Paper Reference(s)

6663/01

Edexcel GCE

Core Mathematics C1

Gold Level G1

Time: 1 hour 30 minutes

Materials required for examination	**Items included with question papers**
Mathematical Formulae (Green)	Nil

Candidates may use any calculator allowed by the regulations of the Joint Council for Qualifications. Calculators must not have the facility for symbolic algebra manipulation, differentiation and integration, or have retrievable mathematical formulas stored in them.

Instructions to Candidates

Write the name of the examining body (Edexcel), your centre number, candidate number, the unit title (Core Mathematics C1), the paper reference (6663), your surname, initials and signature.

Information for Candidates

A booklet 'Mathematical Formulae and Statistical Tables' is provided.
Full marks may be obtained for answers to ALL questions.
There are 11 questions in this question paper. The total mark for this paper is 75.

Advice to Candidates

You must ensure that your answers to parts of questions are clearly labelled.
You must show sufficient working to make your methods clear to the Examiner.
Answers without working may gain no credit.

Suggested grade boundaries for this paper:

A*	A	B	C	D	E
66	58	51	44	37	30

1. Simplify

(*a*) $(3\sqrt{7})^2$

(1)

(*b*) $(8 + \sqrt{5})(2 - \sqrt{5})$

(3)

June 2009

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2. (*a*) Write down the value of $32^{\frac{1}{5}}$.

(1)

(*b*) Simplify fully $(32x^5)^{-\frac{2}{5}}$.

(3)

May 2014

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3. Solve the simultaneous equations

$$x + y = 2$$
$$4y^2 - x^2 = 11$$

(7)

May 2011

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4. A sequence of numbers $a_1, a_2, a_3, \ldots$ is defined by

$$a_1 = 3,$$

$$a_{n+1} = 2a_n - c, \qquad (n \geq 1),$$

where c is a constant.

(*a*) Write down an expression, in terms of c, for a_2.

(1)

(*b*) Show that $a_3 = 12 - 3c$.

(2)

Given that $\sum_{i=1}^{4} a_i \geq 23$,

(*c*) find the range of values of c.

(4)

May 2012

5.

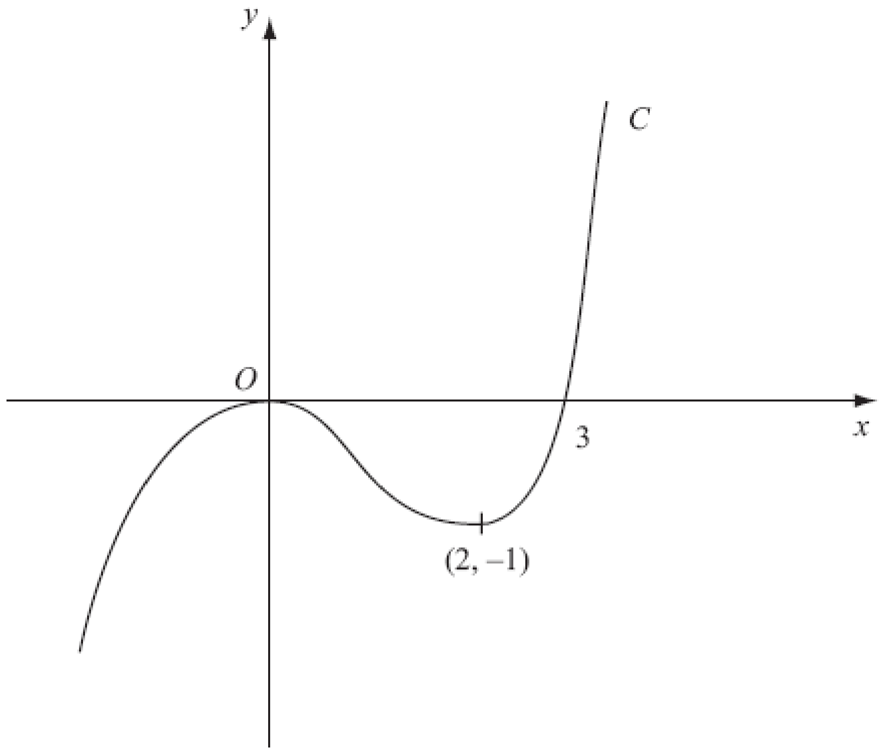

Figure 1

Figure 1 shows a sketch of the curve C with equation $y = \mathrm{f}(x)$. There is a maximum at (0, 0), a minimum at (2, –1) and C passes through (3, 0).

On separate diagrams, sketch the curve with equation

(*a*) $y = \mathrm{f}(x + 3)$,

(3)

(*b*) $y = \mathrm{f}(-x)$.

(3)

On each diagram show clearly the coordinates of the maximum point, the minimum point and any points of intersection with the x-axis.

January 2009

6. The line l_1 has equation $y = -2x + 3$.

The line l_2 is perpendicular to l_1 and passes through the point (5, 6).

(*a*) Find an equation for l_2 in the form $ax + by + c = 0$, where a, b and c are integers.

(3)

The line l_2 crosses the x-axis at the point A and the y-axis at the point B.

(*b*) Find the x-coordinate of A and the y-coordinate of B.

(2)

Given that O is the origin,

(*c*) find the area of the triangle OAB.

(2)

January 2013

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7. The point $P(1, a)$ lies on the curve with equation $y = (x + 1)^2(2 - x)$.

(*a*) Find the value of a.

(1)

(*b*) Sketch the curves with the following equations:

(i) $y = (x + 1)^2(2 - x)$,

(ii) $y = \dfrac{2}{x}$.

On your diagram show clearly the coordinates of any points at which the curves meet the axes.

(5)

(*c*) With reference to your diagram in part (*b*), state the number of real solutions to the equation

$$(x + 1)^2(2 - x) = \frac{2}{x}.$$

(1)

January 2009

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8. Jess started work 20 years ago. In year 1 her annual salary was £17 000. Her annual salary increased by £1500 each year, so that her annual salary in year 2 was £18 500, in year 3 it was £20 000 and so on, forming an arithmetic sequence. This continued until she reached her maximum annual salary of £32000 in year k. Her annual salary then remained at £32 000.

(*a*) Find the value of the constant k.

(2)

(*b*) Calculate the total amount that Jess has earned in the 20 years.

(5)

May 2015

9.

$$f(x) = \frac{(3 - 4\sqrt{x})^2}{\sqrt{x}}, \quad x > 0.$$

(*a*) Show that f(x) = $9x^{-\frac{1}{2}} + Ax^{\frac{1}{2}} + B$, where A and B are constants to be found.

(3)

(*b*) Find f′(x).

(3)

(*c*) Evaluate f′(9).

(2)

June 2009

10.

$$4x^2 + 8x + 3 \equiv a(x + b)^2 + c.$$

(*a*) Find the values of the constants a, b and c.

(3)

(*b*) Sketch the curve with equation $y = 4x^2 + 8x + 3$, showing clearly the coordinates of any points where the curve crosses the coordinate axes.

(4)

January 2013

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11. The curve C has equation

$$y = x^3 - 2x^2 - x + 9, \quad x > 0.$$

The point P has coordinates (2, 7).

(*a*) Show that P lies on C.

(1)

(*b*) Find the equation of the tangent to C at P, giving your answer in the form $y = mx + c$, where m and c are constants.

(5)

The point Q also lies on C.

Given that the tangent to C at Q is perpendicular to the tangent to C at P,

(*c*) show that the x-coordinate of Q is $\frac{1}{3}(2 + \sqrt{6})$.

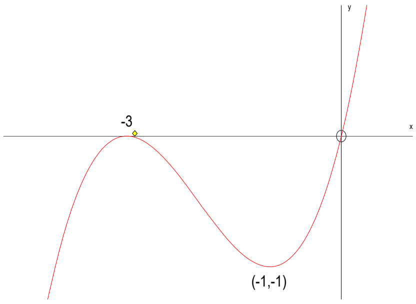
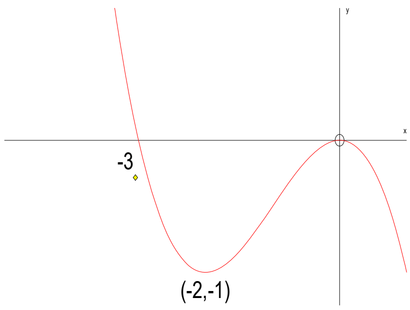
(5)

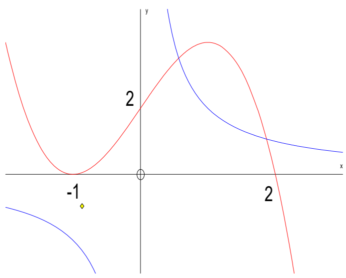
June 2009

TOTAL FOR PAPER: 75 MARKS

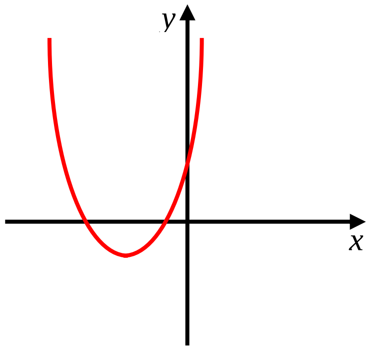
END

Question number	Scheme		Marks
1 (a)	$(3\sqrt{7})^2 = 63$		B1
			(1)
(b)	$(8+\sqrt{5})(2-\sqrt{5}) = 16 - 5 + 2\sqrt{5} - 8\sqrt{5}$		M1
	$= 11,\ -6\sqrt{5}$		A1 A1
			(3)
			[4]
2 (a)	$32^{\frac{1}{5}} = 2$		B1
			(1)
(b)	For 2^{-2} or $\frac{1}{4}$ or $\left(\frac{1}{2}\right)^2$ or 0.25 as coefficient of x^k, for any value of k including $k = 0$		M1
	Correct index for x so Ax^{-2} or $\frac{A}{x^2}$ o.e. for any value of A		B1
	$= \frac{1}{4x^2}$ or $0.25\,x^{-2}$		A1cao
			(3)
			[4]
3	Either	Or	
	$y^2 = 4 - 4x + x^2$	$x^2 = 4 - 4y + y^2$	M1
	$4(4-4x+x^2) - x^2 = 11$ or $4(2-x)^2 - x^2 = 11$	$4y^2 - (4-4y+y^2) = 11$ or $4y^2 - (2-y)^2 = 11$	M1
	$3x^2 - 16x + 5 = 0$	$3y^2 + 4y - 15 = 0$ Correct 3 terms	A1
	$(3x-1)(x-5) = 0,\quad x = ...$	$(3y-5)(y+3) = 0,\quad y = ...$	M1
	$x = \frac{1}{3}\quad x = 5$	$y = \frac{5}{3}\quad y = -3$	A1
	$y = \frac{5}{3}\quad y = -3$	$x = \frac{1}{3}\quad x = 5$	M1 A1
			[7]

Question number	Scheme		Marks
4 (a)	$a_1 = 3,\ a_{n+1} = 2a_n - c\ ,\quad n \geq 1\ ,\ c$ is a constant		
	$\{a_2 =\}\ 2\times 3 - c$ or $2(3) - c$ or $6 - c$		B1
			(1)
(b)	$\{a_3 =\}\ 2\times(\text{"}6 - c\text{"}) - c$		M1
	$= 12 - 3c$ **(*)**		A1 cso
			(2)
(c)	$a_4 = 2\times(\text{"}12 - 3c\text{"}) - c \qquad \{= 24 - 7c\}$		M1
	$\left\{\sum_{i=1}^{4} a_i =\right\}\ 3 + (6 - c) + (12 - 3c) + (24 - 7c)$		M1
	$\text{"}45 - 11c\text{"} \geq 23$ or $\text{"}45 - 11c\text{"} = 23$		M1
	$c \leq 2$ or $2 \geq c$		A1cso
			(4)
			[7]
5 (a)		Shape , touching the x-axis at its maximum.	M1
		Through (0,0) & -3 marked on x-axis, or $(-3, 0)$ seen. Allow $(0, -3)$ if marked on the x-axis. Marked in the correct place, but 3, is A0.	A1
		Min at $(-1, -1)$	A1
			(3)
(b)		Correct shape (top left - bottom right)	B1
		Through -3 and max at (0, 0). Marked in the correct place, but 3, is B0.	B1
		Min at $(-2, -1)$	B1
			(3)
			[6]

Question number	Scheme	Marks
6 (a)	Gradient of l_2 is $\frac{1}{2}$ or 0.5 or $\frac{-1}{-2}$	B1
	Either $y-6="\frac{1}{2}"(x-5)$ or $y="\frac{1}{2}"x+c$ and $6="\frac{1}{2}"(5)+c \Rightarrow c=("\frac{7}{2}")$.	M1
	$x-2y+7=0$ or $-x+2y-7=0$ or $k(x-2y+7)=0$ with ***k* an integer**	A1
		(3)
(b)	Puts $x=0$, or $y=0$ in **their** equation and solves to find appropriate co-ordinate	M1
	x-coordinate of A is -7 and y-coordinate of B is $\frac{7}{2}$.	A1cao
		(2)
(c)	Area $OAB=\frac{1}{2}(7)\left(\frac{7}{2}\right)=\frac{49}{4}$ (units)^2 — Applies $\pm\frac{1}{2}$(base)(height)	M1
	$\frac{49}{4}$	A1cso
		(2)
		[7]
7 (a)	$(a=)\ (1+1)^2(2-1)=\underline{4}$ — $(1, 4)$ or $y=4$ is also acceptable	B1
		(1)
(b)	 (i) Shape  or  anywhere	B1
	Min at $(-1,0)$ … can be -1 on x-axis. Allow $(0,-1)$ if marked on the x-axis. Marked in the correct place, but 1, is B0.	B1
	(2, 0) and (0, 2) can be 2 on axes	B1
	(ii) Top branch in 1st quadrant with 2 intersections	B1
	Bottom branch in 3rd quadrant (ignore any intersections)	B1
		(5)
(c)	(2 intersections therefore) $\underline{2}$ (roots)	B1ft
		(1)
		[7]

Question number	Scheme	Marks
8 (a)	$32000 = 17000 + (k-1)\times 1500 \Rightarrow k = ...$	M1
	$(k =)\ 11$	A1
		(2)
(b)	$S = \frac{k}{2}(2\times 17000 + (k-1)\times 1500)$ or $\frac{k}{2}(17000+32000)$ $S = \frac{k-1}{2}(2\times 17000 + (k-2)\times 1500)$ or $\frac{k-1}{2}(17000+30500)$	M1
	$S = \frac{11}{2}(2\times 17000 + 10\times 1500)$ or $\frac{11}{2}(17000+32000)$ $S = \frac{10}{2}(2\times 17000 + 9\times 1500)$ or $\frac{10}{2}(17000+30500)$ (= 269 500 or 237 500)	A1
	$32000\times\alpha$	M1
	288 000 + 269 500 = 557 500 or 320 000 + 237 500 = 557 500	ddM1A1
		(5)
		[7]
9 (a)	$\left[(3-4\sqrt{x})^2 =\right] 9 - 12\sqrt{x} - 12\sqrt{x} + (-4)^2 x$	M1
	$9x^{-\frac{1}{2}} + 16x^{\frac{1}{2}} - 24$	A1 A1
		(3)
(b)	$f'(x) = -\frac{9}{2}x^{-\frac{3}{2}},\ +\frac{16}{2}x^{-\frac{1}{2}}$	M1a1A1ft
		(3)
(c)	$f'(9) = -\frac{9}{2}\times\frac{1}{27} + \frac{16}{2}\times\frac{1}{3} = -\frac{1}{6} + \frac{16}{6} = \frac{5}{2}$	M1 A1
		(2)
		[8]

Question number	Scheme	Marks
10 (a)	This may be done by completion of square or by expansion and comparing coefficients	
	a = 4	B1
	b = 1	B1
	All three of a = 4, b = 1 and c = –1	B1
		(3)
(b)	 U shaped quadratic graph	
	The curve is correctly positioned with the minimum in the third quadrant. . It crosses x axis twice on negative x axis and y axis once on positive y axis.	A1
	Curve cuts y-axis at $(\{0\}, 3)$. only	B1
	Curve cuts x-axis at $\left(-\frac{3}{2}, \{0\}\right)$ and $\left(-\frac{1}{2}, \{0\}\right)$.	B1
		(4)
		[7]
11 (a)	$x = 2$: $y = 8 - 8 - 2 + 9 = 7$ (*)	B1
		(1)
(b)	$\frac{dy}{dx} = 3x^2 - 4x - 1$	M1 A1
	$x = 2$: $\frac{dy}{dx} = 12 - 8 - 1 (= 3)$	A1ft
	, $y = 3x + 1$	M1 A1
		(5)
(c)	$m = -\frac{1}{3}$ (for $-\frac{1}{m}$ with their m)	B1ft
	$3x^2 - 4x - 1 = -\frac{1}{3}$, $9x^2 - 12x - 2 = 0$ or $x^2 - \frac{4}{3}x - \frac{2}{9} = 0$ (o.e.)	M1 A1
	$\left(x = \frac{12 + \sqrt{144 + 72}}{18}\right)$ $\left(\sqrt{216} = \sqrt{36}\sqrt{6} = 6\sqrt{6}\right)$ or	
	$(3x - 2)^2 = 6 \rightarrow 3x = 2 \pm \sqrt{6}$	M1
	$x = \frac{1}{3}\left(2 + \sqrt{6}\right)$ (*)	A1cso
		(5)
		[11]

Examiner reports

Question 1

Some candidates could not square the surd terms correctly but nearly everyone attempted this question and most scored something.

In part (a) some failed to square the 3 and an answer of 21 was fairly common, others realised that the expression equalled 9×7 but then gave the answer as 56. A few misread the question and proceeded to expand $\left(3+\sqrt{7}\right)^2$. In part (b) most scored a mark for attempting to expand the brackets but some struggled here occasionally adding 8 + 2 instead of multiplying. Those with a correct expansion sometimes lost marks for careless errors, $-8\sqrt{5}+2\sqrt{5}=6\sqrt{5}$, and a small number showed how fragile their understanding of these mathematical quantities was by falsely simplifying a correct answer of $11-6\sqrt{5}$ to $5\sqrt{5}$.

Question 2

In this question 56.5% of candidates gained full marks.

Part (a) was correctly answered by almost all candidates, however, many candidates failed to use their answer to solve part (b).

In part (b) poor bracketing and poor basic understanding of the laws of indices were the main reasons for an incorrect final answer. Many candidates are careless in the way they write fractions and answers are often ambiguous leaving examiners uncertain whether the answer is $\frac{1}{4}x^2$ or $\dfrac{1}{4x^2}$? The negative power created problems for many; for example, $\dfrac{1}{2x^2}$ was often rewritten as $4x^{-2}$ (this was the type of error also regularly seen in question 7). The responses were mixed with fairly equal numbers failing to apply the power to the 32 and failing to achieve x^{-2}. Common incorrect answers were $\dfrac{32}{x^2}$, $\dfrac{1}{32x^2}$, $\frac{1}{4}x^2$ and $4x^{-2}$.

Question 3

Most candidates managed to square a relevant bracket and rarely were middle terms omitted. Some weaker candidates squared x and y and 2 separately obtaining $x^2+y^2=4$. Those who chose to eliminate y were more successful than those eliminating x as there appeared to be fewer problems multiplying a bracket by 4 than there were dealing with a negative sign. The most common mistake was that $4y^2-(2-y)^2=11$ became $4y^2-4-4y+y^2=11$.

Some obtained quadratic equations, which they were unable to solve after earlier slips in their algebra. Of those who used the quadratic formula most heeded the advice about quoting the formula. A few candidates stopped when they had found the two values of the first variable and never found the second variable. Others restarted the process of solving a quadratic equation rather than substituting their known variable into a linear equation. There was a great deal of crossed out work in this question, with many attempts before success was achieved.

Question 4
This question was answered more successfully by candidates than similar ones in the past. The notation did not appear to be such a mystery with most candidates realising that this question tested the topic of recurrence relations and not arithmetic sequences. About two thirds of the candidates gained at least 6 out of the 7 marks available.

Part (a) was generally very well answered and indeed most who got this part right went on to score most of the marks in the question. Those who were unsuccessful often tried to work back from the given $a_3 = 12 - 3c$ to arrive at $a_2 = 6 - 2c$.

In part (b), most candidates scored full marks. Occasionally problems were caused by the incorrect use of brackets.

In part (c), the majority of candidates were able to find a_4, sum the first four terms of the sequence and write their sum ≥ 23 or $= 23$. Some candidates found a_4 incorrectly by omitting brackets resulting in $a_4 = 2 \times 12 - 3c - c = 24 - 4c$. Instead of summing the first four terms, a number of candidates solved $a_4 \geq 23$ or put each term ≥ 23. Few candidates summed by adding either a_1, a_2 and a_3 or a_2, a_3 and a_4 or even a_2, a_3, a_4 and a_5. Some arithmetic errors were made in summing the four terms and a number of candidates miscopied a_4 as $27 - 7c$. There was, however, a number of candidates using the formula for the sum to *n* terms of an arithmetic series in order to sum their four terms. A significant number of candidates, who achieved $45 - 11c \geq 23$, did not know that dividing by a negative number reverses the sign of the inequality. Those who rearranged $45 - 11c \geq 23$ into $45 - 23 \geq 11c$ were more successful in achieving the correct result.

Question 5
There were many good solutions to both parts of this question. In part (a) most candidates translated the curve parallel to the *x*-axis, although occasionally the translation was of $+3$ rather than -3 units, taking the curve "to the right". A common mistake in part (b) was to sketch $y = -\mathrm{f}(x)$ instead of $y = \mathrm{f}(-x)$, reflecting in the *x*-axis instead of the *y*-axis.

Just a few candidates failed to show the coordinates of the turning points or intersections with the *x*-axis, or carelessly omitted a minus sign from a coordinate.

Question 6
Q6 was an accessible question enabling all but the very weakest candidates to attempt full solutions to all three parts. It was pleasing to see the large number of students who were able to achieve full marks for all parts of this coordinate geometry question.

In (a) the majority identified the correct gradient, with only a small minority getting the sign wrong or using 2 or –2 instead of $\frac{1}{2}$. Most candidates used the equation $(y - y_1) = m(x - x_1)$ to set up the equation of the line and usually obtained a correct un-simplified equation. Candidates who used the $y = mx + c$ method were more likely to make errors. A majority got the equation into the required form, but others did not read the question carefully and omitted this step, or gave non-integer coefficients. For some this was the only mark they lost in this question.

In (b) most attempted to put $x = 0$ to get y and $y = 0$ to get x and, provided they had got the correct gradient in (a), they were usually successful. Some solved $x + 7 = 0$ incorrectly getting $x = 7$ for *A*. A very small number of candidates (usually ones that got (a) incorrect) substituted

$x = 5$ and $y = 6$ into their equation by mistake. There were also instances of answers such as $A = -7$, $B = 3.5$, and in some cases an answer was given which combined the coordinates in the form (–7, 3.5)

In (c) most drew the triangle on a grid and were then successful in using the correct method to get the area of the triangle even if their answer was not correct. Common errors were in multiplying 7 by 7 and getting 14 or failing to manipulate fractions correctly resulting in an answer of $\frac{49}{2}$. Other common mistakes were in finding the hypotenuse of the triangle rather than the area of the triangle or in having a negative value for the area. A significant number attempted to use the determinant method yet from these; few were successful as the products involving zeros frequently led to errors. It was pleasing to see diagrams drawn to help with (c).

Question 7

In parts (a) and (b) of this question, it was common to see $(x+1)^2(2-x)$ unnecessarily (and often wrongly) expanded. The value $a = 4$ from part (a) was intended to help candidates to draw appropriately scaled sketches in part (b) and hence to be able to find the number of real solutions to the equation in part (c). Many, however, having correctly obtained the point (1, 4), did not use this in their sketches. While most candidates recognised that the first function was a cubic, many drew "positive cubic" shaped curves and many failed to correctly identify required features such as the minimum on the x-axis and the other points of intersection with the axes. Sketches of the rectangular hyperbola were generally satisfactory and only occasionally missing a branch or in the wrong quadrants. A few had wrong asymptotes such as $y = 2$.

It was not always clear in part (c) whether candidates understood that they should be looking at the number of intersection points of the curves. Their comments sometimes suggested that they were considering intersections with the x-axis. It was disappointing that some candidates ignored the instruction to refer to their diagram and wasted time by trying to solve the given equation algebraically.

Question 8

The majority of candidates successfully found the correct value for k in part (a). Common errors included solving their equation in k incorrectly due to an arithmetic slip (usually subtracting 1500 instead of adding) or using an incorrect formula, with k instead of $k - 1$. Some candidates did not use an equation at all, but simply subtracted 17000 then divided by 1500 arriving at an incorrect answer of $k = 10$. Listing was seen occasionally but more often than not gained no marks as attempts were incomplete. Also a few obtained an answer which was not an integer.

Full marks were fairly common in part (b) but a score of 1 out 5 was also common for those candidates who misinterpreted the question and found S_{20} with $d = 1500$. In general, those candidates gaining the first two method marks went on to gain the third by finding the sum of the 20 terms in total. Poor arithmetical skills let down some candidates losing them the final accuracy mark. Many candidates struggled to multiply by $\frac{11}{2}$ and a surprising number of numerical errors made when adding the two numbers found for first 10 or 11 terms and final 10 or 9 terms. There were few instances of listing; these seemed to be mainly used as a check on the answer obtained from the algebraic approach.

Question 9

Most candidates made a good attempt at expanding the brackets but some struggled with $-4\sqrt{x} \times -4\sqrt{x}$ with answers such as $-4\sqrt{x}$ or $\pm 16\sqrt{x}$ or $\pm 16x^{\frac{1}{4}}$ being quite common. The next challenge was the division by $\sqrt{x}$ and some thought that $\frac{x}{\sqrt{x}} = 1$. Many, but not all, who had difficulties in establishing the first part made use of the given expression and there were plenty of good attempts at differentiating. Inevitably some did not interpret $f'(x)$ correctly and a few attempted to integrate but with a follow through mark here many scored all 3 marks. In part (c) the candidates were expected to evaluate $9^{-\frac{3}{2}}$ or $9^{-\frac{1}{2}}$ correctly and then combine the fractions - two significant challenges but many completed both tasks very efficiently.

Question 10

Many candidates were successful in answering Q10(a). The favoured method was completion of the square. Most got $a = 4$ and $b = 1$, but in obtaining the answer for c, errors were seen of dividing the correct answer –1 by 4. About a third of responses were completely correct, and others had errors arising from the factor 4, leaving the remainder having other errors. There were far more errors in finding the value for c than in finding the value for b. The most common incorrect answers for b were 4 and 2 and the most common incorrect answers for c were –13, 2 and $-\frac{1}{4}$. Two other methods were far less common than completing the square. These were ‘expanding $a(x + b)^2 + c$ and equating coefficients’ and ‘trial and error’. Many candidates had success with the expansion method.

Q10(b) was mostly answered well. The curve was mainly positioned the right way up and in the right place. The quality of graphs could have been better in many cases but few ‘V’ shapes were seen. Sometimes it was difficult to read the fractional coordinates as the candidates were writing them too small and too near their curve. A few candidates tried to use their answers from Q10(a) to help them draw the graph in Q10(b). This was not always successful as many had made errors in Q10(a) and others did not use the information correctly. Most candidates worked from the equation $y = 4x^2 + 8x + 3$ instead. Few of the answers seen did not include a graph, a very small minority drew an upside down U graph and a minority of candidates drew a cubic curve or a line. Other errors in the graph drawing included having the minimum above the x-axis, or on the x-axis, or on the y-axis. Almost all candidates correctly marked the y-intercept at (0, 3).

Question 11

A number of partial attempts at this question may suggest that some were short of time although the final part was quite challenging.

Most secured the mark in part (a) although careless evaluation of $2 \times (2)^2$ as 6 spoiled it for some. Apart from the few who did not realise the need to differentiate to find the gradient of the curve, and hence the tangent, part (b) was answered well. Some candidates though thought that the coefficient of x^2 (the leading term) in their derivative gave them the gradient. There was the usual confusion here between tangents and normals with some candidates thinking that $\frac{dy}{dx}$ gave the gradient of the normal not the tangent. In part (c) many knew they needed to use the perpendicular gradient rule but many were not sure what to do. A common error was to find the equation of a straight line (often the normal at *P*) and then attempt to find the intersection with the curve. Those who did embark on a correct approach usually solved their quadratic equation successfully using the formula, completing the square often led to difficulties with the x^2 term, but a few provided a correct verification.

Statistics for C1 Practice Paper Gold Level G1

				Mean score for students achieving grade:							
Qu	**Max score**	**Modal score**	**Mean %**	**ALL**	**A***	**A**	**B**	**C**	**D**	**E**	**U**
1	4		85	3.41		3.87	3.72	3.60	3.44	3.22	2.48
2	4		74	2.97	3.94	3.76	3.42	3.09	2.80	2.42	1.63
3	7		76	5.33	6.95	6.74	6.28	5.80	5.29	4.53	2.85
4	7		77	5.40	6.83	6.57	6.21	5.91	5.51	5.05	3.13
5	6		80	4.79		5.69	5.25	4.90	4.44	3.98	2.71
6	7	7	76	5.29	6.89	6.73	6.31	5.95	5.37	4.84	3.08
7	7		60	4.19		6.29	5.19	4.42	3.74	3.10	2.09
8	7	7	69	4.84	6.50	6.20	5.38	4.85	4.36	3.86	3.03
9	8		61	4.89		7.18	6.30	5.42	4.45	3.32	1.51
10	7	7	60	4.22	6.85	6.03	4.89	4.28	3.74	3.32	2.26
11	11		50	5.47		9.61	7.24	5.54	4.03	2.69	1.15
	75		**67.73**	**50.80**	**37.96**	**68.67**	**60.19**	**53.76**	**47.17**	**40.33**	**25.92**