2009 Mathematics

Standard Grade General

Finalised Marking Instructions

Special Instructions

1 The main principle in marking scripts is to give credit for the skills which have been demonstrated. Failure to have the correct method may not preclude a pupil gaining credit for the calculations involved or for the communication of the answer.

Care should be taken to ensure that the mark for any question or part question is entered in the correct column, as indicated by the horizontal line.

Where a candidate has scored zero marks for any question attempted, "0" should be shown against the answer in the appropriate column.

It is of great importance that the utmost care should be exercised in adding up the marks. Where appropriate, all summations for totals and grand totals must be carefully checked.

2 The answer to one part, correct **or incorrect** must be accepted as a basis for subsequent dependent parts of a question. Full marks in the dependent part is possible if it is of equivalent difficulty.

3 Do not penalise insignificant errors. An insignificant error is one which is significantly below the level of attainment being assessed.

eg An error in the calculation of 16 + 15 would not be penalised at Credit Level.

4 Working after a correct answer should **only** be taken into account if it provides **firm** evidence that the requirements of the question have not been met.

5 In certain cases an error will ease subsequent working. **Full** credit cannot be given for this subsequent work but **partial** credit may be given.

6 Accept answers arrived at by inspection or mentally, where it is possible for the answer to have been so obtained.

7 Do not penalise omission or misuse of units unless marks have been specifically allocated to units.

8 A wrong answer without working receives no credit unless specifically mentioned in the marking scheme.

The rubric on the outside of the Papers emphasises that working must be shown. In general markers will only be able to give credit to partial answers if working is shown. However there may be a few questions where partially correct answers unsupported by working can still be given some credit. **Any such instances will be stated in the marking scheme.**

9 Acceptable alternative methods of solution can only be given the marks specified, ie a more sophisticated method cannot be given more marks.

Note that for some questions a method will be specified.

10 In general do not penalise the same error twice in the one question.

11 Accept legitimate variations in numerical/algebraic questions.

12 Do not penalise bad form eg $\sin x^0 = 0{\cdot}5 = 30^0$.

13 A transcription error is not normally penalised except where the question has been simplified as a result.

2009 Mathematics SG − General Level − Paper 1

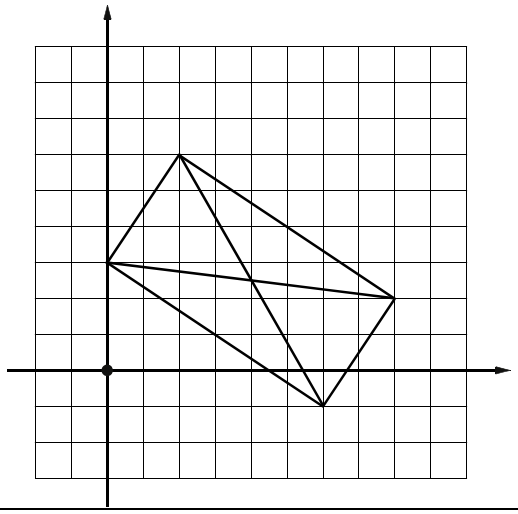
Marking Instructions

Award marks in whole numbers only

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
1 (a)	**Ans: 2·44** •[1] correct subtraction	•[1] 2·44 **1K**
(b)	**Ans: 138 000** •[1] correct multiplication	•[1] 138 000 **1K**
(c)	**Ans: 36·7** •[1] correct division	•[1] 36·7 **1K**
(d)	**Ans: 43·2** •[1] find 10% or equivalent •[2] correct multiplication	•[1] 54 ÷ 10 •[2] 5·4 × 8 = 43·2 **2K**
NOTES:		

<table>
<tr><th>Question No</th><th>Give 1 mark for each •</th><th>Illustrations of evidence for awarding each mark</th></tr>
<tr><td>2</td><td>Ans: $2{\cdot}96 \times 10^{-2}$
•[1] correct coefficient
•[2] correct multiplier</td><td>•[1] $2{\cdot}96$
•[2] $\times 10^{-2}$
2K</td></tr>
<tr><td colspan="3">NOTES:</td></tr>
<tr><td>3 (a)</td><td>Ans:
<table>
<tr><td>Number of sections (s)</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td></td><td>11</td></tr>
<tr><td>Number of metal rings (r)</td><td>4</td><td>9</td><td>14</td><td>19</td><td>24</td><td></td><td>54</td></tr>
</table>
•[1] any two correct number of rings
•[2] two further correct number of rings</td><td>•[1] any two from 14, 19, 24, 54
•[2] remaining two from 14, 19, 24, 54
2R</td></tr>
<tr><td>(b)</td><td>Ans: $r = 5s - 1$
•[1 + 2] correct formula</td><td>•[1 + 2] $r = 5s - 1$
2R</td></tr>
<tr><td>(c)</td><td>Ans: 16
•[1] correct strategy to find s
•[2] correct solution</td><td>•[1] $79 = 5s - 1$
•[2] $s = 16$
2R</td></tr>
<tr><td colspan="3">NOTES:
(b) for (:) 5s-1 award 1/2
(c) solution may be obtained by extending table</td></tr>
</table>

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
4	**Ans: 4 tiles correctly added to drawing** •[1] 1 tile added to tiling •[2] continues tiling with a further 1 tile •[3] continues tiling with a further 2 tiles	•[1] •[2] •[3] **3R**
NOTES:		
5 (a)	**Ans: Points A (2, 6), B (8, 2) and C (6, -1) correctly plotted** •[1] 2 points correctly plotted •[2] 1 further point correctly plotted	•[1] •[2] **2K**
(b)	**Ans: Point D (0, 3) correctly plotted** •[1] point D correctly plotted	•[1] (0, 3) **1R**

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
(c)	**Ans: Point of intersection (4, 2½) plotted** •[1] diagonals drawn •[2] point of intersection plotted 	•[1] 2 diagonals •[2] (4, 2½) **2R**
NOTES:		

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
6	**Ans: -17°C** •[1] subtract 26° from 9° •[2] correct subtraction	•[1] 9 - 26 •[2] = -17(°C) **2K**
NOTES:		
7	**Ans: 200 (grams)** •[1] knowing to divide 240 by 6 •[2] knowing to multiply answer to above by 5 •[3] all calculations correct within a valid strategy	•[1] 240 ÷ 6 (= 40) •[2] 40 × 5 •[3] = 200 (grams) **3R**
NOTES:		
8 (a)	**Ans: DIAGRAM REQ'D** •[1] stem correct •[2] all leaves on correct level •[3] leaves ordered correctly	•[1] •[2] •[3] **3K**
(b)	**Ans: 6·7 (cm)** •[1] median correctly identified	•[1] 6·7 (cm) **1K**
NOTES:		

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
9	**Ans: 143°** •[1] using ∠DAB = 34° to calculate ∠ABD •[2] using ∠ABC = 90° to calculate ∠CBD •[3] correct subtraction of angles BCD and CBD from 180°	•[1] ∠ABD = ½ (180 – 34)° = 73° •[2] ∠CBD = 90 – 73 = 17° •[3] ∠BDC = 180 – (17 + 20) = 143° **3R**
NOTES:		

KU 15 marks
RE 18 marks

[END OF PAPER 1 MARKING INSTRUCTIONS]

2009 Mathematics SG − General Level – Paper 2

Marking Instructions

Award marks in whole numbers only

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
1	**Ans: 42 mph** •[1] correct substitution in correct formula •[2] time conversion calculation •[3] correct calculation	•[1] s = 28/40 (miles/min) •[2] = 0·7 × 60 •[3] = 42 mph **3K**
NOTES:		
2	**Ans: (£) 56·80** •[1] knowing to find the cost of 19 return journeys •[2] knowing to subtract £264·30 from answer to above •[3] correct multiplication AND subtraction	•[1] 19 × 16·90 = 321·10 •[2] 321·10 - 264·30 •[3] = (£) 56·80 **3R**
NOTES:		

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
3	**Ans: 641 (cm^2)** •[1] calculate area of circle •[2] calculate area of semi-circle •[3] calculate area of 1/3 of semi-circle	•[1] $Ac = \pi \times 35^2 = 3846{\cdot}5$ •[2] $Asc = ½ \times 3846{\cdot}5 = 1923{\cdot}25$ •[3] $A = 1/3 \times 1923{\cdot}25 = 641\ (cm^2)$ **3K**
NOTES:		
4 (a)	**Ans: 2h 15 min** •[1] time calculation	•[1] 2h 15 min **1K**
(b)	**Ans: 2255** •[1] knowing to subtract 2h 15 min from 0110 •[2] correct time calculation (over midnight)	•[1] 0110 – 2h 15 min •[2] 2255 **2R**
NOTES: Or (b) 2005 → 0110 5hrs 5 min 1750 + 5 hrs 5 min → 2255		

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
5 (a)	**Ans: $3(2c - 5d)$** •[1] correct common factor •[2] correct factorisation	•[1] $3 (\ldots)$ •[2] $(2c - 5d)$ **2K**
(b)	**Ans: $a + 15$** •[1] correct multiplication of 1st bracket •[2] correct multiplication of 2nd bracket •[3] correct solution	•[1] $5a + 5$ •[2] $10 - 4a$ •[3] $a + 15$ **3K**
NOTES:		
6 (a)	**Ans:** •[1] one selection •[2] a further two selections •[3] one further selection and all totals correct	•[1] •[2] •[3] **3R**

Selections				Cost
Drama	**Sport**	**Movies**	**Music**	**52**
Drama	**Sport**	**Movies**	**Kids**	**54**
Drama	**Sport**	**Kids**	**Music**	**49**
Drama	**Movies**	**Kids**	**Music**	**44**
Sport	**Movies**	**Kids**	**Music**	**57**

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
(b)	**Ans: Sport, Movies, Kids, Music (£57)** •[1] correct selection of 4 channel mixes	•[1] Sport, Movies, Kids, Music (£57) **1R**
NOTES:		
7	**Ans: 3·3 (hrs)** •[1] calculate *fx* •[2] add *fx* column •[3] correctly divide answer to above by 76 •[4] correct rounding	•[1] 16, 24, 54, 44, 40, 36, 35 •[2] 249 •[3] 3·2763 ... •[4] 3·3 (hrs) **4K**
NOTES:		
8	**Ans: 3·3 (m)** •[1] knowing to half base •[2] knowing to use Pythagoras •[3] correct form of Pythagoras •[4] correct calculation must include a square root	•[1] ½ × 2·4 (= 1·2) •[2] $3{\cdot}5^2 = h^2 + 1{\cdot}2^2$ •[3] $h^2 = 3{\cdot}5^2 - 1{\cdot}2^2$ •[4] h = 3·3 (m) **4R**
NOTES:		

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
9	**Ans: (£) 22·25** •[1] cost of Margherita and Hot Spicy •[2] cost of two Vegetarian •[3] correct total	•[1] 5·15 + 5·00 •[2] 2 × 6·05 = 12·10 •[3] (£) 22·25 **3K**
NOTES:		
10	**Ans: (£) 74·40** •[1] knowing to calculate both interests •[2] knowing to subtract •[3] all calculations correct <u>Alternative Solution</u> Diff = 3·7 - 2·5 = 1·2% Diff = 1·2 of 6200 = (£) 74·40	•[1] CB = 2·5% of 6200 = (£) 155·00 HB Int = 3·7% of 6200 = (£) 229·40 •[2] Diff = 229·40 - 155·00 •[3] = (£) 74·40 **3R**
NOTES:		

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
11	**Ans: 8·45** •[1] for a valid trig ratio •[2] correct rearranging •[3] correct trig calculation	•[1] Cos 65° = x/20 •[2] x = 20 × Cos 65° •[3] x = 8·45 **3K**
NOTES:		
12	**Ans: Yes, 3m^3 left over** •[1] knowing to change depth to metres •[2] knowing to find volume of cuboid •[3] statement with reason	•[1] depth = 0·12m •[2] volume = 0·12 × 225 = 27 •[3] Yes, there will be 3m^3 left over **3R**
NOTES: 30 ÷ 225 = 0.133 yes 13cm > 12cm		
13	**Ans: Position shown** •[1] correct angle •[2] correct distance •[3] correct positioning of point	•[1] •[2] •[3] **3K**
NOTES:		

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
14	**Ans: 5 (cm)** •[1] knowing to find area of 1 square •[2] knowing to find length of side •[3] correct solution	•[1] $150 \div 6 \ (= 25)$ •[2] $\sqrt{25}$ •[3] 5 (cm) **3R**
NOTES:		

KU 25 marks
RE 22 marks

FINAL TOTALS	**KU 40 marks** **RE 40 marks**

[END OF PAPER 2 MARKING INSTRUCTIONS]