

Cambridge International AS & A Level

CANDIDATE NAME									
CENTRE NUMBER						NDIDA IMBER			

MATHEMATICS 9709/52

Paper 5 Probability & Statistics 1

October/November 2020

1 hour 15 minutes

You must answer on the question paper.

You will need: List of formulae (MF19)

INSTRUCTIONS

- Answer all questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do not use an erasable pen or correction fluid.
- Do not write on any bar codes.
- If additional space is needed, you should use the lined page at the end of this booklet; the question number or numbers must be clearly shown.
- You should use a calculator where appropriate.
- You must show all necessary working clearly; no marks will be given for unsupported answers from a calculator.
- Give non-exact numerical answers correct to 3 significant figures, or 1 decimal place for angles in degrees, unless a different level of accuracy is specified in the question.

INFORMATION

- The total mark for this paper is 50.
- The number of marks for each question or part question is shown in brackets [].

This document has 16 pages. Blank pages are indicated.

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Find the probability that obtaining a 4 requires fewer than 6 throws.	[2]
	••••••
Find the probability that a 4 is obtained at least 3 times.	[3]
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(a)	Show that the probability that Sadie takes exactly 1 red ball is $\frac{15}{56}$.
(b)	Draw up the probability distribution table for X .
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(b)	Draw up the probability distribution table for X.

(c)	Given that $E(X) = \frac{15}{8}$, find $Var(X)$. [2]

Pia runs 2 km every day and her times in minutes are normally distributed with mean 10.1 and standard

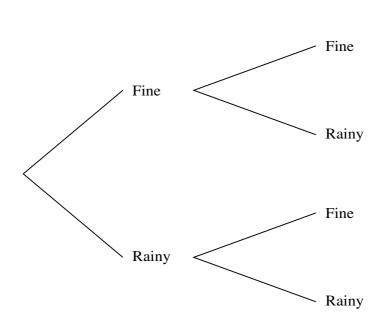
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On 75% of days, Pia ta	ikes longer than t min	utes to run 2 km. Fi	nd the value of t .	
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(c)	On how many days in a period of 90 days would you expect Pia to take between 8.9 and
(0)	11.3 minutes to run 2 km?
	11.5 infinites to full 2 kill:

4 In a certain country, the weather each day is classified as fine or rainy. The probability that a fine day is followed by a fine day is 0.75 and the probability that a rainy day is followed by a fine day is 0.4. The probability that it is fine on 1 April is 0.8. The tree diagram below shows the possibilities for the weather on 1 April and 2 April.

(a) Complete the tree diagram to show the probabilities. [1]

2 April



1 April

(b)	Find the probability that 2 April is fine. [2]	

Let *X* be the event that 1 April is fine and *Y* be the event that 3 April is rainy.

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Find the prob	ability that 1 A _l	pril is fine given	that 3 April is rain	y.	
Find the prob	ability that 1 A _l	pril is fine given	that 3 April is rain		
Find the prob	ability that 1 A _l		that 3 April is rain	y.	
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Find the prob	ability that 1 A _I		that 3 April is rain	y.	

5 The following table gives the weekly snowfall, in centimetres, for 11 weeks in 2018 at two ski resorts, Dados and Linva.

Dados	6	8	12	15	10	36	42	28	10	22	16
Linva	2	11	15	16	0	32	36	40	10	12	9

(a) Represent the information in a back-to-back stem-and-leaf diagram.

[4]

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The median, lower quartile and upper quartile of the weekly snowfall for Linva are 132 cm respectively. Use this information and your answers to part (b) to compare the	2, 9
tendency and the spread of the weekly snowfall in Dados and Linva.	

Mr and Mrs Ahmed with their two children, and Mr and Mrs Baker with their three children, are

(a)	In how many ways can the 9 people be divided into a group of 6 and a group of 3?	[2]
(a)	in now many ways can the 9 people be divided into a group of 6 and a group of 5:	[4]
		••••••
of	The 9 people are selected at random for a particular activity.	
)	Find the probability that this group of 5 people contains all 3 of the Baker children.	[3]

All 9 people stand in a line.

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