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NZQA

NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

For Supervisor's use only

Level 1 Mathematics, 2007

90194 Determine probabilities

Credits: Two
9.30 am Tuesday 20 November 2007

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**
Determine probabilities. ☐	Solve probability problems using theoretical methods. ☐	Explore probability situations to solve problems. ☐
Overall Level of Performance ☐		

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

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CAMPERVAN HOLIDAYS

You should show **ALL** working.

QUESTION ONE

James works for a campervan hire company, TourNZ Ltd.
The table below gives the numbers of different sized campervans hired during the last year.
The campervans were hired by New Zealanders and by visitors from overseas.

TourNZ Ltd Campervans

	2-person	4-person	6-person	Totals
Hired by a New Zealander	233	290	175	698
Hired by a visitor from overseas	290	145	97	532
Totals	523	435	272	1230

(a) A campervan was hired from TourNZ last year.
What is the probability that it was hired by a New Zealander?

(b) A 4-person campervan was hired from TourNZ last year.
What is the probability that it was hired by a visitor from overseas?

QUESTION TWO

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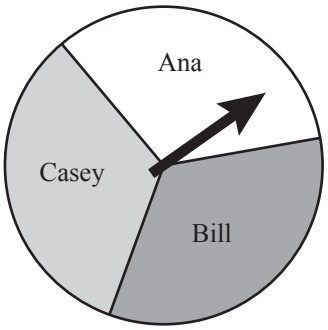
Ana, Bill and Casey have hired a campervan for a two-week holiday.

The picture shows the spinner they used each day to decide who would drive the campervan.
The spinner has equal-sized sectors.



(a) What is the probability that Bill drives the campervan on each of the first two days?

(b) What is the probability that there are different drivers on each of the first two days?

QUESTION THREE

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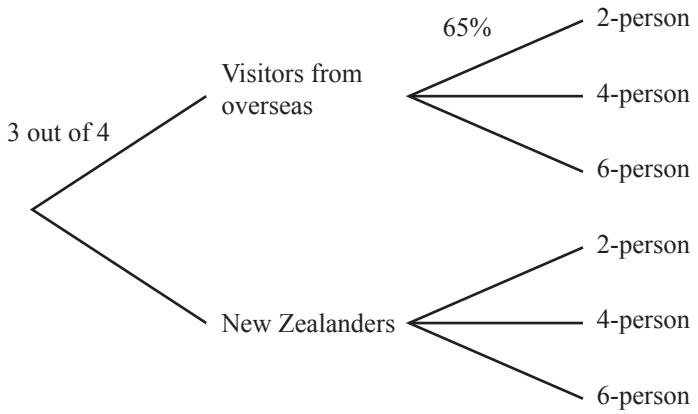
SeeNZ Ltd hired out campervans to New Zealanders and to visitors from overseas during the last year.
Three out of four campervans were hired out to visitors from overseas.
Of the visitors from overseas, 65% hired 2-person campervans, 30% hired 4-person campervans and the rest hired 6-person campervans.
Of the New Zealanders, 35% hired 2-person campervans, 45% hired 4-person campervans and the rest hired 6-person campervans.
Some of this information is shown on the tree diagram below:



(a) What is the probability that a SeeNZ campervan hired out last year was a 6-person campervan hired by a visitor from overseas?

(b) What is the probability that a SeeNZ campervan hired out last year was a 4-person campervan?

(c) 90% of the New Zealanders return the campervan to the same place from where they hired it.
60% of the overseas visitors return the campervan to the same place from where they hired it.

Calculate the probability that the next campervan hired out will be returned to the place from where it was hired.

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Note that Question Three continues on the next page.

(d) The most common campervan booking at SeeNZ is for a 10-day length of time.
85% of customer requests for a 10-day booking can be confirmed immediately.
The rest of the customer requests for a 10-day booking go on a waiting list.
Only 25% of those on the waiting list eventually have their request for a 10-day booking confirmed.
SeeNZ had to turn away 20 people during a three month period, because their request for a 10-day booking could not be confirmed.

Calculate the total number of customer requests for a 10-day booking SeeNZ received during that three month period.

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

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Question number	

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