90290

Level 2 Mathematics, 2004

90290 Solve straightforward problems involving sequences

Credits: Two

2.00 pm Tuesday 23 November 2004

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 pages 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.

Achievement Criteria	*For Assessor's use only*	
Achievement	**Achievement with Merit**	**Achievement with Excellence**
Solve straightforward problems involving sequences.	Solve problems involving sequences.	Explore situations and interpret the results of problems involving sequences.
Overall Level of Performance		

You are advised to spend 25 minutes answering the questions in this booklet.

SURFING THE NET

Show working.

QUESTION ONE

Julia spends 21 minutes on the internet on the first day her new computer arrives.
She spends 24 minutes on the internet on the second day.
She spends 27 minutes on the internet on the third day.
She continues to increase her daily internet use at the same rate.

(a) How long will she spend on the internet on the 20th day?

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(b) How much time will she spend in total on the internet in the first 20 days?

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QUESTION TWO

Jason spends 20 minutes on the internet the first day the new computer arrives.
Each day he increases the time spent on the internet by 7% from the day before (ie each day he spends 1.07 times as many minutes as he did the previous day).

What is the total time Jason has spent on the internet in the first 21 days?

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QUESTION THREE

The Brown family lease a computer system and make payments monthly.
The payments reduce each month by the same percentage.
They paid $900 in the second month.
They paid $729 in the fourth month and $590.49 in the sixth month, and so on.

How much did they pay in the first month?

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QUESTION FOUR

Jason buys a laptop computer for $4 800.

The computer depreciates at the rate of 32% per year. How many years, to the nearest year, will it take for the laptop to reduce to one-tenth of its original value?

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QUESTION FIVE

Aunt Jane helps Jason with his savings.
In week 1 she gives him $75.
Each week she reduces the amount she gives him by 20% of the previous week's amount.

If this continues indefinitely, how much will Aunt Jane give Jason in total?

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QUESTION SIX

Jeremy's Internet Reduction Plan

Jeremy decides to reduce his internet use by the same number of minutes each week.
Jeremy uses the internet for 1 490 minutes in week 9, and the total number of minutes of his internet use after 24 weeks is 29 880 minutes.

For how many minutes did Jeremy use the internet in week 1 of his Reduction Plan?

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

Question
number

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Question number