For Supervisor's use only

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90290

NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

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

Level 2 Mathematics, 2006

90290 Solve straightforward problems involving arithmetic and geometric sequences

Credits: Two
2.00 pm Wednesday 29 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.

Make sure you have a copy of Formulae Sheet L2-MATHF.

You should answer ALL the questions in this booklet.

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**	
Solve straightforward problems involving both arithmetic and geometric sequences.	Solve problems involving sequences.	Explore situations and interpret the results of problems involving sequences.	
Overall Level of Performance			

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

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"COMPUTING"

QUESTION ONE

Lesley's employer is pleased with her improved performance in entering data on the computer.
On the first day she made 750 errors in the data entries.
On day two she made 85% of the number of errors that she made on the first day.
On day three she made 85% of the number of errors that she made on the second day and so on.

If this pattern continued indefinitely, what would be the **total** number of errors in data entry that she would have made?

QUESTION TWO

Grant has a 5 000-word assignment to write.
Grant begins his assignment on 3 March and writes 175 words.
Each day he writes 290 more than he did the previous day.

(a) How many words will he write on **6 March**?

(b) How many words will he have written **in total** at the end of 5 days?

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(c) Kim also has to write a 5 000-word assignment.
On the first day she manages to write 100 words.
Each day she writes three times as many words as she wrote the previous day.

How many words will Kim have written **in total** at the end of the fourth day?

(d) Emma types her assignment on a computer.
She types 700 words on the day she begins the assignment.
Each day she types 10% fewer words than the day before.

How long will she take to type the 5 000-word assignment?

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QUESTION THREE

Lesley is working every day on a computer project.
She told Meg she did 60 pages of work on her ninth day on the project.
Meg remembers that on Lesley's fourth day, Lesley had done 25 pages.
Lesley said that each day she has increased the number of pages she did by the same number from the day before.

How many pages could Meg expect Lesley to complete on the twentieth day?

QUESTION FOUR

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Karl decides to buy a new computer.
Ten years ago, his grandmother deposited $800 in a bank account for Karl.
He received 7% interest **per annum** compounded monthly over the 10 years.

How much money would Karl have in the account for his new computer?
SHOW YOUR WORKING.

QUESTION FIVE

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A publishing company knows that producing 60 copies of a book will cost $1 850.
To produce 140 copies, it would cost $2 975.
The publishers believe that $25.75 will be a realistic selling price for the book.

There are both fixed costs and variable costs when producing the books. The fixed cost is the same no matter how many books are produced. The variable cost depends directly on the number of books produced.

Using these costings, what is the minimum number of books that must be sold in order to make a profit?

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

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Question number	