2012 Mathematics SG – Credit 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	**Ans: 2·37** • knowing correct order of operations • carrying out both calculations	• 4·83 • 2·37 **2KU**

NOTES:

(i) for 2·37 with or without working — award 2/2

(ii) for 4·83 with or without working — award 1/2

(iii) for 211· 17 with or without working (7·2 - 0·161) × 30 — award 1/2

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
2	**Ans: $6x^3 - x^2 + 13x - 10$** • beginning to expand • completing expansion • simplification	• any **3** correct terms • a further **3** correct terms • $6x^3 - x^2 + 13x - 10$ **3KU**
NOTES:		

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
3	**Ans:** $m = (kL)^2$ • beginning to rearrange • completed rearrangement	• $\sqrt{m} = kL$ • $m = (kL)^2$ or k^2L^2 **2KU**
NOTES:		

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
4	**Ans:** $2\sqrt{11}$ • recognition of right angle at R • correct substitution into valid strategy • calculation of QR • simplification of surd	 • $\hat{R} = 90°$ or $PQ^2 = PR^2 + QR^2$ or indication on diagram • $QR^2 = 12^2 - 10^2$ • $QR = \sqrt{44}$ • $2\sqrt{11}$ **4RE**
NOTES:		

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
5	**Ans: yes, plus justification** • strategy • continue strategy • communication	• $\frac{90}{150}$ or 0·6 • $\frac{96}{150}$ or 0·64 • yes, because $\frac{96}{150} > \frac{90}{150}$ or 0·64 > 0·6 **3RE**

NOTES:

(i) The communication must include reference to both values or the use of comparative language.

(ii) $\frac{18}{30} = \frac{3}{5} = \frac{15}{25}$ gains the first 2 marks.

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
6 (a)	**Ans: $x = 2$** • strategy • correct equation	• 2 • $x = 2$ **2KU**
NOTES:		
(b)	**Ans: 9** • substitution • solution	• $y = 5 + 4(2) - 2^2$ • 9 **2KU**
NOTES:		

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
7	**Ans: proof** • starting proof • processing • starting to simplify • final simplification	• $x = \frac{2 \pm \sqrt{(-2)^2 - 4(2)(-1)}}{2 \times 2}$ • $\sqrt{12}$ • $2\sqrt{3}$ • $\frac{1 \pm \sqrt{3}}{2}$ **4RE**
NOTES: (i) Final mark can be awarded only if $2\sqrt{3}$ is explicitly stated.		

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
8	**Ans: (4,5)** **Method 1** • re-arranging terms • evidence of scaling • one value • coordinates	• $2y = -x + 14$ • $4y = -2x + 28$ • $y = 5$ • (4,5) **4KU**
	Ans: (4,5) **Method 2** • substitution • simplifying • one value • coordinates	• $x + 2(2x - 3) = 14$ • $5x - 6 = 14$ • $x = 4$ • (4,5) **4KU**

NOTES:

(i) for (4, 5) without working but checked in **both** equations — award 1/4

(ii) for (4, 5) without either working or checking — award 0/4

(iii) The final mark is available only for an answer in coordinate form

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
9 (a)	**Ans:** $\frac{40}{x}$ • statement of time	• $(T =)\frac{40}{x}$ **1KU**
(b)	**Ans:** $\frac{40}{x+5}$ • statement of time	• $(T =)\frac{40}{x+5}$ **1RE**
(c)	**Ans:** $\frac{200}{x(x+5)}$ • strategy • common denominator • simplified expression	• $\frac{40}{x}-\frac{40}{x+5}$ • $\frac{\ldots}{x(x+5)}-\frac{\ldots}{x(x+5)}$ • $\frac{200}{x(x+5)}$ **3RE**
NOTES: (i) A candidate who writes $\frac{40}{x+5}-\frac{40}{x}$ gains the first mark (ii) The final mark may be awarded for $\frac{-200}{x(x+5)}$ if it leads to $\frac{200}{x(x+5)}$		

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
10 (a)	**Ans: 64** • evaluation	• 64 **1KU**
(b)	**Ans: -2** • solution	• $n=-2$ **1RE**
NOTES:		

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
11 (a)	**Ans: 110** • solution	• 110 **1RE**
(b)	**Ans:** $\frac{n}{2}\times\left(\frac{n}{2}+1\right)$ • expression	• $\frac{n}{2}\times\left(\frac{n}{2}+1\right)$ **1RE**
NOTES:		
(c)	**Ans: 2530** • starting strategy • completing strategy	• 2550 • 2530 **2RE**
NOTES:		

KU 17 marks
RE 20 marks

[END OF PAPER 1 MARKING INSTRUCTIONS]