			90 - 01		9709_wzz_qp_s
50 va	lues of the variabl	e x are summarised	l by		
		$\Sigma(x-20) = 35$	and	$\Sigma x^2 = 25036.$	
Find	the variance of the				[3
1 1110	ine variance of the	se so varaes.			(5
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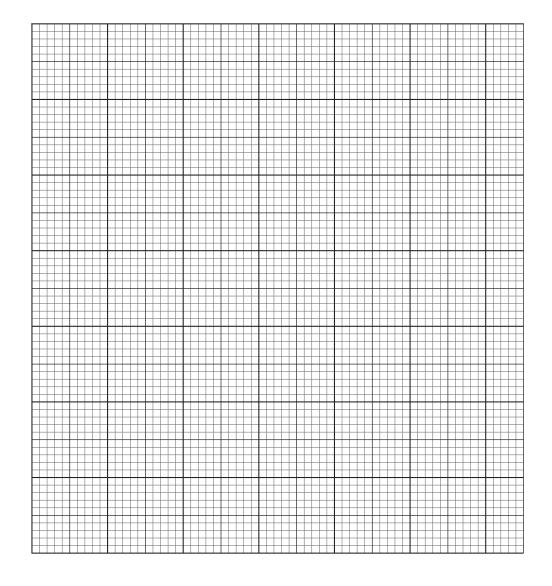
Use an approxima	tion to find the	probability tha	at fewer than 2	20 of these stu	dents have b	lue eyes.	[5
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3 The times, *t* minutes, taken to complete a walking challenge by 250 members of a club are summarised in the table.

Time taken (t minutes)	<i>t</i> ≤ 20	<i>t</i> ≤ 30	<i>t</i> ≤ 35	<i>t</i> ≤ 40	<i>t</i> ≤ 50	<i>t</i> ≤ 60
Cumulative frequency	32	66	112	178	228	250

(a) Draw a cumulative frequency graph to illustrate the data.

[2]



(b)	Use your graph to estimate the 60th percentile of the data.	[1]
		•••••

It is given that an estimate for the mean time taken to complete the challenge by these 250 members is 34.4 minutes.

these 250 members.	[4
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4 Three fair 4-sided spinners each have sides labelled 1, 2, 3, 4. The spinners are spun at the same time and the number on the side on which each spinner lands is recorded. The random variable *X* denotes the highest number recorded.

(a)	Show that $P(X = 2)$	$=\frac{7}{64}$.					[3]
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(b)	Complete the proba	bility distrib	ution table	for X .			[2]
	[х	1	2	3	4	
		P(X = x)		$\frac{7}{64}$	$\frac{19}{64}$		
		<u>'</u>	•				
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On another occasion, one of the fair 4-sided spinners is spun repeatedly until a 3 is obtained. The random variable Y is the number of spins required to obtain a 3.

(c)	Find $P(Y = 6)$.	.]
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(d)	Find $P(Y > 4)$.	2]
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	of the bags are chosen at random.
1)	Find the probability that fewer than 3 of these bags are underweight. [3]
nd	weights of the bags of sugar produced by company <i>B</i> are normally distributed with mean 1.04 kg standard deviation 0.06 kg. Find the probability that a randomly chosen bag produced by company <i>B</i> weighs more than
nd	
nd	standard deviation $0.06 \mathrm{kg}$. Find the probability that a randomly chosen bag produced by company B weighs more than
nd	standard deviation $0.06 \mathrm{kg}$. Find the probability that a randomly chosen bag produced by company B weighs more than
nd	standard deviation $0.06 \mathrm{kg}$. Find the probability that a randomly chosen bag produced by company B weighs more than
nd	standard deviation $0.06 \mathrm{kg}$. Find the probability that a randomly chosen bag produced by company B weighs more than
nd	standard deviation $0.06 \mathrm{kg}$. Find the probability that a randomly chosen bag produced by company B weighs more than
nd	standard deviation $0.06 \mathrm{kg}$. Find the probability that a randomly chosen bag produced by company B weighs more than

5

81%	of the bags of sugar produced by company B weigh less than $w \log x$.
(c)	Find the value of w . [3]
	First October 19

-7	Find the number of different arrangements of the 9 letters in the word ACTIVATED.
b)	Find the number of different arrangements of the 9 letters in the word ACTIVATED in wh there are at least 5 letters between the two As.
b)	
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b)	there are at least 5 letters between the two As.
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b)	there are at least 5 letters between the two As.

Five letters are selected at random from the 9 letters in the word ACTIVATED.

Find the probability that the selection does not contain more Ts than As.	[5
	•••••

Sam and Tom are playing a game which involves a bag containing 5 white discs and 3 red discs. They take turns to remove one disc from the bag at random. Discs that are removed are not replaced into the bag. The game ends as soon as one player has removed two red discs from the bag. That player wins the game.

Sam removes the first disc. (a) Find the probability that Tom removes a red disc on his first turn. [2]

Find the probability that Tom wins the game on his second turn.	[4
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Find the probability that Sam removes a red disc on his first turn given that	ot Tom wing the gam
on his second turn.	at 10m wms the gan
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