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90194

NZQA
NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

For Supervisor's use only

Level 1 Mathematics, 2009

90194 Determine probabilities

Credits: Two
9.30 am Friday 20 November 2009

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.

The questions in this paper are NOT in order of difficulty. Attempt all questions or you may not provide enough evidence to achieve the required standard.

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

You should show ALL working.

Check that this booklet has pages 2–6 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					

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

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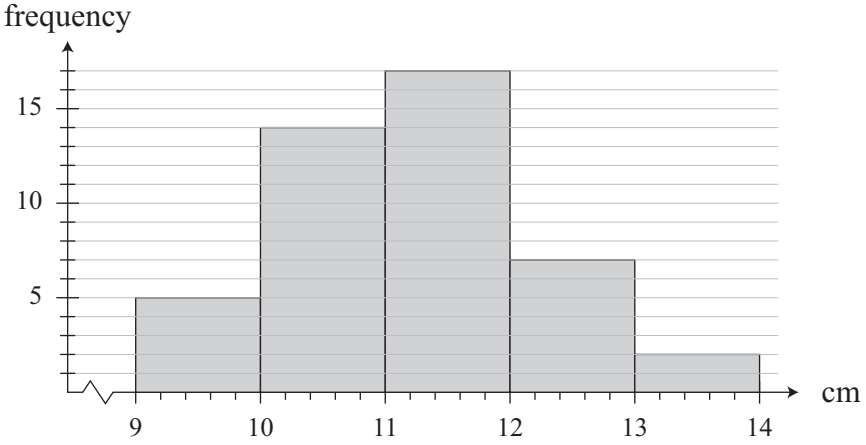
QUESTION ONE

(a) There are 45 plants in flower in Anne's garden.
10 of the plants have blue flowers, and 11 of the plants have white flowers.
A plant is chosen at random from Anne's garden.

What is the probability that it has neither blue flowers nor white flowers?

(b) The heights of the 45 plants in Anne's garden were measured 3 weeks after planting.
The heights were plotted on the histogram.

Heights of plants in Anne's garden 3 weeks after planting



A plant is chosen at random from Anne's garden 3 weeks after planting.

What is the probability that the plant chosen is less than 12 cm high?

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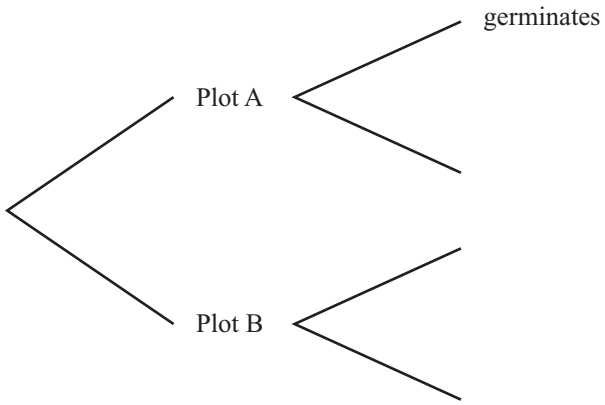
(c) A research scientist plants eleven seeds in Plot A and nine seeds in Plot B.
The probability that a seed germinates in Plot A is 0.7, and in Plot B it is 0.8



Find the probability that a seed chosen at random germinates.

(d) The scientist then plants seeds in Plots D, E and F in the ratio 8 : 10 : 7
The probability that a seed germinates in Plot D is 0.7 and in Plot E is 0.8.
This scientist expects 390 seeds to germinate from the 600 he planted.

What is the probability that a seed in Plot F germinates?

QUESTION TWO

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(a) A health survey asked a group of 220 adults about their age and levels of exercise.

The table shows some of the data from the survey.

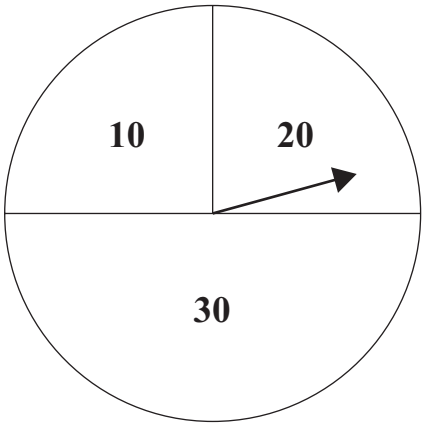
	Under 50 years old	**50 years or older**
Regular exercise	98	38
No regular exercise	62	22

(i) Find the probability that an adult picked at random from the whole group is 50 years or older, and does no regular exercise.

(ii) From the group of adults 50 years or older, a person was picked at random.

What is the probability that this person exercised regularly?

(b)



A circular spinner is divided into two quarters and one half, with the three sectors labelled with scores of "10", "20" and "30", as shown in the diagram.

(i) Ngaire spins the arrow twice.

What is the probability that the **total** of the two scores is 30?

(ii) Sue is also playing with the spinner.

She spins the arrow twice and adds the two scores.

She does this 80 times.

How many times would she expect the **total** to be at least 40?

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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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