Paper Reference(s)

6663/01

Edexcel GCE

Core Mathematics C1
Silver Level S4

Time: 1 hour 30 minutes

Materials required for examination papers	**Items included with question**
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
67	59	51	43	35	27

1. (*a*) Write down the value of $125^{\frac{1}{3}}$.

(1)

(*b*) Find the value of $125^{-\frac{2}{3}}$.

(2)

January 2009

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2. Find $\dfrac{15}{\sqrt{3}} - \sqrt{27}$ in the form $k\sqrt{3}$, where k is an integer.

(4)

May 2013 (R)

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3. (i) Express

$$(5 - \sqrt{8})(1 + \sqrt{2})$$

in the form $a + b\sqrt{2}$, where a and b are integers.

(3)

(ii) Express

$$\sqrt{80} + \frac{30}{\sqrt{5}}$$

in the form $c\sqrt{5}$, where c is an integer.

(3)

January 2013

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4. Find the set of values of x for which

(*a*) $4x - 3 > 7 - x$

(2)

(*b*) $2x^2 - 5x - 12 < 0$

(4)

(*c*) **both** $4x - 3 > 7 - x$ **and** $2x^2 - 5x - 12 < 0$

(1)

June 2009

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5. Solve

(*a*) $2^y = 8$,

(1)

(*b*) $2^x \times 4^{x+1} = 8$.

(4)

May 2013 (R)

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6. (*a*) By eliminating y from the equations

$$y = x - 4,$$

$$2x^2 - xy = 8,$$

show that

$$x^2 + 4x - 8 = 0.$$

(2)

(*b*) Hence, or otherwise, solve the simultaneous equations

$$y = x - 4,$$

$$2x^2 - xy = 8,$$

giving your answers in the form $a \pm b\sqrt{3}$, where a and b are integers.

(5)

May 2007

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7. The point P (4, –1) lies on the curve C with equation $y = \mathrm{f}(x)$, $x > 0$, and

$$\mathrm{f}'(x) = \frac{1}{2}x - \frac{6}{\sqrt{x}} + 3.$$

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

(4)

(*b*) Find $\mathrm{f}(x)$.

(4)

May 2012

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8. The curve C_1 has equation

$$y = x^2(x + 2).$$

(*a*) Find $\dfrac{\mathrm{d}y}{\mathrm{d}x}$.

(2)

(*b*) Sketch C_1, showing the coordinates of the points where C_1 meets the x-axis.

(3)

(*c*) Find the gradient of C_1 at each point where C_1 meets the x-axis.

(2)

The curve C_2 has equation

$$y = (x - k)^2(x - k + 2),$$

where k is a constant and $k > 2$.

(*d*) Sketch C_2, showing the coordinates of the points where C_2 meets the x and y axes.

(3)

January 2012

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9. The equation

$$(k + 3)x^2 + 6x + k = 5, \text{ where } k \text{ is a constant,}$$

has two distinct real solutions for x.

(*a*) Show that k satisfies

$$k^2 - 2k - 24 < 0.$$

(4)

(*b*) Hence find the set of possible values of k.

(3)

January 2013

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10. The line l_1 passes through the point $A(2, 5)$ and has gradient $-\frac{1}{2}$.

(a) Find an equation of l_1, giving your answer in the form $y = mx + c$.

(3)

The point B has coordinates $(-2, 7)$.

(b) Show that B lies on l_1.

(1)

(c) Find the length of AB, giving your answer in the form $k\sqrt{5}$, where k is an integer.

(3)

The point C lies on l_1 and has x-coordinate equal to p.

The length of AC is 5 units.

(d) Show that p satisfies

$$p^2 - 4p - 16 = 0.$$

(4)

January 2009

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11. The first term of an arithmetic sequence is 30 and the common difference is -1.5.

(a) Find the value of the 25th term.

(2)

The rth term of the sequence is 0.

(b) Find the value of r.

(2)

The sum of the first n terms of the sequence is S_n.

(c) Find the largest positive value of S_n.

(3)

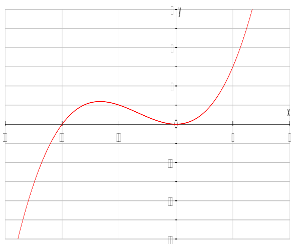
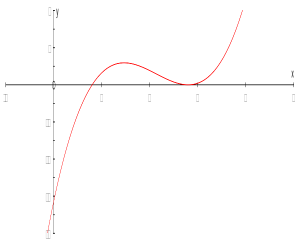
January 2008

TOTAL FOR PAPER: 75 MARKS

END

Question Number	Scheme	Marks
1. (a)	**5** (± 5 is B0)	B1 (1)
(b)	$\dfrac{1}{(\text{their } 5)^2}$ or $\left(\dfrac{1}{\text{their } 5}\right)^2$	M1
	$= \dfrac{1}{25}$ **or 0.04** ($\pm\dfrac{1}{25}$ is A0)	A1 (2) **[3]**
2.	$\dfrac{15}{\sqrt{3}} = \dfrac{15}{\sqrt{3}} \times \dfrac{\sqrt{3}}{\sqrt{3}} = 5\sqrt{3}$	M1A1
	$\sqrt{27} = 3\sqrt{3}$	B1
	$\dfrac{15}{\sqrt{3}} - \sqrt{27} = 2\sqrt{3}$	A1 **[4]**
3. (i)	$(5-\sqrt{8})(1+\sqrt{2})$	
	$= 5 + 5\sqrt{2} - \sqrt{8} - 4$	M1
	$= 5 + 5\sqrt{2} - 2\sqrt{2} - 4$	B1
	$= 1 + 3\sqrt{2}$	A1 (3)
(ii)	Method 1: **Either** $\sqrt{80} + \dfrac{30}{\sqrt{5}}\left(\dfrac{\sqrt{5}}{\sqrt{5}}\right)$; Method 2: **Or** $\left(\dfrac{\sqrt{400}+30}{\sqrt{5}}\right)\dfrac{\sqrt{5}}{\sqrt{5}}$; Method 3: **Or** $\sqrt{80} + \dfrac{\sqrt{900}}{\sqrt{5}} = \sqrt{80} + \sqrt{180}$	M1
	Method 1: $= 4\sqrt{5} + \ldots$; Method 2: $= \left(\dfrac{20+..}{..}\right)\dfrac{..}{..}$; Method 3: $= 4\sqrt{5} + \ldots$	B1
	Method 1: $= 4\sqrt{5} + 6\sqrt{5}$; Method 2: $= \left(\dfrac{50\sqrt{5}}{5}\right)$, $= 10\sqrt{5}$; Method 3: $= 4\sqrt{5} + 6\sqrt{5}$	A1 (3) **[6]**

Question Number	Scheme	Marks
4. (a)	$5x > 10$, $x > 2$ [Condone $x > \frac{10}{2} = 2$]	M1, A1
		(2)
(b)	$(2x+3)(x-4) = 0$, 'Critical values' are $-\frac{3}{2}$ and 4	M1, A1
	$-\frac{3}{2} < x < 4$	M1 A1ft
		(4)
(c)	$2 < x < 4$	B1ft
		(1)
		[7]
5. (a)	$2^y = 8 \Rightarrow y = 3$	B1 cao
		(1)
(b)	$8 = 2^3$	M1
	$4^{x+1} = (2^2)^{x+1}$ or $(2^{x+1})^2$	M1
	$2^{3x+2} = 2^3 \Rightarrow 3x + 2 = 3 \Rightarrow x = \frac{1}{3}$	M1A1
		(4)
		[5]
6. (a)	$2x^2 - x(x-4) = 8$	M1
	$x^2 + 4x - 8 = 0$ (*)	A1cso
		(2)
(b)	$x = \frac{-4 \pm \sqrt{4^2 - (4\times1\times-8)}}{2}$ or $(x+2)^2 \pm 4 - 8 = 0$	M1
	$x =$ - 2 $\pm$ (any correct expression)	A1
	$\sqrt{48} = \sqrt{16}\sqrt{3} = 4\sqrt{3}$ or $\sqrt{12} = \sqrt{4}\sqrt{3} = 2\sqrt{3}$	B1
	$y = \left(-2 \pm 2\sqrt{3}\right) - 4$	M1
	$\underline{x = -2 + 2\sqrt{3},\quad y = -6 + 2\sqrt{3}\ \ x = -2 - 2\sqrt{3},\quad y = -6 - 2\sqrt{3}}$	A1
		(5)
		[7]

Question Number	Scheme	Marks
7.	$P(4,-1)$ lies on C where $\mathrm{f}'(x)=\frac{1}{2}x-\frac{6}{\sqrt{x}}+3,\ \ x>0$	
(a)	$\mathrm{f}'(4)=\frac{1}{2}(4)-\frac{6}{\sqrt{4}}+3\,;=2$	M1; A1
	T: $y--1=2(x-4)$	dM1
	T: $y=2x-9$	A1
		(4)
(b)	$\mathrm{f}(x)=\frac{x^{1+1}}{2(2)}-\frac{6x^{-\frac{1}{2}+1}}{(\frac{1}{2})}+3x\left(+c\right)$ o.e.	M1 A1
	$\left\{\mathrm{f}(4)=-1\Rightarrow\right\}\ \frac{16}{4}-12(2)+3(4)+c=-1$	dM1
	$\left\{\,4-24+12+c=-1\quad\Rightarrow\ c=7\right\}$	
	So, $\left\{\mathrm{f}(x)=\right\}\ \frac{x^2}{2(2)}-\frac{6x^{\frac{1}{2}}}{(\frac{1}{2})}+3x+7$	A1 cso
		(4) **[8]**
8. (a)	$[\,y=x^3+2x^2\,]$ so $\frac{\mathrm{d}y}{\mathrm{d}x}=3x^2+4x$	M1A1
		(2)
(b)	 Shape 	B1
	Touching x-axis at origin	B1
	Through and not touching or stopping at -2 on x –axis. Ignore extra intersections.	B1
		(3)
(c)	At $x=-2$: $\frac{\mathrm{d}y}{\mathrm{d}x}=3(-2)^2+4(-2)=4$	M1
	At $x=0$: $\frac{\mathrm{d}y}{\mathrm{d}x}=0$ (Both values correct)	A1
		(2)
(d)	 Horizontal translation (touches x-axis still)	M1
	$k-2$ and k marked on positive x-axis	B1
	$k^2(2-k)$ (o.e) marked on negative y-axis	B1
		(3) **[10]**

Question Number	Scheme	Marks
9. (a)	**Method 1:**	
	Attempts b^2-4ac for $a=(k+3)$, $b=6$ and their c. $\quad c\neq k$	M1
	$b^2-4ac=6^2-4(k+3)(k-5)$	A1
	$(b^2-4ac=)\quad -4k^2+8k+96$ or $-(b^2-4ac=)\quad 4k^2-8k-96$	B1
	As $b^2-4ac>0$, then $-4k^2+8k+96>0$ and so, $k^2-2k-24<0$	A1
	Method 2:	
	Considers $b^2>4ac$ for $a=(k+3)$, $b=6$ and their c. $\quad c\neq k$	M1
	$6^2>4(k+3)(k-5)$	A1
	$4k^2-8k-96<0$ or $-4k^2+8k+96>0$ or $9>(k+3)(k-5)$	B1
	and so, $k^2-2k-24<0$ following correct work	A1
		(4)
(b)	Attempts to solve $k^2-2k-24=0$ to give $k=$	M1
	($\Rightarrow$ Critical values, $k=6,-4$.)	
	$k^2-2k-24<0$ gives $-4<k<6$	M1 A1
		(3) **[7]**
10. (a)	$y-5=-\frac{1}{2}(x-2)$ or equivalent, e.g. $\dfrac{y-5}{x-2}=-\dfrac{1}{2}$	M1A1, A1cao
		(3)
(b)	$y=-\frac{1}{2}x+6$	
	$x=-2\Rightarrow\ y=-\frac{1}{2}(-2)+6=7$ (therefore B lies on the line)	B1
		(1)
(c)	$(AB^2=)\ (2--2)^2+(7-5)^2$, $\quad =16+4=20$, $\quad AB=\sqrt{20}=2\sqrt{5}$	M1, A1, A1
		(3)
(d)	C is $(p,\ -\frac{1}{2}p+6)$, so $\quad AC^2=(p-2)^2+\left(-\dfrac{1}{2}p+6-5\right)^2$	M1
	Therefore $\quad 25=p^2-4p+4+\frac{1}{4}p^2-p+1$	M1
	$25=1.25p^2-5p+5$ or $100=5p^2-20p+20$ (or better, RHS simplified to 3 terms)	A1
	Leading to: $\quad 0=p^2-4p-16$ $\quad$ (*)	A1cso
		(4) **[11]**

Question Number	Scheme	Marks
11. (a)	$u_{25} = a + 24d = 30 + 24\times(-1.5)$	M1
	$= -6$	A1
		(2)
(b)	$a + (n-1)d = 30 - 1.5(r-1) = 0$	M1
	$r = 21$	A1
		(2)
(c)	$S_{20} = \frac{20}{2}\{60 + 19(-1.5)\}$ or $S_{21} = \frac{21}{2}\{60 + 20(-1.5)\}$ or $S_{21} = \frac{21}{2}\{30 + 0\}$	M1 A1ft
	$= 315$	A1
		(3)
		[7]

Examiner reports

Question 1

Many candidates answered both parts of this question correctly. In part (b), however, some did not understand the significance of the negative power. Others, rather than using the answer to part (a), gave themselves the difficult, time-wasting task of squaring the 125 and then attempting to find a cube root. Negative answers (or ±) appeared occasionally in each part of the question.

Question 2

Again the majority of candidates (81%) scored full marks. The most common method was to rationalise the denominator of the first term, simplify the second term and then combine. Many candidates also chose to combine both terms into one fraction first and then rationalise the denominator although a surprising number, who opted for this method, stopped at $6/\sqrt{3}$ thus losing 3 marks.

Question 3

In part (i) a significant number of candidates were unable to expand the brackets correctly: common errors were $\sqrt{8} \times 2 = 16$ and $-\sqrt{8} \times \sqrt{2} = +4$ or $+\sqrt{16}$.

Most converted $\sqrt{8}$ to $2\sqrt{2}$ after they attempted to expand the brackets, but a common error was to use $\sqrt{8} = 4\sqrt{2}$.

Some found collecting terms challenging so followed a correct $5 + 5\sqrt{2} - 2\sqrt{2}$ by an incorrect $9 + 3\sqrt{2}$.

In part (ii) most candidates were able to change $\sqrt{80}$ to $4\sqrt{5}$ but few knew that they needed to multiply the top **and bottom** of $\frac{30}{\sqrt{5}}$ by $\sqrt{5}$ to rationalise the denominator. A number of candidates multiplied the top and bottom of the fraction by $-\sqrt{5}$ and then did not use the correct signs so ended up with $4\sqrt{5} - 6\sqrt{5}$. Some of the candidates who were able to change $\frac{30}{\sqrt{5}}$ to $\frac{30\sqrt{5}}{5}$ were unable to simplify this to $6\sqrt{5}$.

Changing $\sqrt{80} + \frac{30}{\sqrt{5}}$ to $\frac{\sqrt{400}+30}{\sqrt{5}}$ was not a common method used but a common incorrect approach was to multiply each term of $\sqrt{80} + \frac{30}{\sqrt{5}}$ by $\sqrt{5}$ (i.e. as if it was an equation) and to forget the denominator. Some other candidates who were able to reach $\frac{50}{\sqrt{5}}$ could not then rationalise the denominator to obtain the correct $10\sqrt{5}$.

Question 4

Part (a) provided a simple start for the majority of the candidates and apart from a few arithmetic errors most scored full marks.

In part (b) the quadratic expression was factorised and the critical values were usually found correctly however many candidates were unable to identify the solution as a closed region. Many just left their answer as $x < -\frac{3}{2}$ and $x < 4$, others chose the outside regions and some just stopped after finding the critical values. Candidates who successfully answered part (b) often answered part (c) correctly as well although some repeated their previous working to achieve this result.

The use of a sketch in part (b) and a number line in part (c) was effective and is a highly recommended strategy for questions of this type.

Question 5

In part (a) almost all candidates obtained the correct answer. Performance in part (b) was more variable and discriminated to some extent. By far the most common error was to write 4^{x+1} as 2^{2x+1} in attempt to achieve a common base. Some candidates also multiplied their powers of 2 instead of adding them.

Question 6

In part (a) most tried the simple substitution of $(x – 4)$ into the second equation. Some made a sign error ($–4x$ instead of $+4x$) and proceeded to use this incorrect equation in part (b). Some candidates did not realise that part (a) was a first step towards solving the equations and repeated this work at the start of part (b) (sometimes repairing mistakes made there). The major loss of marks in part (b) was a failure to find the y values but there were plenty of errors made in trying to find x too. Those who attempted to complete the square were usually successful although some made sign errors when rearranging the 2 and some forgot the ± sign. Of those who used the quadratic formula it was surprising how many incorrect versions were seen. Even using the correct formula was no guarantee of success as incorrect cancelling was common: $\frac{-4 \pm \sqrt{48}}{2}$ was often simplified to $-2 \pm \sqrt{24}$ or $\frac{-4 \pm 4\sqrt{3}}{2}$ became $-2 \pm 4\sqrt{3}$.

Question 7

This question discriminated well with just over half of the candidature gaining at least 6 of the 8 marks available. A significant number of candidates started by integrating $f'(x)$ to give $f(x)$. In most cases they realised that this was valid work for part (b) and so relabelled their initial work as (b).

In part (a), the majority of candidates evaluated $f'(4)$ and used a correct line formula in order to find the equation of the tangent. A few made arithmetic errors when evaluating $\frac{1}{2}(4) - \frac{6}{\sqrt{4}} + 3$, some incorrectly manipulated $y + 1 = 2(x - 4)$ into $y = 2x - 7$ and some found the equation of the normal. Some candidates rewrote $-\frac{6}{\sqrt{x}}$ as $-6\sqrt{x}$ and used this throughout the question and others deduced a tangent gradient of $\frac{1}{2}$ by looking at the coefficient of x in the $f'(x)$ expression.

A significant minority of candidates started part (a) by differentiating $f'(x)$ and substituting $x = 4$ into the resulting expression. Other candidates incorrectly used $(4, -1)$ by setting their expression for $f'(4)$ equal to -1, which resulted in a meaningless equation.

In part (b), most candidates integrated $f'(x)$ to find $f(x)$ but unfortunately a significant minority failed to find the value of *c* using $(4, -1)$. Of those who used $(4, -1)$ to find *c*, a number made arithmetic errors. Other candidates found $f(4)$ in terms of *c* and equated their result to 0 instead of –1. A small number of candidates failed to integrate 3 correctly and some candidates either incorrectly simplified $\frac{\frac{x^2}{2}}{2}$ to x^2 or $-\frac{6x^{\frac{1}{2}}}{(\frac{1}{2})}$ to $-3x^{\frac{1}{2}}$. A very small number of candidates found the value of *c* correctly but failed to include this evaluated *c* in an expression for $f(x)$.

Question 8

Although full marks for this question were rare most were able to gain some marks.

Part (a) was answered very well with only occasional errors in multiplying out being seen.

In part (b) most drew a cubic curve and many realised that it touched the *x*-axis at (0, 0) and cut the axis at $x = -2$. Some failed to realise that the repeated root meant that there should be a turning point at the origin and drew a curve which crossed the *x*-axis at 3 places. In part (c) most candidates were able to substitute their *x* values into their derivative and find the gradient of the curve at the required points. Some failed to identify the connection with part (a) and simply tried to find the gradient between two points. The final part proved challenging but a few excellent sketches were seen. Many did not identify the connection with part (b) and those who did sometimes translated vertically as well as horizontally so that the new curve touched the *x*-axis at a maximum not a minimum. Finding the coordinates of the points of intersection in terms of *k* proved too difficult for most with the *y*-intercept proving particularly troublesome.

Question 9

In part (a) most candidates attempted to find $b^2 - 4ac$ using $a = k + 3$, $b = 6$ and $c = k - 5$ (candidates would be advised to write down formulae first, so that examiners can determine whether or not the correct one is being used if there are errors in substitution). Some however ignored the RHS of the original equation and used $c = k$, not having first produced a quadratic equal to zero. Others made errors and used $c = k + 5$.

A few candidates misunderstood the meaning of coefficient and used $a = (k + 3)x^2$. Algebraic errors were common. A small number of candidates assumed $b^2 - 4ac = 0$, which didn't necessarily lose the first marks but led to errors later in the question when they tried to 'convert' their equation into an inequality.

However, the most common mistakes in part (a), concerned sign errors when expanding the brackets. A large number of candidates went from, for example, $36 - 4(k^2 - 5k + 3k - 15) > 0$ to $36 - 4k^2 - 20k + 12k - 60 > 0$. These sign errors were very common (particularly as $36 - 60$ gave the –24). Candidates who multiplied $(k + 3)$ and $(k - 5)$ first then multiplied by 4 usually made fewer errors than those who tried to multiply by 4 or –4 first before multiplying by $(k - 5)$.

A significant number of candidates failed to gain the final accuracy mark for part (a). This mark required correct use of the inequality. Some included the inequality in the final couple of lines, having omitted it throughout. Others used $b^2 - 4ac < 0$ from the start, presumably assuming they needed to do this since the given printed inequality was less than zero. However most candidates who used $b^2 - 4ac > 0$ from the start tended to remember to reverse the inequality sign when dividing by -4, gaining the last mark.

In part (b) most candidates successfully factorised the given quadratic. A few factorised incorrectly leading to the wrong critical values, and some gave $(k + 6)(k - 4) < 0$, usually leading to the answer $-6 < k < 4$ instead of the correct $-4 < k < 6$. Some candidates then substituted values for k to solve the inequality; others drew a number line and shaded the required interval. There were a variety of intervals given as answers for the last two marks in part (b). It was quite common to see answers such as $k < 6$, $k < -4$, or $k < -4$ and $k > 6$. Very few candidates used set notation: $k \in (-4, 6)$.

Question 10

The first three parts of this question were usually well done but part (d) proved particularly difficult and was rarely completed successfully.

Part (a) caused few problems, although a few candidates failed to put their answer in the form $y = mx + c$. The usual method in part (b) was verification that $(-2, 7)$ satisfied $y = -\frac{1}{2}x + 6$, but other approaches included consideration of the gradient of the line joining $(-2, 7)$ and $(2, 5)$. In part (c), most candidates reached $AB^2 = 20$, which usually led either to the correct answer $2\sqrt{5}$ or occasionally to $4\sqrt{5}$.

For the most efficient method in part (d), the vital step was to find the y-coordinate of C in terms of p. Candidates who failed to do this were rarely able to make very much progress towards establishing a relevant equation. Those who did get started were often let down by poor algebra in their attempts to expand brackets and simplify the equation. Often the only working seen in part (d) was the solution (by formula) of the given quadratic equation.

Question 11

Most candidates knew in part (a) how to use the term formula for an arithmetic sequence. Some, effectively using $a + nd$ instead of $a + (n-1)d$, reached the answer -7.5 instead of -6, while the omission of a minus sign was a surprisingly common mistake, leading to $30 + 36 = 66$ instead of $30 - 36 = -6$.

In part (b), many candidates equated the correct expression to zero to score the method mark, but mistakes in calculation were very common. Dividing 31.5 by 1.5 sometimes caused problems. Other approaches, such as counting back from the 25th term found in part (a), were sometimes successful.

Few students seemed to fully appreciate the connection between part (b) and part (c) but those who did invariably scored all the marks. Many ended up trying to solve an equation with two unknowns (S_n and n) or assumed that S_n was zero, which led to the commonly seen, incorrect $n = 41$. Many candidates seemed completely confused by part (c) and made no real progress. In the question as a whole, inefficient methods involving ‘listing’ terms were infrequently seen.

Statistics for C1 Practice Paper Silver Level S4

				Mean score for students achieving grade:							
Qu	Max score	Modal score	Mean %	ALL	A*	A	B	C	D	E	U
1	3		82	2.47		2.91	2.85	2.57	2.44	2.04	1.63
2	4		87	3.46	4.00	3.87	3.72	3.26	3.04	2.68	1.53
3	6		73	4.36	5.98	5.48	4.84	4.25	3.93	3.61	2.78
4	7		70	4.90		6.41	5.61	5.12	4.58	3.98	2.63
5	5		86	4.32	4.99	4.91	4.55	4.15	3.97	3.55	2.62
6	7		63	4.41		5.76	5.10	4.70	4.23	3.59	2.32
7	8		64	5.11	7.78	7.30	6.61	5.78	4.85	3.70	1.78
8	10		59	5.92	9.41	8.64	7.25	6.46	5.45	4.92	3.05
9	7		58	4.06	6.89	6.35	5.40	4.40	3.61	3.00	1.59
10	11		59	6.52		9.78	7.86	7.02	6.39	5.86	4.00
11	7		57	3.99		5.91	4.72	3.91	3.36	2.92	1.87
	75		**66**	**49.52**		**67.32**	**58.51**	**51.62**	**45.85**	**39.85**	**25.80**