## Assessment Schedule – 2015

## Mathematics and Statistics (CAT): Apply algebraic procedures in solving problems (91027A)

## Assessment Criteria

**DAY 1**

NOTES – alternative methods showing algebra leading to a correct solution are acceptable.
It is expected that the responses to selecting and applying procedures will be appropriate and correct.
Writing an equation does not mean having "the variable =..."
Unless stated otherwise numerical errors will be ignored and correct answer only and guess and check methods will be limited to a ns grade.
Numerical answers are accepted without simplification

THIS SCHEDULE MUST BE READ IN CONJUNCTION WITH THE GUIDELINES FOR MARKING

| ONE | Evidence | Max grade | Achievement | Merit | Excellence |
|---|---|---|---|---|---|
| (a) | $4x^2 + 3x - 10$ | us | Expansion with simplification – having not been given the opportunity to select a procedure at curriculum level 6. Must be simplified | | |
| (b) | $x = 0$ and $x = -3$ | u | Solved. Must have both values. Accept for u with CAO. | | |
| (c) | $23 = 8 + 3(h - 2)$ where $h$ is the number of hours.<br>$3h - 6 = 15$<br>$h = 7$<br>Rani has the bike for 7 hours. | r | Set up equation omitting the –2 and solved.<br>OR<br>Equation given with the –2. | Equation without the –2 but the addition made at the end. OR correct equation set up and solved. | |
| (d) | $\frac{4ab^2 - 4a^3b}{4ab^2} = \frac{4ab(b-a^2)}{4ab^2}$<br>$= \frac{b-a^2}{b}$ or $1 - \frac{a^2}{b}$ | r | Numerator simplified or factorised. | Rational expression simplified. | |
| (e) | If $S$ is the distance travelled by Sam and $J$ is the distance travelled by Jake.<br>$S + J = 8$<br>$J = 8 - S$<br>$3S = 2J$<br>$3S = 16 - 2S$<br>$5S = 16$<br>$S = 3.2$<br>$J = 4.8$<br>They meet 4.8 km from Jake's home. | t | One equation formed. | Combined equation in one variable.<br>OR<br>No algebraic expression but demonstrated the correct use of the ratio and achieved the correct answer OR algebraic expression with the ratio reversed and a correct or consistent solution. | Correct algebraic expression leading to correct solution. |

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|---|---|---|---|---|---|
| (f) | $c$ is the product of two numbers.<br>If there is only one solution, it must be a square number.<br>These two numbers have to add to 6 for the expression given.<br>$c$ is the square of 6/2.<br>The solution becomes<br>$x^2 + 6x + 9 = 0$<br>$(x + 3)^2 = 0$<br>$x = -3$ | t | If show factorising as a perfect square as an indication of understanding the meaning of 1 solution. | Value of constant found or solution from perfect square without giving the value of the constant. Evidence of finding the value of the constant may be from their equation. | Value of constant found and the equation solved. |

| TWO | Evidence | Max grade | Achievement | Merit | Excellence |
|---|---|---|---|---|---|
| (a) | $(3x-2)(x-3)$ | us | us factorised expression. No penalty for solving = 0. | | |
| (b) | $h = 4 \times 0.5 + 1$<br>$= 3$ | u | Substituted and correct solution. Numerical errors are not accepted in this question. | | |
| (c) | $(x+5)(x-2) < 0$<br>$-5 < x < 2$ | r | Factorised expression written.<br>OR<br>With the end points included in the inequality. | Solved stating the interval with both end points excluded. This may be in the form of an algebraic expression or as a written description.<br>Accept $2 > x > -5$ | |
| (d) | $2^{n-1} \geq 16$<br>$n - 1 = 4$<br>$n = 5$<br>or after the 4th week | r | Simplifies equation or inequations. | Equation solved which at curriculum level 6 will be by guess and check accept 5 or after the 4th week. | |
| (e) | EITHER<br>$\frac{(x+1)(x-1)}{(x+1)^2} = \frac{3}{4}$<br>$\frac{x-1}{x+1} = \frac{3}{4}$ if $x \neq 1$<br>$4x - 4 = 3x + 3$<br>$x = 7$<br>OR<br>$4x^2 - 4 = 3x^2 + 6x + 3$<br>$x^2 - 6x - 7 = 0$<br>$(x-7)(x+1) = 0$<br>$x = 7$ or $x = -1$<br>$x = -1$ is an invalid solution as dividing by 0.<br><br>OR<br>Substitution of $\pm 1$ or $-7$ showing these solutions are invalid. | t | Expression factorised correctly.<br><br>OR<br><br>For identifying the $+6x$.<br><br>Substitution giving invalid solution. | Expression simplified.<br><br>Correct factorising and solve giving 2 solutions.<br>OR<br>Substituting the given solutions and finding 1 of them does not work. | Single solution found (ignore statement if $x \neq 1$)<br><br>Elimination of one solution as $x = -1$ is invalid with justification. |
| (f) | A + S = 38<br>12A + 10S = 420<br><br>12A + 10(38 – A) = 420<br><br>12A – 10A = 420 – 380<br><br>2A = 40<br>A = 20<br><br>18 students.<br>OR S = 18 | t | One equation formed. | One variable eliminated. | Solution found. |

| THREE | Evidence | Max grade | Achievement | Merit | Excellence |
|---|---|---|---|---|---|
| (a) | $4(x + 5) = 24$<br>$4x + 20 = 24$<br>$x = 1$ | u | Equation set up AND solved.<br>Accept with equation as "variable =...". | | |
| (b) | Area = $n(n + 2)$ | u | Expression correct with brackets or in expanded form – accept without Area =<br>Accept CAO.<br>May be expressed with a different variable. | | |
| (c) | $5r^3 = 320$<br>$r^3 = 64$<br>$r = 4$ | r | Equation simplified. | Equation solved this may be in the form $\sqrt[3]{\frac{320}{5}}$. | |
| (d) | Miree studies for 12 hours.<br>$S \geq \frac{2}{3} \times 3 \times 4 + 2 \geq 10$<br>**Condition 1:**<br>If Sarah studies for more than four hours on the weekend, she studies for longer than Miree.<br>**Condition 2:**<br>If Sarah studies for 4 hours, they study for the same length of time.<br>**Condition 3:**<br>If Sarah studies between 2 and 4 hours on the weekend, she studies less than Miree. | t | An algebraic inequality.<br>OR<br>Statements as to whether the claim is correct or not and justify this for a given number of hours on the weekend.<br>• Yes if she studies for more than 4 hours on the weekend.<br>• No if she only studies for 4 or less hours on the weekend.<br>• No if she studies between two and four hours on the weekend. | Inequality and one of the above statements.<br>OR<br>A positive and negative statement from those listed above. | Complete response with an inequality and both scenarios. |

| | | | | | |
|---|---|---|---|---|---|
| (e) | Let hours worked by Marius = $x$<br>Marius earns $14x$<br>Samie earns $\frac{18x}{2}$<br>$23x = 138$<br>$x = 6$<br>Samie works for 3 hours and earns \$54.<br><br>OR solved by simultaneous equations<br>M= 2S<br>14M + 18S = 138<br>28S + 18S = 138<br>46S = 138<br>S = 3<br><br>Samie works for 3 hours and earns \$54. | t | Consistent use of variable between hours worked and money earned.<br><br>OR<br>One equation given. | Relationship formed in 1 variable.<br>OR<br>Problem solved for other person.<br><br>Relationship formed in 1 variable Or problem solved for other person. | Problem solved.<br><br>Problem solved. |
| (f) | Volume of cylinder<br>$= \pi r^2 h_{\text{cylinder}}$<br>$= 2 \times \frac{\pi}{3} r^2 h_{\text{cone}}$<br>$\Rightarrow h_{\text{cylinder}} = \frac{2}{3} h_{\text{cone}}$<br>$\Rightarrow$ ratio of height of cylinder to height of the cone is $\frac{2}{3}$<br>or $2:3$. | t | Relationship formed for the volumes. | An error in the simplification or consistent solution with the multiplication factor on the wrong side of the relationship. | Relationship simplified.<br><br>Ignore if relationship stated as 3:2. |

**Guidelines for marking the MCAT 2015**

The style of some of the questions in this year's assessment has changed so as to align more closely with the requirements of the achievement standard. The title of the standard requires the candidate to use algebraic procedures in solving problems.

Explanatory note two requires the candidates to select an appropriate procedure from those listed in explanatory note four and these will be at approximately level six of the curriculum. This requirement is consistent with the spirit of the New Zealand Curriculum.

This means that a candidate must achieve a minimum of 1**"u"** grade . **"u"** indicates selecting and demonstrating the use of an appropriate algebraic procedure in progressing towards a solution of a problem, as opposed to a grade of **"us"**. A **"us**" grade indicates that a candidate has correctly completed the procedure that they were **directed** to perform, which occurs in questions 1a and 2a.

**If** the candidate selects and uses an appropriate algebraic procedure correctly in the solving of a problem, a "**u"** grade is awarded. A definition of a problem in this standard is given in explanatory note 2 of the standard.

I.e. In this context "in solving problems" means correctly:

i) selecting and applying an appropriate algebraic procedure(s) from those listed in EN 4 of the standard
ii) translating a word problem into mathematical terms
iii) translating mathematical terms into word statements in progressing towards a solution of a problem.

**Implications.**

In order to be awarded achievement or higher in this standard, the candidate must demonstrate the selection and correct use of an appropriate procedure which would lead them towards the correct solution. This 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. This means that the candidate may give an appropriate and consistent response to an incorrect algebraic expression.

**Correct answers only and guess and check** can only be awarded a **"us"** grade. The gaining of this **"us"** grade can only be used once in the assessment. This is because answering a question in this way fails to demonstrate an appropriate algebraic procedure at level 6 of the curriculum, as listed in the achievement standard. The students are expected to demonstrate the application of a range of procedures within their solutions.

**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 then destroyed by a numerical error, the candidate should not be penalised in **most** questions. 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.
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"**.

**Correct answers only, numerical methods and guess and check** do not provide sufficient evidence to ensure appropriate application of algebraic procedures as listed in the achievement standard. These are graded as **ns.**

**Grading parts of questions**

1. Check each part of the question and grade as **n**, **us** (only available for part 1a or 2a), **u**, **r**, **t**, or in the case of CAO (correct answer or ns only), NM (numerical methods) or GC (guess and check) record **ns**.
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.
3. There is no requirement to satisfy evidence for achievement before evidence for merit is counted, or for sufficient evidence for merit to be shown before evidence for excellence is able to be recognised.

**Question grade**

Each question gains the overall grade indicated below:

| | | | |
|---|---|---|---|
| No u or us gains **N** | 1u or us gains **1A**<br><br>2 or more u or us gains **2A** | 1r gains **M**<br><br>2 or more r gains **2M** | 1t gains **E**<br><br>2t gains **2E** |

**Sufficiency across the paper**

1. **For a Not Achieved grade (N)**

   Less than 3A

   or: 3 of us and u grades within the one question only gains 2A and no us or u grades anywhere else in the paper

   or: 3A but no straight u grade awarded

   or: a single E or M grade

   Note: 1A and 1M will gain N unless there is also u grade in the question where the M was awarded (this is higher than a 2A.)

   Do remember a candidate cannot be awarded Achievement for the standard unless you have at least one straight u question correct i.e. have chosen an algebraic procedure and made progress towards a solution.

   If the candidate has only achieved 2A grades including at least 1u grade in the entire paper you may reclassify **one** of the ns grades as a us grade in order to generate a 1A + 1A + 1A or 2A + 1A.

2. **For the award of an Achievement grade (A).**
   3A or higher as indicated in the table below.

| | **1 question** | **Another question** | **Another question** | |
|---|---|---|---|---|
| Method 1 | 1us = 1A | 1us = 1A | 1u = 1A | The candidate must gain at least 3A across a minimum of 2 questions.<br>At least one of the As must come from a **u** grade.<br>I.e. there must be at least one example of the candidate choosing an appropriate procedure and consistently applying it in progressing towards the solution of a problem. |
| Method 2 | 2 or more us = 2A | 1u = 1A | n = N | |
| Method 3 | 2 or more u = 2A | 1us = 1A | n = N | |
| Method 4 | 1u = 1A | 1u = 1A | 1u = 1A | |
| Method 5 | 2 or more u = 2A | 1u = 1A | n = N | |
| Method 6 | 1u or us = 1A | 1M (provided there is also a u grade elsewhere in the question) or 1E | | |

3 **For the award of a Merit grade (M)**
3 M or higher **OR** 1E and 1M

4 **For the award of an Excellence grade (E)**
3E **OR** 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.

**Verifying**

1. 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.
2. Holistic decision. If a candidate's work provides significant evidence towards the award of a higher grade 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 in the basis of the response to this question.

## Assessment Schedule – 2015

## Mathematics and Statistics (CAT): Apply algebraic procedures in solving problems (91027B)

## Assessment Criteria

**DAY 2**

NOTES – alternative methods showing algebra leading to a correct solution are acceptable.
It is expected that the responses to selecting and applying procedures will be appropriate and correct.
Writing an equation does not mean having "the variable =..."
Unless stated otherwise numerical errors will be ignored and correct answer only and guess and check methods will be limited to a ns grade.
Numerical answers are accepted without simplification

THIS SCHEDULE MUST BE READ IN CONJUNCTION WITH THE GUIDELINES FOR MARKING

| ONE | Evidence | Max grade | Achievement | Merit | Excellence |
|---|---|---|---|---|---|
| (a) | $(2x - 3)(x - 6)$ | us | us factorised expression. No penalty for solving = 0. | | |
| (b) | $h = 2(2 - 1) + 2 = 4$ | u | Substituted and correct solution. Numerical errors are not accepted in this question. | | |
| (c) | $(x + 6)(x - 2)$<br>$-6 < x < 2$ | r | Factorised expression written or with end points included in the inequality. | Solved stating the interval with both end points excluded. This may be in the form of an algebraic expression or as a written description.<br>Accept $2 > x > -6$ | |
| (d) | $2^{n-1} \geq 16$<br>$n - 1 = 4$<br>$n = 5$<br>or after the 4th week | r | Simplifies equation or inequation. | Equation solved which at curriculum level 6 will be by guess and check.<br>accept 5 or after the 4th week. | |

| | | | | | |
|---|---|---|---|---|---|
| (e) | EITHER<br>$\frac{(x+1)(x-1)}{(x+1)^2}=\frac{3}{4}$<br>$\frac{x-1}{x+1}=\frac{3}{4}$ if $x\neq 1$<br>$4x-4=3x+3$<br>$x=7$<br>OR<br>$4x^2-4=3x^2+6x+3$<br>$x^2-6x-7=0$<br>$(x-7)(x+1)=0$<br>$x=7$ or $x=-1$<br>$x=-1$ is an invalid solution as dividing by 0<br><br>OR<br>Substitution of ±1 or ±7 showing these solutions are invalid. | t | Expression factorised correctly<br><br>OR<br><br>For identifying the $+6x$.<br><br>Substitution giving invalid solution. | Expression simplified.<br><br>Correct factorising and solve giving 2 solutions or substituting the given solutions and finding 1 of them does not work. | Single solution found (ignore statement if $x\neq 1$).<br><br>Elimination of one solution as $x=-1$ is invalid with justification. |
| (f) | $A+S=21$<br>$14A+10S=258$<br>$14A+10(21-A)=258$<br>$14A-10A=258-210$<br>$4A=48$<br>$A=12$<br>9 of the group were over 65. | t | One equation formed. | One variable eliminated. | Solution found. |

| TWO | Evidence | Max grade | Achievement | Merit | Excellence |
|---|---|---|---|---|---|
| (a) | $3x^2 + x - 14$ | us | Expansion with simplification – having not been given the opportunity to select a procedure at curriculum level 6. Must be simplified | | |
| (b) | $x = 0$ and $x = -9$ | u | Solved. Must have both values. Accept for u with CAO. | | |
| (c) | $77 = 38 + 13(h - 2)$ where $h$ is the number of hours.<br>$13h - 26 = 39$<br>$13h = 65$<br>Manu looks after her cousins for 5 hours. | r | Set up equation omitting the – 2 and solved.<br>OR<br>Equation given with the –2. | Equation without the -2 but the addition made at the end OR correct equation set up and solved. | |
| (d) | $\frac{6xy^2 - 2x^3y}{4xy^2} = \frac{2xy(3y - x^2)}{4xy^2}$<br>$= \frac{3y - x^2}{2y}$ | r | Numerator simplified or factorised. | Rational expression simplified. | |
| (e) | If $U$ is the distance travelled by Uenuku and $T$ is the distance travelled by Tom:<br>$U + T = 15$<br>$3U = 2T$<br>$3(15 - T) = 2T$<br>$45 - 3T = 2T$<br>$5T = 45$<br>$T = 9$<br>$U = 6$<br>They meet 6 km from Uenuku's home. | t | One equation formed. | Combined equation in one variable.<br>OR<br>No algebraic expression but demonstrated the correct use of the ratio and achieved the correct answer OR algebraic expression with the ratio reversed and a correct or consistent solution. | Correct algebraic expression leading to correct solution. |

| | | | | | |
|---|---|---|---|---|---|
| (f) | $b$ is the sum of two numbers.<br>If there is only one solution, the two numbers must be same.<br>These two numbers have to multiply together to get 16 for the expression given.<br>$b$ is twice the square root of 16.<br>$b = -8$ or $b = 8$<br>The solution becomes<br>$x^2 + 8x + 16 = 0$<br>or $x^2 - 8x + 16 = 0$<br>$(x + 4)^2 = 0$ or $(x - 4)^2 = 0$<br>$x = -4$ or $x = 4$ | t | Show factorised as a perfect square as an indication of understanding the meaning of 1 solution. | Value of constant found or solution from perfect square without giving the value of the constant. Evidence of finding the value of the constant may be from their equation. No need for both possible solutions. | Value of constant found and the equation solved. |

| THREE | Evidence | Max grade | Achievement | Merit | Excellence |
|---|---|---|---|---|---|
| (a) | $\frac{a+7}{4}=5$<br>$a=20-7$<br>$=13$ | u | Equation set up AND solved.<br>Accept with equation as variable =. | | |
| (b) | Area = $a(a-3)$ | u | Expression correct with brackets or in expanded form – accept without Area =<br>Accept CAO.<br>May be expressed with a different variable | | |
| (c) | $6r^4=486$<br>$r^4=81$<br>$r=3$ | r | Equation simplified. | Equation solved this may be in the form $\sqrt[4]{\frac{64}{4}}$. | |
| (d) | $K$ has 400 shots.<br>$T \geq \frac{3}{4}\times 400+80$<br>$\geq 380$<br>**Condition 1:**<br>No. If Talia shoots between 80 and 100 shots on the weekend she shoots less than Kaziah.<br>**Condition 2:**<br>No. If Talia shoots 100 goals on the weekend she shoots the same number as Kaziah.<br>**Condition 3:**<br>Yes. If Talia shoots more than 100 goals then she shoots more than Kaziah. | t | An algebraic inequality.<br>OR<br>Statements as to whether the claim is correct or not and justify this for a given number of shots on the weekend.<br>• Yes if she shoots more than 100 shots on the weekend.<br>• No if she only shoots 100 or less hours on the weekend.<br>• No if she shoots between 80 and 100 shots on the weekend. | Inequality and one of the above statements.<br>OR<br>A positive and negative statement from those listed above. | Complete response with an inequality and both scenarios. |

| | | | | | |
|---|---|---|---|---|---|
| (e) | Let hours worked by Marina $x$.<br>Marina earns $20x$<br>Wiremu earns $\frac{18x}{3}$<br>$78x = 156 \times 3$<br>$x = 6$<br>Wiremu works for 2 hours and earns \$36<br>OR<br>Solved by simultaneous equations<br>M = 3W<br>20M +18W = 156<br>$3 \times 20W + 18W = 156$<br>78W = 156<br>W = 2<br>Wiremu works for 2 hours and earns \$36. | t | Consistent use of variable between hours worked and money earned.<br><br>OR<br><br>One equation given. | Relationship formed in 1 variable.<br>OR<br>Problem solved for other person.<br><br>Relationship formed in 1 variable Or problem solved for other person. | Problem solved.<br><br>t problem solved. |
| (f) | Volume of cylinder<br>$= \pi r_1^2 h$<br>$= 4 \times \frac{\pi}{3} r_2^2 h$<br>$\Rightarrow r_1^2 = \frac{4}{3} r_2^2$<br>Radius of cone = $\sqrt{\frac{4}{3}}$ radius of cylinder. | t | Relationship formed for the volumes | An error in the simplification or consistent solution with the multiplication factor on the wrong side of the relationship. | Relationship simplified. |

**Guidelines for marking the MCAT 2015**

The style of some of the questions in this year's assessment has changed so as to align more closely with the requirements of the achievement standard. The title of the standard requires the candidate to use algebraic procedures in solving problems.

Explanatory note two requires the candidates to select an appropriate procedure from those listed in explanatory note four and these will be at approximately level six of the curriculum. This requirement is consistent with the spirit of the New Zealand Curriculum.

This means that a candidate must achieve a minimum of 1**"u"** grade . **"u"** indicates selecting and demonstrating the use of an appropriate algebraic procedure in progressing towards a solution of a problem, as opposed to a grade of **"us"**. A **"us**" grade indicates that a candidate has correctly completed the procedure that they were **directed** to perform, which occurs in questions 1a and 2a.

**If** the candidate selects and uses an appropriate algebraic procedure correctly in the solving of a problem, a "**u"** grade is awarded. A definition of a problem in this standard is given in explanatory note 2 of the standard.

I.e. In this context "in solving problems" means correctly:

i) selecting and applying an appropriate algebraic procedure(s) from those listed in EN 4 of the standard
ii) translating a word problem into mathematical terms
iii) translating mathematical terms into word statements in progressing towards a solution of a problem.

**Implications.**

In order to be awarded achievement or higher in this standard, the candidate must demonstrate the selection and correct use of an appropriate procedure which would lead them towards the correct solution. This 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. This means that the candidate may give an appropriate and consistent response to an incorrect algebraic expression.

**Correct answers only and guess and check** can only be awarded a **"us"** grade. The gaining of this **"us"** grade can only be used once in the assessment. This is because answering a question in this way fails to demonstrate an appropriate algebraic procedure at level 6 of the curriculum, as listed in the achievement standard. The students are expected to demonstrate the application of a range of procedures within their solutions.

**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 then destroyed by a numerical error, the candidate should not be penalised in **most** questions. 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.
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"**.

**Correct answers only, numerical methods and guess and check** do not provide sufficient evidence to ensure appropriate application of algebraic procedures as listed in the achievement standard. These are graded as **ns.**

**Grading parts of questions**

1. Check each part of the question and grade as **n**, **us** (only available for part 1a or 2a), **u**, **r**, **t**, or in the case of CAO (correct answer or ns only), NM (numerical methods) or GC (guess and check) record **ns**.
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.
3. There is no requirement to satisfy evidence for achievement before evidence for merit is counted, or for sufficient evidence for merit to be shown before evidence for excellence is able to be recognised.

**Question grade**

Each question gains the overall grade indicated below:

| | | | |
|---|---|---|---|
| No u or us gains **N** | 1u or us gains **1A**<br>2 or more u or us gains **2A** | 1r gains **M**<br>2 or more r gains **2M** | 1t gains **E**<br>2t gains **2E** |

**Sufficiency across the paper**

1. **For a Not Achieved grade (N)**

   Less than 3A

   or: 3 of us and u grades within the one question only gains 2A and no us or u grades anywhere else in the paper

   or: 3A but no straight u grade awarded

   or: a single E or M grade

   Note: 1A and 1M will gain N unless there is also u grade in the question where the M was awarded (this is higher than a 2A.)

   Do remember a candidate cannot be awarded Achievement for the standard unless you have at least one straight u question correct i.e. have chosen an algebraic procedure and made progress towards a solution.

   If the candidate has only achieved 2A grades including at least 1u grade in the entire paper you may reclassify **one** of the ns grades as a us grade in order to generate a 1A + 1A + 1A or 2A + 1A.

2. **For the award of an Achievement grade (A).**
   3A or higher as indicated in the table below.

| | **1 question** | **Another question** | **Another question** | |
|---|---|---|---|---|
| Method 1 | 1us = 1A | 1us = 1A | 1u = 1A | The candidate must gain at least 3A across a minimum of 2 questions.<br>At least one of the As must come from a **u** grade.<br>I.e. there must be at least one example of the candidate choosing an appropriate procedure and consistently applying it in progressing towards the solution of a problem. |
| Method 2 | 2 or more us = 2A | 1u = 1A | n = N | |
| Method 3 | 2 or more u = 2A | 1us = 1A | n = N | |
| Method 4 | 1u = 1A | 1u = 1A | 1u = 1A | |
| Method 5 | 2 or more u = 2A | 1u = 1A | n = N | |
| Method 6 | 1u or us = 1A | 1M (provided there is also a u grade elsewhere in the question) or 1E | | |

3 **For the award of a Merit grade (M)**
3 M or higher **OR** 1E and 1M

4 **For the award of an Excellence grade (E)**
3E **OR** 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.