

Part Two: Mathematics Standard Grade – Credit

Paper 1

Award marks in whole numbers only

Question			Marking Scheme Give 1 mark for each •	Max Mark	Illustrations of evidence for awarding a mark at each •
1			Evaluate $86.5 - 3.651 \times 20$ Ans: 13.48 • ¹ knowing correct order of operations • ² carrying out both calculations	2 (KU)	• ¹ must involve a multiplication followed by a subtraction • ² 13.48
Notes: (i) for 13.48 with/without working award 2/2 (ii) for 1656.98 with/without working award 1/2 (iii) for 73.02 with no further calculation award 0/2					

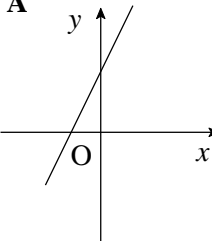
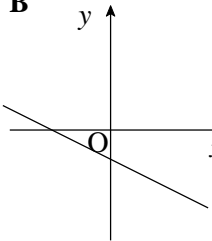
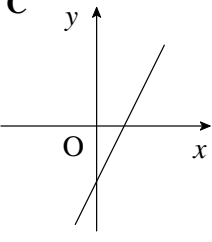
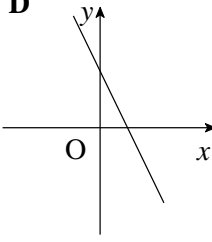
Question			Marking Scheme Give 1 mark for each •	Max Mark	Illustrations of evidence for awarding a mark at each •
2			Evaluate $\frac{1}{2} \div 2\frac{2}{3}$ Ans: $\frac{3}{16}$ • ¹ process • ² a correct calculation	2 (KU)	• ¹ $\frac{1}{2} \times \frac{3}{8}$ • ² $\frac{3}{16}$
Notes: (i) for $\frac{3}{16}$ with/without working award 2/2 (ii) for $\frac{8}{6}$ or $1\frac{2}{6}$ with/without working award 1/2 (iii) $\frac{3}{16}$ leading to $5\frac{1}{3}$ cannot be awarded the second mark					

Question			Marking Scheme Give 1 mark for each •	Max Mark	Illustrations of evidence for awarding a mark at each •									
3			A group of people attended a course to help them stop smoking. The following table shows the statistics before and after the course.	2	<div><div>•¹ on average fewer cigarettes were smoked per person after the course</div><div>•² the number of cigarettes smoked per person was more varied after the course</div></div>									
			<table><tr><td></td><td><i>Mean number of cigarettes smoked per person per day</i></td><td><i>Standard deviation</i></td></tr><tr><td>Before</td><td>20·8</td><td>8·5</td></tr><tr><td>After</td><td>9·6</td><td>12·0</td></tr></table>				<i>Mean number of cigarettes smoked per person per day</i>	<i>Standard deviation</i>	Before	20·8	8·5	After	9·6	12·0
						<i>Mean number of cigarettes smoked per person per day</i>	<i>Standard deviation</i>							
			Before			20·8	8·5							
			After			9·6	12·0							
			Make two valid comments about these results.											
Ans: see below														
• ¹ comment about mean														
• ² comment about standard deviation														
				(RE)										
Notes:														
(i) do not accept 'the average number of cigarettes smoked per person was less'														
(ii) do not accept 'the standard deviation after the course was greater'														

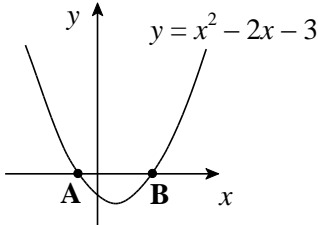
Question			Marking Scheme Give 1 mark for each •	Max Mark	Illustrations of evidence for awarding a mark at each •
5	a		150 patients have been given a flu vaccine. The data is shown in the table below.	1 	

Question			Marking Scheme Give 1 mark for each •	Max Mark	Illustrations of evidence for awarding a mark at each •
6		a	<p>Joan buys gold and silver charms to make bracelets.</p> <p>2 gold charms and 5 silver charms cost £125.</p> <p>Let g pounds be the cost of one gold charm and s pounds be the cost of one silver charm.</p> <p>Write down an equation in terms of g and s to illustrate the above information.</p> <p>Ans: $2g + 5s = 125$</p> <p>•¹ process</p>	1 (KU)	<p>•¹ $2g + 5s = 125$</p>
6		b	<p>4 gold charms and 3 silver charms cost £145.</p> <p>Write down another equation in terms of g and s to illustrate this information.</p> <p>Ans: $4g + 3s = 145$</p> <p>•¹ process</p>	1 (KU)	<p>•¹ $4g + 3s = 145$</p>
6		c	<p>Hence calculate the cost of each type of charm.</p> <p>Ans: $g = 25; s = 15$</p> <p>•¹ starting process</p> <p>•² value of one variable</p> <p>•³ value of a second variable</p>	3 (RE)	<p>•¹ evidence of scaling</p> <p>•² $g = 25$</p> <p>•³ $s = 15$</p>
<p>Notes:</p> <p>(i) for $g = 25$ and $s = 15$ without working but checked in both equations award 1/3</p> <p>(ii) for $g = 25$ and $s = 15$ without working award 0/3</p>					

Question			Marking Scheme Give 1 mark for each •	Max Mark	Illustrations of evidence for awarding a mark at each •
7	a		<p>Expand and simplify</p> $(2x - 5)(x^2 + 3x - 7)$ <p>Ans: $2x^3 + x^2 - 29x + 35$</p> <ul style="list-style-type: none"> •¹ starting to expand •² continuing to process •³ collecting like terms 	<p>3</p> <p>(KU)</p>	<ul style="list-style-type: none"> •¹ any 3 correct terms •² a further 3 correct terms •³ $2x^3 + x^2 - 29x + 35$
7	b		<p>Solve the inequality</p> $4x - 5 \leq 7x - 20$ <p>Ans: $x \geq 5$ or $5 \leq x$</p> <ul style="list-style-type: none"> •¹ dealing with variable •² dealing with constant •³ solution 	<p>3</p> <p>(KU)</p>	<ul style="list-style-type: none"> •¹ $-3x$ or $3x$ •² -15 or 15 •³ $x \geq 5$ or $5 \leq x$

Question	Marking Scheme Give 1 mark for each •	Max Mark	Illustrations of evidence for awarding a mark at each •
8	<p>Four straight line graphs are shown below.</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>A</p>  </div> <div style="text-align: center;"> <p>B</p>  </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 20px;"> <div style="text-align: center;"> <p>C</p>  </div> <div style="text-align: center;"> <p>D</p>  </div> </div> <p>Which one of these above could represent the line with equation $2x + y = 3$?</p> <p>Give two reasons to justify your answer.</p> <p>Ans: graph D</p> <ul style="list-style-type: none"> •¹ re-arranging •² understanding •³ conclusion 	<p style="text-align: center; margin-top: 100px;">3</p> <p style="text-align: center; margin-top: 20px;">(RE)</p>	<ul style="list-style-type: none"> •¹ $y = -2x + 3$ •² m – negative c – positive •³ D
<p>Notes:</p> <p>(i) for an answer with no working award 0/3</p> <p>(ii) for candidates who do not re-arrange, the 1st mark can be awarded only if the correct gradient and intercept are stated</p>			

Question			Marking Scheme Give 1 mark for each •	Max Mark	Illustrations of evidence for awarding a mark at each •
9	a	<p>Quick-Smile photographers charge the following rates:</p> <ul style="list-style-type: none">• 50p per photograph for the first 12 photographs printed• 35p per photograph for any further photographs printed• £4.25 for a CD of the photographs. <p>How much will it cost to have 16 photographs printed plus a CD?</p> <p>Ans: £11.65</p> <ul style="list-style-type: none">•¹ starting the process•² calculation	2 (KU)	<ul style="list-style-type: none">•¹ either $(12 \times 0.5) \dots + 4.25$ or $(16 - 12) \times 0.35$•² £11.65	
Notes: (i) for £11.65 with/without working award 2/2 (ii) the 2 nd mark may be awarded only for a correct calculation involving all 3 rates.					
9	b	<p>Find a formula for C, the cost in pounds, of having x photographs printed (where x is greater than 12) plus a CD.</p> <p>Ans: (c =) $6 + (x-12) 0.35 + 4.25$</p> <ul style="list-style-type: none">•¹ starting strategy•² continuing strategy•³ formula	3 (RE)	<ul style="list-style-type: none">•¹ 12×0.5•² $(x - 12) \times 0.35$•³ $6 + (x - 12) 0.35 + 4.25$	
Notes: (i) ignore subsequent simplification (ii) candidates may work in pence, but final answer must be in pounds					

Question			Marking Scheme Give 1 mark for each •	Max Mark	Illustrations of evidence for awarding a mark at each •
10			<p>The parabola with equation $y = x^2 - 2x - 3$ cuts the x-axis at the points A and B as shown in the diagram.</p> 		
	a		<p>Find the coordinates of A and B.</p> <p>Ans: A(-1,0), B(3,0)</p> <p>•¹ equating to zero</p> <p>•² factorising</p> <p>•³ solving for x</p> <p>•⁴ co-ordinates</p>	<p>4</p> <p>(RE)</p>	<p>•¹ $x^2 - 2x - 3 = 0$</p> <p>•² $(x - 3)(x + 1) = 0$</p> <p>•³ $x = -1$ or 3</p> <p>•⁴ A(-1,0), B(3,0)</p>
<p>Notes:</p> <p>(i) equating to zero must appear prior to solving for x</p> <p>(ii) for correct coordinates with no working award 0/4</p> <p>(iii) candidates may draw graph – check page 15 on answer booklet</p>					
10	b		<p>Write down the equation of the axis of symmetry of $y = x^2 - 2x - 3$.</p> <p>Ans: $x = 1$</p> <p>•¹ calculation</p>	<p>1</p> <p>(KU)</p>	<p>•¹ $x = 1$</p>
<p>Notes:</p> <p>(i) an answer of 1 is not sufficient to gain the mark</p>					

Question			Marking Scheme Give 1 mark for each •	Max Mark	Illustrations of evidence for awarding a mark at each •
11		a	<p>Jenny is doing calculations using consecutive numbers.</p> <p>She notices a pattern which always gives an answer of 1.</p> <p>Using 2, 3, 4 gives $3^2 - 2 \times 4 = 1$. 3, 4, 5 gives $4^2 - 3 \times 5 = 1$. 4, 5, 6 gives $5^2 - 4 \times 6 = 1$.</p> <p>Using 8, 9, 10, write down a similar pattern.</p> <p>Ans: $9^2 - 8 \times 10 = 1$</p> <p>•¹ statement</p>	1 (KU)	<p>•¹ $9^2 - 8 \times 10 = 1$</p>
Notes: (i) do not accept $9^2 - 8 \times 10$					
11		b	<p>Using n, $(n + 1)$, $(n + 2)$, show that the answer is 1 for any three consecutive numbers.</p> <p>Ans: proof</p> <p>•¹ beginning proof</p> <p>•² simplification</p> <p>•³ proof</p>	3 (RE)	<p>•¹ $(n + 1)^2 - n(n + 2)$</p> <p>•² $n^2 + 2n + 1 - n^2 - 2n$</p> <p>•³ 1</p>
Notes: (i) for the 2 nd mark, brackets must be explicitly expanded (ii) the 3 rd mark can be awarded only if the 2 nd mark has been awarded					

KU 20
RE 18

[END OF PAPER 1 MARKING INSTRUCTIONS]