



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, 2003

90290 Solve straightforward problems involving sequences

Credits: Two

9.30 am Wednesday 19 November 2003

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.

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.	<input type="checkbox"/>	Solve problems involving sequences.	<input type="checkbox"/>	Explore situations and interpret the results of problems involving sequences.	<input type="checkbox"/>
Overall Level of Performance			<input type="checkbox"/>		

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

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KORRIE'S BACKYARD

Show ALL working.

QUESTION ONE

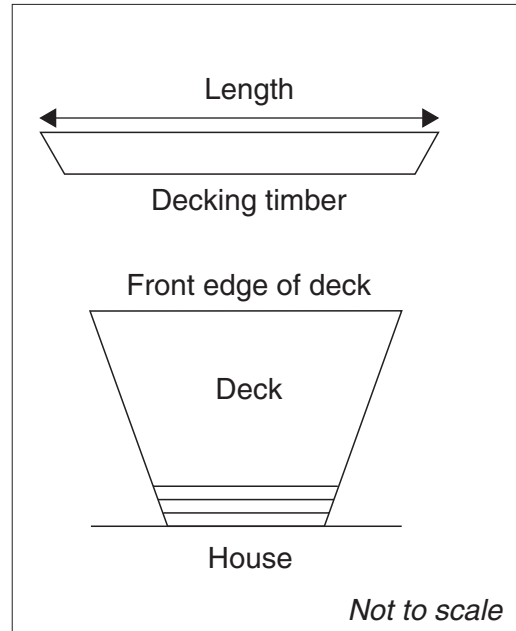
Korrie intends to build a trapezium-shaped deck at the back of her house using decking timber.

The shortest piece of decking timber is 3.60 metres long.

The second piece is 3.72 metres long and each successive piece is 0.12 metres longer than the previous piece.

The deck will require 24 pieces of decking timber. The shortest three pieces of decking timber are shown on the diagram to the right.

Calculate how long the front edge of the deck will be.



QUESTION TWO

Korrie uses an exercycle to train for a cycle race around Lake Taupo.

The first day she cycles for 15 km.

Each day she cycles 0.5 km more than she did on the previous day.

She cycles for each of the 31 days in March.

Calculate the total distance that Korrie cycles in the month of March.

QUESTION THREE

Korrie bought a cactus plant.

The height of the cactus was 24 cm.

Each week, the cactus was 5% taller than it was the week before (ie 1.05 times taller).

Calculate the height of the cactus at the beginning of the 12th week.

QUESTION FOUR

Korrie planted some bamboo.

The first week, it grew 60 cm.

Each week, the length that the bamboo grows is 10% less than in the previous week.

The bamboo was initially at ground level.

Calculate the maximum height the bamboo will ever grow.

QUESTION FIVE

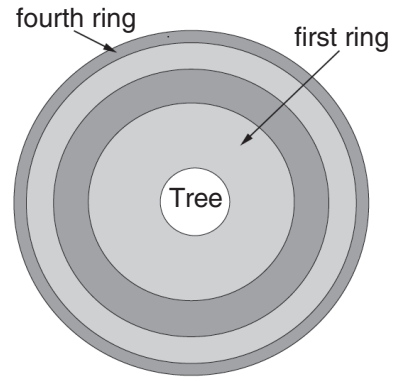
Korrie has put cobblestones in the shape of rings around the trunk of a tree, as shown to the right.

The percentage increase in area from one ring to the next is constant.

The area of the first ring is 2.42 square metres.

The area of the fourth ring is 8.98 square metres.

Calculate the area of the **second** ring of cobblestones.



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QUESTION SIX

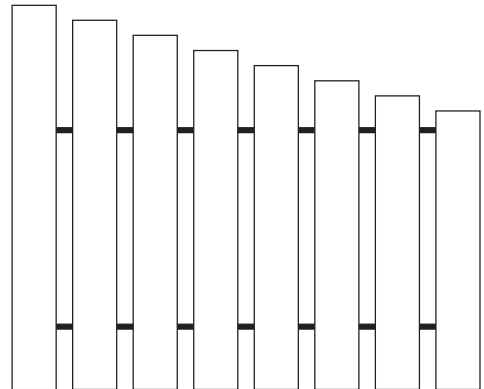
Korrie is building a wooden fence.

The 8 pieces of wood in the last section of fence reduce in height.

Each piece of wood is 80 mm shorter than the previous piece.

Korrie can make 8 of the pieces of wood using all of a 6 metre length of timber.

Calculate the length of the longest piece of wood.



Payments are made at the end of each month for both plans.

Pay a deposit of \$1510. The first monthly payment is \$120, and then each successive payment is \$20 more than the previous.

Pay a deposit of \$3160. The first monthly payment is \$500, and then each successive payment is \$10 less than the previous.

Calculate how many months it will be before the total amount paid into the *Hotspa* payment plan would be the same as the total amount paid into the *Springspa* payment plan.

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

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Question Number	Question	Answer
1	What is the primary purpose of a business plan?	To outline the business's goals and strategies for achieving them.
2	Which of the following is NOT a typical component of a business plan?	Financial statements (e.g., income statement, balance sheet).
3	What is the difference between a mission statement and a vision statement?	A mission statement describes the company's current purpose and goals, while a vision statement describes the company's long-term aspirations and future state.
4	What is the primary purpose of a market research report?	To provide information about the market and its potential customers.
5	Which of the following is NOT a typical component of a market research report?	Financial statements (e.g., income statement, balance sheet).
6	What is the primary purpose of a SWOT analysis?	To identify the company's strengths, weaknesses, opportunities, and threats.
7	Which of the following is NOT a typical component of a SWOT analysis?	Financial statements (e.g., income statement, balance sheet).
8	What is the primary purpose of a business model canvas?	To provide a visual representation of the business model.
9	Which of the following is NOT a typical component of a business model canvas?	Financial statements (e.g., income statement, balance sheet).
10	What is the primary purpose of a business plan?	To outline the business's goals and strategies for achieving them.

[illegible]

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

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Question Number	Question	Answer
1	What is the main purpose of the study?	To investigate the effect of the new curriculum on the learning outcomes of the students.
2	What are the research objectives?	To determine the level of student achievement, to identify the factors affecting student achievement, and to compare the learning outcomes of the students in the experimental and control groups.
3	What is the research hypothesis?	The students in the experimental group will achieve higher learning outcomes than the students in the control group.
4	What is the significance of the study?	The study is significant because it provides valuable information about the effectiveness of the new curriculum and helps to improve the quality of education.
5	What are the limitations of the study?	The study is limited by the sample size, the duration of the study, and the lack of control over external factors.
6	What are the conclusions of the study?	The study concludes that the new curriculum has a positive effect on the learning outcomes of the students.
7	What are the recommendations of the study?	The study recommends that the new curriculum should be implemented in all schools and that further research should be conducted to investigate the long-term effects of the curriculum.

[illegible]