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90147

NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

National Certificate of Educational Achievement
TAUMATA MĀTAURANGA Ā-MOTU KUA TAEA

Level 1 Mathematics, 2006

90147 Use straightforward algebraic methods and solve equations

Credits: Four
9.30 am Friday 24 November 2006

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

You should answer ALL the questions in this booklet.

You should show ALL working.

If you need more space for any answer, use the page(s) provided at the back of this booklet and clearly number the question.

Check that this booklet has pages 2–7 in the correct order and that none of these pages is blank.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

For Assessor's use only	**Achievement Criteria**	
Achievement	**Achievement with Merit**	**Achievement with Excellence**
Use straightforward algebraic methods. ☐	Use algebraic methods and solve equations in context. ☐	Use algebraic strategies to investigate and solve problems. ☐
Solve equations. ☐		
Overall Level of Performance (all criteria within a column are met) ☐		

You are advised to spend 30 minutes answering the questions in this booklet.

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PETER, PAUL AND MARY (PLUS FRIENDS)

You should show **ALL** working.

QUESTION ONE

Solve these equations:

(a) $2(x - 3) = 8$

(b) $5x + 7 = x - 2$

(c) $3x(x + 4) = 0$

QUESTION TWO

Expand and simplify:

$(3x - 1)(x - 2) =$

QUESTION THREE

Simplify:

$$\frac{9x^5}{12x^3} =$$

QUESTION FOUR

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Mary prints flowers onto different-shaped tablecloths.
Mary's rule for calculating the total number of flowers, F, she prints onto a tablecloth is:

$F = \frac{n(n+1)}{2}$ where n is the number of edges on the tablecloth.

Use this rule to calculate the total number of flowers, F, she prints on a tablecloth that has 6 edges.

The total number of flowers, $F =$ _____

QUESTION FIVE

Simplify:

$$\frac{x^2+7x+10}{x+2}$$

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QUESTION SIX

Peter has more than twice as many CDs as Mary.
Altogether they have 97 CDs.

Write a relevant equation, and use it to find the **least number** of CDs that Peter could have.

Least number of CDs that Peter could have = _____

QUESTION SEVEN

Paul bought some CDs in a sale.
He bought four times as many popular CDs as classical CDs.
The popular CDs, P, were \$1.50 each.
The classical CDs, C, were 50 cents each.
He spent \$52 altogether.

Solve these equations to find out how many classical CDs Paul bought.

$$4C = P$$
$$1.5P + 0.5C = 52$$

The number of classical CDs Paul bought = _____

QUESTION EIGHT

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James is five years old now and Emma is four years older.

Form a relevant equation and use it to find out how many years it will take until James's and Emma's ages in years, multiplied together, make 725 years.

Show all your working.

Extra paper for continuation of answers if required.
Clearly number the question.

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Question number	

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Clearly number the question.

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Question number	