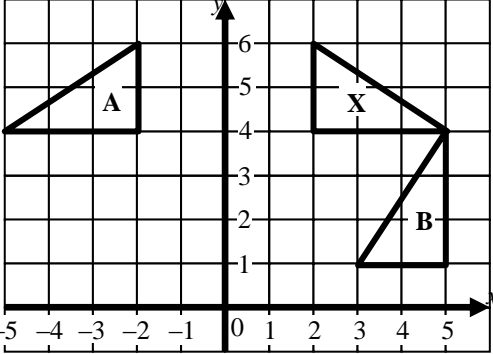
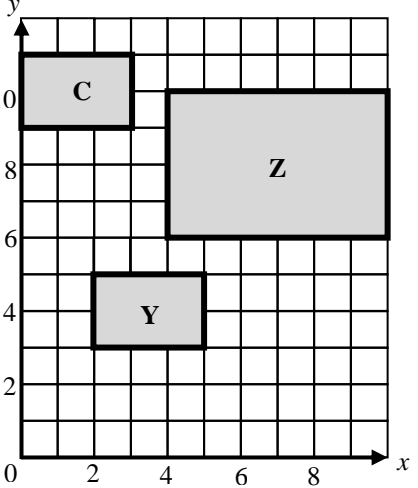
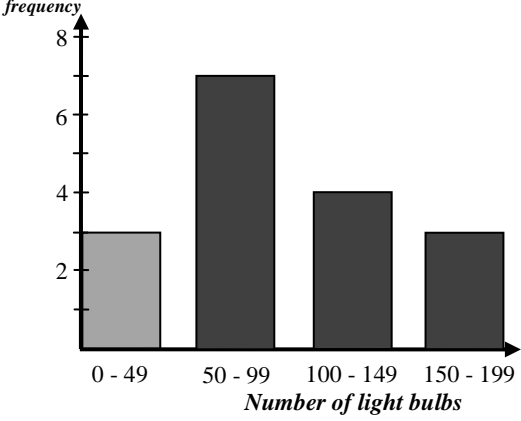
- Incorrect working or statement following a correct answer is ignored.
- Marks are not sub-divisible; no half marks may be awarded.
- Other abbreviations used:
  - o.e. (or equivalent)
  - e.e.o.o. (each error or omission)
- Markers are advised to indicate the M, A or B marks awarded in the body of the script and then write their total in the margin. The total mark for each question should be written in the table included at the top of page 1 of the main paper. This measure facilitates the moderation of papers.

**Non Calculator Paper (25 marks)**

Que.	Requirements	Mark	Additional Guidance	Lev.	
<b>1</b>	$17 - 2 \times 7$ $17 - 14$ 3	M1 A1	<b>2</b>	7	
<b>2</b>	a) i) 1, 2, 4, 8 ii) 1, 2, 4, 5, 10, 20	B1 B1	<b>3</b>	7	
	b) 4	A1 f.t.		7	
<b>3</b>	1	B1	<b>1</b>	7	
<b>4</b>	C) $220^\circ$	B1	<b>1</b>	8	
<b>5</b>	$5 + 10 + 5 + \dots + 8 = 52$ $52 \div 8$ 6.5	M1 A1	<b>2</b>	7	
<b>6</b>	a) $9 \times 5 = 45 \text{ cm}^2$	B1	<b>3</b>	7	
	b) $45 \div 2$ $22.5 \text{ cm}^2$	M1 A1 f.t.		f.t. from part a)	7
<b>7</b>	b) 5	B1	<b>5</b>	7	
	c) D	B1		7	
	d) 2 -6	B1 B1		7	
	e) B	B1		7	
<b>8</b>	Because you can write 196 as $(2 \times 7) \times (2 \times 7)$ i.e. $14^2$	M1	<b>1</b>	Or any other valid reason 8	
<b>9</b>	$6a - 15 - 4$ $6a - 19$	M1 A1	<b>2</b>	7	
<b>10</b>	a) $210 \div 7$ or $210 \times \frac{1}{7}$ 30	M1 A1	<b>5</b>	7	
	b) $\frac{1}{5} \div 2 \div 4$	M1		o.e.	8
	$\frac{1}{5} \times \frac{1}{8}$	M1		o.e.	
	$\frac{1}{40}$	A1			

**Main Paper (75 marks)**

Que.	Requirements	Mark	Additional Guidance	Lev.
<b>1</b>	a) $80^\circ$ Angles on a straight line add up to $180^\circ$	B1 B1	o.e. Accept any other valid reason o.e.	7
	b) $70^\circ$ Angles in a triangle add up to $180^\circ$	B1 B1		6
	c) $290^\circ$ Angles at a point add up to $360^\circ$	B1 B1		6
<b>2</b>	a) i) $A = 7.54$ $B = 7.52$ $C = 7.575$  ii) $A > B, B < C, A < C.$	B1 B1 B1  B2 f.t.	-1 e.e.o.o.	7
	b) i) $\frac{3}{7}$ ii) 0.43	B1 B1		7
<b>3</b>	a) $100 : 60 : 40$ $10 : 6 : 4$ $5 : 3 : 2$	M1  A1	Accept any other valid method	7
	b) $5 + 3 + 2 = 10$ $\frac{30}{10} = 3$  $3 \times 2 = 6$	M1  A1		4
<b>4</b>	a) 3	B1		7
	b) Method for finding LCM 60	M1 A1		7
	c) A, B and D are equivalent to $6a + 10$ C is equivalent to $6a + 9$ C is not equivalent to the rest	M1 M1 A1		6
<b>5</b>	a) Gradient is $\frac{\text{difference in } y}{\text{difference in } x}$ $\frac{3}{1}$ 3	M1 M1 A1	Seen or implied Or other equivalent fraction	7
	b) -1	B1		7
	c) $y = 3x - 1$	B1 f.t.		7

<p><b>6</b></p>	<p>a)</p>  <p>b) i)</p>  <p>ii) '2' '(0, 0)'</p>	<p>B1 M1 A1 M1 A1 B1 B1</p>	<p>Correct image A Rotation of X about any point Correct image B</p> <p><b>7</b></p> <p>Either 2 squares left or 6 squares up Correct image C Or 'O'</p>	<p>7</p>															
<p><b>7</b></p>	<p>a)</p> <table border="1" data-bbox="311 1182 785 1456"> <thead> <tr> <th>Number of light bulbs</th> <th>Tally</th> <th>Frequency</th> </tr> </thead> <tbody> <tr> <td>0 - 49</td> <td>   </td> <td>3</td> </tr> <tr> <td>50 - 99</td> <td>    </td> <td><b>7</b></td> </tr> <tr> <td>100 - 149</td> <td>    </td> <td><b>4</b></td> </tr> <tr> <td>150 - 199</td> <td>   </td> <td><b>3</b></td> </tr> </tbody> </table> <p>b)</p>  <p>c) <math>\frac{4}{17}</math></p>	Number of light bulbs	Tally	Frequency	0 - 49		3	50 - 99		<b>7</b>	100 - 149		<b>4</b>	150 - 199		<b>3</b>	<p>B1 B1 B1 A3 f.t. M1 A1</p>	<p>1 mark for every 2 correct entries</p> <p><b>8</b></p> <p>1 mark for each bar (Do not deduct marks if bars touch each other)</p> <p>Correct numerator or denominator</p>	<p>7</p>
Number of light bulbs	Tally	Frequency																	
0 - 49		3																	
50 - 99		<b>7</b>																	
100 - 149		<b>4</b>																	
150 - 199		<b>3</b>																	

<b>8</b>	a)	BC is 7.3 cm ( $\pm 2$ mm) Angle C is $32^\circ$ ( $\pm 2^\circ$ ) Angle B is $90^\circ$ ( $\pm 2^\circ$ ) and triangle ABC formed	M1 M1 A1	<b>4</b>		7
	b)	4.6 ( $\pm 0.2$ ) metres	B1			7
<b>9</b>	a)	i) $12k$ ii) $10m$	B1 B1	<b>5</b>		7
	b)	Kaya: $12 \times 21 = 252$ Mattias: $10 \times 25 = 250$ Kaya has the larger number of coins	M1 M1 A1			7
<b>10</b>	a)	$\frac{20}{100} \times 9,000,000$  1,800,000	M1 A1	<b>6</b>		7
	b)	$600 - 372 = 228$  $\frac{228}{600} \times 100\%$  38%	M1 M1 M1 A1		Dividing by 600 (seen or implied) Multiplying by 100% (seen or implied)	7
<b>11</b>	a)	$5.1 \times 5.1$ $26.01 \text{ cm}^2$	M1 A1	<b>8</b>		7
	b)	$8.5 - 5.1 = 3.4$ $3.4 \div 2 = 1.7 \text{ cm}$	M1 A1			8
	c)	$9.7 - 5.1 = 4.6$ Area = $\frac{1}{2}$ base $\times$ height = $0.5 \times 8.5 \times 4.6$ = $19.55 \text{ cm}^2$	M1 M1 M1 A1		Finding the height of the triangle Seen or implied Seen or implied	7
<b>12</b>			M1 A1  M1 A1	<b>4</b>	Constructing the bisector (arcs must be shown)  Constructing the perpendicular (arcs must be shown)  Bisector and perpendicular may/ may not intersect	7
<b>13</b>	a)	5	B1	<b>5</b>		7
	b)	55	B1			7
	c)	Horizontal. Whenever L is an even number, the line is horizontal.	B1			7
	d)	Multiply L by 5, then add 5 to get the length of the line.	M1 A1		For 'multiply L by 5' o.e.	7