Assessment Schedule – 2017

Mathematics (CAT): Apply algebraic procedures in solving problems (91027A) – Day 1

Candidates must show algebraic working.
Be aware solutions in multi-part questions may be found in any part and awarded credit.
Equivalent answers are accepted.

Evidence Statement

Q	Expected coverage	Grade (generated by correctly demonstrating the procedures listed in EN4)
ONE (a)	$d = 3 \times 5 + 3 \times 5^2$ $= 15 + 3 \times 25$ $= 15 + 75$ $= 90$	For award of u: Correct solution – no alternative.
(b)	$(2x + 3)(x - 3) = 0$ $x = -\frac{3}{2}$ or 3	For award of u: ONE of • factorising quadratic • consistent solving from incorrect factorising of a quadratic which has a coefficient of x^2 greater than 1.
		For award of r: Correct use of algebra in solving equation.
(c)	$y = 6x - 21$ $6y = 36x - 126$ $36x - 126 - x = 14$ $35x = 140$ $x = 4$ $y = 24 - 21$ $y = 3$ $x - y = 1$ **OR** $6x - y - 21 = -x + 6y - 14$ $7x = 7y + 7$ $7x - 7y = 7$ $x - y = 1$ **If candidate adds the 2 equations, they find $x + y = 7$, which gains r.**	For award of u: ONE of • correct combining of equations in one variable • consistent solution for one variable • consistent solution. **OR** ONE of • combine two equations by addition or subtraction or equating • removing common factors • consistent solution.
		For award of r: Solving for one variable. **OR** TWO or more of the procedures for u.
		For award of t: Correct solution to problem.

(d)	$3^2 \times 3^{x-4} > 87$ $3^{x-2} > 81 + 6$ $> 3^4 + 6$ $x - 2 > 4$ $x > 6$ or $x \geq 7$ or $x = 7, 8, 9, \ldots$ **OR** $3^{x-4} > \frac{87}{9}$ $3^{x-4} > 9\frac{6}{9}$ or $3^{x-4} \geq 10$ then continues using guess and check followed by $x > 6$ or $x \geq 7$ or $x = 7, 8, 9, \ldots$	For award of u: ONE of: • expressing in index form with the indices for the LHS combined • consistent equating of indices • guess and check giving correct answer with no algebraic working • correct division by 9, giving $> 9\frac{6}{9}$ or ≥ 10. For award of r: TWO or more of the stated procedures for u. For award of t: Correct solution showing algebraic working.
(e)	$K^3 = mK$ $K^2 = m$ $K = \sqrt{m}$ $K^2 = K + 5 + n$ $m = \sqrt{m} + 5 + n$ or $n = m - \sqrt{m} - 5$ ($K \neq 0$ and $\pm$ not required) **OR** $K^3 = mK$ $K^3 - mK = 0$ $K(K^2 - n) = 0$ When $K = 0$, then $n = -5$ Or $K^2 = m$, then $m = \sqrt{m} + 5 + n$	For award of u: ONE of: • correct writing the expression $K^2 = m$ or $K^2 = K + 5 + n$ ($K^3 = mK$ on its own is not sufficient for u) • consistent expression without K^2 • writing $K = \sqrt{m}$ • consistent expression for n in terms of m. For award of r: THREE or more of the stated procedures for u (including correct expression without K). For award of t: Correct equation. Ignore $\pm$

<table>
<tr><th>Q</th><th>Expected coverage</th><th>Grade (generated by correctly demonstrating the procedures listed in EN4)</th></tr>
<tr><td rowspan="3">TWO
(a)</td><td rowspan="3">$x = \frac{\pm\sqrt{9-h}}{2}$
Accept $x = \sqrt{\frac{9-h}{4}}$
or $x = \pm\sqrt{\frac{h-9}{-4}}$</td><td>For award of u:
Correct expression.
Ignore omission of ±.</td></tr>
<tr><td></td></tr>
<tr><td></td></tr>
<tr><td rowspan="3">(b)</td><td rowspan="3">$\frac{x^2-5x+4}{5x^2-20x} = \frac{(x-4)(x-1)}{5x(x-4)}$
$= \frac{x-1}{5x}$</td><td>For award of u:
ONE of
• factorising numerator
• factorising denominator
• consistent simplifying of expression.</td></tr>
<tr><td>For award of r:
Correct simplification of expression.</td></tr>
<tr><td></td></tr>
<tr><td rowspan="3">(c)(i)</td><td rowspan="3">$2(12x + 1) + 2 \times 4x$
$= 24x + 2 + 8x$
$= 32x + 2$
OR
Total width = $12x + 1$
Total height = $2x + 4$
$12x + 1 + 2 + 10x - 2 + 4x - 2 + 2x + 3 + 4x = 32x + 2$</td><td>For award of u:
ONE of:
• recognises the missing total width being $4x$ or the part length on the right being $10x - 2$. These may be given in an unsimplified form
• recognises that the perimeter is twice the total width and total height of the shape
• has gone on to solve for P = 0 (or similar) AND either
- consistently simplified expression using 6 sides with wrong lengths for one or both of the unknown sides or
- included one of the measurements more than once. E.g. they have treated the shape as two separate rectangles or
- have only included 5 sides.</td></tr>
<tr><td>For award of r:
• Correctly found perimeter but has gone on to solve for P = 0 (or similar)
• consistently found perimeter using 6 sides with one incorrect length or one length counted twice and has not gone on to solve for P = 0 (or similar)
• consistently simplified expression using 5 out of the 6 correct sides, e.g. $22x + 4$ or $28x + 2$ or $32x + 8$ and has not solved for P = 0 (or similar).</td></tr>
<tr><td>For award of t:
Correct simplified expression AND has not gone on to solve using P = 0 (or similar).</td></tr>
<tr><td>(ii)</td><td>$(4x - 2)(2x + 3) + 2(12x + 1)$
$= 8x^2 + 8x - 6 + 24x + 2$
$= 8x^2 + 32x - 4$
$= 92$
$8x^2 + 32x - 96 = 0$
$x^2 + 4x - 12 = 0$
$(x + 6)(x - 2) = 0$
$x = 2$ or -6
x can't be –ve, therefore 2 cm.</td><td>(Contribution to the grade for this part may be found in (i) ie expression for area.)
For award of u:
ONE of:
• sets up equation for area which may involve incorrect lengths found in (i)
• consistently expands
• consistently simplifies
• consistently solves the equation that must be a quadratic.</td></tr>
</table>

	OR Using subtraction of areas process.	For award of r: THREE or more procedures for u.
		For award of t: Correct solution.
(d)	$(x + 6)(x - 4) = x^2 + 2$ $x^2 + 2x - 24 = x^2 + 2$ $2x - 24 = 2$ $2x = 2 + 24$ $= 26$ $x = 13$ Number of tiles at the start is $= 13^2 = 169$	For award of u: ONE of: • sets up equation $(x + 6)(x - 4) = x^2 + 2$ • simplifies $(x + 6)(x - 4) = x^2 + 2$ generating a linear equation • solves the equation **OR** ONE of: • sets up expression involving $(x + 6)(x - 4)$ and consistently expands and simplifies this quadratic expression • consistently solves the equation.
		For award of r: Any TWO or more of the steps required for u above.
		For award of t: Correct solution.

Q	Expected coverage	Grade (generated by correctly demonstrating the procedures listed in EN4)
THREE (a)(i)	A = $(3x - 10)(x + 4)$	For award of u: Correctly factorised. Evidence of factorisation may be found in parts (i) or (ii).
(ii)	$x = \frac{10}{3}$ or $x = -4$ $x > \frac{10}{3}$ as the lengths and / or the area must both be positive.	For award of u: ONE of: • consistently solved from (i) with the coefficient of x being greater than 1 • consistently solved from (i) with no coefficient of x and correct justification • solved giving two solutions • answer can be found in part (i).
		For award of r: ONE of: • $x \geq \frac{10}{3}$ with correct justification • $x > \frac{10}{3}$ without justification. Do not accept $x > -4$ with justification that length cannot be negative.
(b)	$2^{3x+4} > 2^{x^2}$ 2^{x^2} $3x + 4 > x^2$ $x^2 - 3x - 4 < 0$ $(x+1)(x-4) < 0$ $-1 < x < 4$ **OR** Accept $x > -1$ and $x < 4$ or equivalent.	For award of u: ONE of: • relationship given for exponents • relationship rearranged and factorised • consistent solutions to an equation that contains only one error.
		For the award of r: ONE of: • correct solutions given for the correct expression treated as an equation • consistent solutions to inequation • correct solution for inequation, giving one correct end point.
		For award of t: Correct solutions.

(c)	Per week calculation: $15T + 16P = 200$ $T + P = 13$ $T = 13 - P$ $15 \times 13 - 15P + 16P = 200$ $P = 200 - 13 \times 15$ $P = 5$ $T = 8$ Pete works 5 hours and Tane 8 hours. OR Per 5 week calculation: $15T + 16P = 1000$ $T + P = 65$ And subsequently solving to give: $T = 40$ and $P = 25$ gains a t grade	For award of u: ONE of : • identifies equation in terms of P and T for total amount to be earned either per week or in total • consistently establishes equation in one variable • consistently calculates the number of hours Pete **or** Tane worked. For award of r: ONE of : • consistently finds the number of hours Pete **and** Tane worked • correctly established equation in one variable. For award of t: Problem solved.

<table>
<tr>
<td>(d)</td>
<td>If the first odd number is A
$B = A + 2$
$\frac{B}{A} - \frac{A}{B} = \frac{B^2 - A^2}{AB}$
$= \frac{(A+2)^2 - A^2}{A(A+2)}$
$= \frac{A^2 + 4A + 4 - A^2}{A(A+2)}$
$= \frac{4A+4}{A^2+2A}$
$= \frac{4(A+1)}{A^2+2A}$
The numerator having factor of 4 will be even.
The denominator having an odd number squared is an odd number and the 2A having a factor of 2 will be even. An odd number plus and even number is always odd.
OR
Ignoring C in terms of A accept:
First odd number: $2n + 1$
Second odd number: $2n + 3$
$\frac{2n+3}{2n+1} - \frac{2n+1}{2n+3}$
$C = \frac{(2n+3)(2n+3)-(2n+1)(2n+1)}{(2n+1)(2n+3)}$
$= \frac{4n^2+12n+9-(4n^2+4n+1)}{4n^2+6n+2n+3}$
$= \frac{8n+8}{4n^2+8n+3}$

OR equivalent.</td>
<td>For award of u:
ONE of:
• expression for 2 consecutive odd numbers and substitutes these into equation
• correct simplification of fraction
• expansion of numerator
• simplification of numerator
• valid statement derived from algebraic working
Numerical proof or demonstration gains n.<hr>For award of r:
THREE or more of the stated procedures for u<hr>For award of t:
Correct statement from correct algebraic working reducing to one fraction.
If the candidate proceeds to indicate that an even divided by an even can be simplified until one of them becomes odd then this is correct and acceptable.

Demonstrating with numbers and not showing algebraic proof gains n.</td>
</tr>
</table>

Assessment Schedule – 2017

Mathematics (CAT): Apply algebraic procedures in solving problems (91027A) – Day 2

Candidates must show algebraic working.

Be aware solutions in multi-part questions may be found in any part and awarded credit.

Equivalent answers are accepted.

Evidence Statement

Q D2	Expected coverage	Grade (generated by correctly demonstrating the procedures listed in EN4)
ONE (a)	$s = 2 \times 4 + 5 \times 4^2$ $= 8 + 5 \times 16$ $= 8 + 80$ $= 88$	For award of u: Correct solution – no alternative.
(b)	$(3x - 4)(x + 4)$ $x = \frac{4}{3}$ or -4	For award of u: ONE of: • factorising quadratic • Consistent solving from incorrect factorising of quadratic must involve coefficient of x greater than 1.
		For award of r: Correct use of algebra in solving equation.
(c)(i)	Total width = $3x - 1$ Total height = $2x + 4$ $2(3x - 1) + 2(x + 4)$ $= 6x - 2 + 4x + 8$ $= 10x + 6$ **OR** $2 + 4 + 2x - 1 + x + x - 1 + 3x - 1 + 6 = 10x$	For award of u: ONE of: • recognition of the missing total width being $3x - 1$ **or** the part length on the right being $x + 5$. These may be given in an unsimplified form. • recognises that the perimeter is twice the total width and total height of the shape • has gone on to solve for P = 0 (or similar) **AND either** - consistently simplified expression using 6 sides with wrong lengths for one or both of the unknown sides. **or** - included one of the measurements more than once, e.g. they have treated the shape as two separate rectangles. **or** - has only included 5 sides.
		For award of r: • correctly found perimeter but has gone on to solve for P = 0 (or similar) • consistently found perimeter using 6 sides with one incorrect length or one length counted twice and has not gone on to solve for P = 0 (or similar) • consistently simplified expression using 5 out of the 6 correct sides, eg. $7x + 7$ or $9x + 1$ or $10x + 4$ and has not solved for P= 0 (or similar).
		For award of t: Correct simplified expression AND has **not** gone on to solve using P = 0 (or similar).

(ii)	$(2x-1)(2x+4) + x(x-1) = 146$ $4x^2 + 6x - 4 + -x^2 - x = 146$ $= 5x^2 + 5x - 4 = 146$ $5x^2 + 5x - 4 = 146$ $5x^2 + 5x - 150 = 0$ $x^2 + x - 30 = 0$ $(x-5)(x+6) = 0$ $x = 5$ and $x = -6$ x can't be –ve, therefore 5. **OR** Using subtraction of extras process.	(Contribution to the grade for this part may be found in (i) ie expression for area.) For award of u: ONE of: • sets up equation for area which may involve incorrect lengths found in (i) • consistently expands • consistently simplifies • consistently solves the equation that must be a quadratic.
		For award of r: THREE or more of the procedures for u.
		For award of t: Correct solution.
(d)	$N^3 = mN$ $N^2 = m$ $N = \sqrt{m}$ $\quad N^2 = N + 4 - k$ $N^2 = N + 4 - k$ $m = \sqrt{m} + 4 - k$ $k = \sqrt{m} + 4 - m$ ($N \neq 0$ and $\pm$ not required.) **OR** Where $N \neq 0$; If the candidate recognises $N = \pm\sqrt{m}$ then accept: $k = \pm\sqrt{m} + 4 - m$ **OR** $N^3 = mN$ $N^3 - mN = 0$ $N(N^2 - m) = 0$ when $N = 0$ then $m = 4$ or $N^2 = m$ then $m = \sqrt{m} + 4 - k$	For award of u: ONE of: • correct writing of an expression $N^2 = m$ **or** $N^2 = N + 4 - k$ ($N^3 = mN$ on its own is not sufficient for u) • consistent expression without N^2 • Writing $N = \sqrt{m}$ • consistent expressing for N in terms of m.
		For award of r: THREE or more of the stated procedures for u (including correct expression without N).
		For award of t: Correct equation ignore $\pm$.

<table>
<tr><th>Q D2</th><th>Expected coverage</th><th>Grade</th></tr>
<tr><td rowspan="3">TWO
(a)(i)</td><td rowspan="3">A = $(x - 4)(3x + 8)$</td><td>For award of u:
Correctly factorised.
Evidence of factorisation may be found in parts (i) or (ii).</td></tr>
<tr><td></td></tr>
<tr><td></td></tr>
<tr><td rowspan="3">(ii)</td><td rowspan="3">$x = -\frac{8}{3}$ or $x = 4$
$x > 4$ as the lengths and / or area must both be +ve</td><td>For award of u:
ONE of:
• consistently solved from (i) with the coefficient of x being greater than 1
• consistently solved from (i) with no coefficient of x and correct justification
• solved giving two solutions
• answer can be found in part (i).</td></tr>
<tr><td>For award of r:
ONE of:
• $x \geq 4$ with correct justification
• $x > 4$ without justification
Do not accept $x > -\frac{8}{3}$ with justification that length cannot be negative.</td></tr>
<tr><td></td></tr>
<tr><td rowspan="3">(b)</td><td rowspan="3">$x = 5y - 15$
$-5x + y = -21$
$-5(5y - 15) + y = -21$
$-25y + 75 + y = -21$
$24y = 96$
$y = 4$
$x = 5$
$x + y = 9$
OR
$x - 5y + 15 = 0$
$(+)\ \underline{-5x + y + 21 = 0}$
$-4x - 4y + 36 = 0$
$x + y = 9$
If candidate subtracts the 2 equations they find $x - y = 1$ which gains r.</td><td>For award of u:
ONE of:
• correct combining of equations in one variable
• consistent solution for one variable
• consistent solution
OR
• combine two equations by addition or subtraction or equating
• removing of common factors
• consistent solution.</td></tr>
<tr><td>For award of r:
Solving for one variable
OR
Two or more of the procedures for u.</td></tr>
<tr><td>For award of t:
Correct solution to problem.</td></tr>
</table>

(c)	$(x + 5)(x + 2) = x^2 + 24$ $x^2 + 7x + 10 = x^2 + 24$ $7x = 14$ $x = 2$ Area = 4 m^2	For award of u: ONE of: • sets up equation for area $(x + 5)(x + 2) = x^2 + 24$ • simplifies $(x + 5)(x + 2) = x^2 + 24$ generating a linear equation • solves the equation **OR** • sets up expression involving $(x + 5)(x + 2)$ and consistently expands and simplifies this quadratic expression • consistently solves the equation.
		For award of r: Any TWO or more of the steps required for u above.
		For award of t: Correct solution.
(d)	Per week calculation $5c + 9d = 89$ $c + d = 13$ $c = 13 - d$ $5(13 - d) + 9d = 89$ $65 - 5d + 9d = 89$ $4d = 89 - 65$ $= 24$ $d = 6$ $c = 7$ So there are 6 dogs and 7 cats **OR** Per 5 week calculation: $c + d = 65$ $5c + 9d = 445$ and subsequently solving to give: $d = 30$ and $c = 35$ gains a t grade.	For award of u: ONE of: • identifies equation in terms of c and d for total amount to be spent either per week or total spending over the 5 weeks • consistently establishes equation in one variable • consistently calculates the number of cats **or** dogs.
		For award of r: ONE of: • consistently finds the number of cats **and** dogs • **correctly** established equation in one variable.
		For award of t: Problem solved.

Q D2	Expected coverage	Grade
THREE (a)	$m = \frac{\pm\sqrt{n+16}}{3}$ $m = \pm\sqrt{\frac{n+16}{9}}$ accept $m = \sqrt{\frac{n+16}{9}}$	For award of u: • correct expression. • ignore omission of ±.
(b)	$\frac{6x(x-3)}{(2x-1)(x-3)} = \frac{6x}{2x-1}$	For award of u: ONE of: • factorising numerator • factorising denominator • consistent simplifying of expression.
		For award of r: Correct simplification of expression.
(c)	$x^2 - 6 > x$ $x^2 - x - 6 > 0$ $(x+2)(x-3) > 0$ $x < -2$ or $x > 3$ **OR** accept $3 < x < -2$	For award of u: ONE of: • relationship given for exponents • relationship rearranged and factorised • consistent solutions to an equation that contains only one error.
		For the award of r: ONE of: • correct solutions given for the correct expression treated as an equation • consistent solutions to inequation • correct solution for inequation giving one correct end point.
		For award of t: Correct solutions.
(d)	$4^2 \times 4^{x-5} > 65$ $4^{x-3} > 64 + 1$ $> 4^3 + 1$ $x - 3 > 3$ $x > 6$ or $x \geq 7$ or $x = 7, 8, 9, \ldots$ OR $4^{x-5} > \frac{65}{16}$ $4^{x-5} > 4\frac{1}{16}$ or $4^{x-5} \geq 5$ then continues using guess and check followed by $x > 6$ or $x \geq 7$ or $x = 7, 8, 9, \ldots$	For award of u: ONE of: • expressing in index form with the indices for the LHS combined • consistent equating of indices • guess and check giving correct answer with no algebraic working • corr.ect division by 16 giving $> 4\frac{1}{16}$ or ≥ 5. or
		For award of r: TWO or more of the stated procedures for u.
		For award of t: Correct solution showing algebraic working

<table>
<tr>
<td rowspan="3">(e)</td>
<td rowspan="2">If the first even number is A
$B = A + 2$
$\frac{B}{A} - \frac{A}{B} = \frac{B^2 - A^2}{AB}$
$= \frac{(A+2)^2 - A^2}{A(A+2)}$
$= \frac{A^2 + 4A + 4 - A^2}{A(A+2)}$
$= \frac{4A+4}{A^2+2A}$
$= \frac{4(A+1)}{A(A+2)}$</td>
<td>For award of u:
ONE of:
• expression for 2 consecutive odd numbers and substitutes these into equation
• correct simplification of fraction
• expansion of numerator
• simplification of numerator
• valid statement derived from algebraic working.
Numerical proof or demonstration gains n.</td>
</tr>
<tr>
<td>For award of r:
THREE or more of the stated procedures for u.</td>
</tr>
<tr>
<td>The numerator having factor of 4 will be even.
The denominator having an even number squared is an even number, and the $2A$ having a factor of 2 will be even. An even number plus an even number is always even.
OR
Ignoring C in terms of A accept:
First even number: $2n$
Second even number: $2n + 2$
$\frac{2n+2}{n} - \frac{2n}{2n+2}$
$C = \frac{(2n+2)(2n+2) - 2n \times 2n}{2n(2n+2)}$
$= \frac{4n^2 + 8n + 4 - 4n^2}{4n^2 + 4n}$
$= \frac{8n+4}{4n^2+4n}$
The numerator will be even and the denominator will be even.

OR equivalent.</td>
<td>For award of t:
Correct statement from correct algebraic working reducing to one fraction.
If the candidate proceeds to indicate that an even divided by an even can be simplified until one of them becomes odd then this is correct and acceptable.
Demonstrating with numbers and not showing algebraic proof gains n.</td>
</tr>
</table>

Guidelines for marking the MCAT 2017

The title of the standard requires the candidate to use algebraic procedures in solving problems. To fulfill the requirements of explanatory note 2, all questions require the candidates to choose the procedures from explanatory note 4 (EN4) that will lead them towards a solution of the question and apply these correctly. Evidence of algebraic working must be shown.

In order to provide evidence towards any grade, the candidate must demonstrate a level of algebraic thinking consistent with level six of the curriculum and be consistent with the spirit of the New Zealand Curriculum.

Guess and check is a basic substitution method of solving a problem and is at a lower curriculum level and cannot be used to demonstrate that the solution is unique in some questions eg. Question 3d on day 1 and 3e on day 2. If a candidate requires **one** u grade to achieve the standard the assessor may award one grade of **us** anywhere in the paper where they have shown evidence of the correct use of guess and check to solve the problem where a specific solution is required.

As an alternative, a correct answer only may be awarded a **us** grade once in the paper. You may only use this bonus grade for either a guess and check response or a correct answer once in the paper. This should be coded as "**us**".

Implications

All working must be checked in order to identify evidence of the application of a listed procedure which may involve a consistent application of an appropriate procedure applied to an incorrect algebraic expression on the condition that the expression does not significantly simplify the application.

Grading in general

1. In grading a candidate's work, the focus is on evidence required within the achievement standard.
2. Where there is evidence of correct algebraic processing and the answer is incorrect due to a numerical error, the candidate should not be penalised except in question **1a**. If it cannot be determined if it is a numerical or an algebraic error, the grade should not be awarded. e.g. factorising of a quadratic expression. Where the solution is inappropriate to the given context, the student's grade will drop down one.
3. Units are not required anywhere in the paper.
4. The grade for evidence towards the awarding of **achievement** is coded as **"u" or "us"**.
   For **merit**, the demonstrating of relational thinking is coded as **"r"**,
   and for **excellence**, the demonstrating of abstract thinking is coded as **"t"**.

Grading parts of questions

1. Check each part of the question and grade as **n**, **u (or us)**, **r**, **t**.
2. When the highest level of performance for a part of a question is demonstrated in the candidate's work, a code is recorded against that evidence. Only the highest grade is recorded for each part of a question.

Question grade

Each question gains the overall grade indicated below:

No **u** or **us** gains **N**	1**u** gains **1A** 2**u** or more gains **2A**	1**r** gains **1M** 2**r** or more gains **2M**	1**t** gains **1E** 2**t** or more gains **2E**
Note: A us grade may only be used once across the paper.			

Some examples of sufficiency across the paper

1. **For a Not Achieved grade (N)**
   2A or lower.
2. **For the award of an Achievement grade (A)**
   - 3A or higher from either:
   - 1A or higher in each question
   - 1A in one question and 2A in another
   - 2A and 1M or higher i.e. 3 questions correct across the paper.
3. **For the award of a Merit grade (M)**
   3M or higher from either:
   - 1M in each question
   - 1M in one question and 2M in another

   OR a total of
   - 2E and 1A
   - 1E, 1M and a total of 2u or more from any questions.
4. **For the award of an Excellence grade (E)** – 3E or more from 2 or more questions.
   OR a total of
   - 2E and 2M

Results

1. When loading school data, ensure you follow the instructions given on the NZQA schools' secure web site. (In high security features, Provisional and Final Results Entry, L1 MCAT Instructions – School's PN has access to this).
2. **Please ensure that all registered candidates have a grade recorded on the website before submitting your school's papers for verification otherwise this does not allow verification to take place.**
3. Verification reports will not be included in the envelope returned to the school. It can be accessed on the NZQA secure web site.

Verifying

A reminder that candidates' work submitted for verification **should not be scripts where assessors have allocated final grades by professional judgement or on a holistic basis or scripts that have been discussed on the help line.** The purpose of verification is to check the school's ability to correctly apply the schedule.

A holistic decision is when a candidate's work provides significant evidence towards the award of a higher grade across the paper and the assessor believes it would be appropriate to award such a grade.The assessor should review the entire script and determine if it is a minor error or omission that is preventing the award of the higher grade. The question then needs to be asked "Is this minor error preventing demonstration of the requirements of the standard?". The final grade should then be determined on the basis of the response to this question.

ASSESSMENT SCHEDULE – 2017

The assessment schedule for the MCAT 2017 looks a little different.

There are several reasons for this:

All parts of questions are problems in which the candidates are required to demonstrate the use of mathematical processes in order to find a solution.

E.g. at achieved level, all of the processes below must be included in all parts:
- selecting and using procedures in solving problems
- demonstrating knowledge of algebraic concepts and terms
- communicating solutions using appropriate mathematical symbols

In order to do this they need to apply the procedures listed in AS91027 explanatory note 4 (EN4) at curriculum level 6 difficulty.

The procedures are "selected by the candidate" hence it is not always possible to give a "defined" way of solving the problem. Alternative methods of solving the problem are to be accepted if the mathematical procedure is from the given list, and demonstrates working at curriculum level 6.

A likely method of solution is given in the expected coverage.

A way of identifying the grade to be allocated for a part of a question is given in the last column of the table, where the procedures used in the expected coverage are listed.

If a candidate makes an error in their working that demonstrates the lack of ability to perform that procedure, they may well demonstrate further evidence of appropriate application of other procedures later in their solution. The remainder of the question must be considered for the application of procedures that lead to a consistent solution, as long as it does not simplify the problem before the allocation of the grade.