lo.	Paper Reference		1. The volume of a sample of gas is kept constant. The gas is heat	ted and the pressure
ndidate 0.	6 6 8 3 / 0 1 <sup>Signature</sup>		$\Sigma p = 445$ $\Sigma p^2 - 28125$ The results are summar	rised below.
	per Reference(s)	Examinar's use only	(a) Find S and S	$\sum pt = 26830$
_ 1	Edoxaol CCE	CASHINE'S USE ONLY	(a) Find $S_{pp}$ and $S_{pi}$ .	
	Luexcel GCE	Team Leader's use only	Given that $S_n = 21760$ ,	
5	statistics S1		(b) calculate the product moment correlation coefficient.	
A	dvanced/Advanced Subsidiary	Question Leave		
g V	Vednesday 20 May 2009 – Afternoon	1	(c) Give an interpretation of your answer to part (b).	
T 5498	ime: 1 hour 30 minutes	2		
A003		3	a) Spp = $2p^2 - (2p)^2 \div n = 18322$	.5
E I M	aterials required for examination Items included with question papers	4	Sot = Sot - (sol(sh) : 0 $($	100
M	athematical Formulae (Orange or Green) Nil	5		130
Ca	ndidates may use any calculator allowed by the regulations of the Joint uncil for Qualifications. Calculators must not have the facility for symbolic	0	b) PMCC, r = Spt	16150
alş	ebra manipulation, differentiation and integration, or have retrievable thematical formulae stored in them.	8	Sppx Stt 183	522.5× 2176
			(=0.809	
ructions to Candid	ates			
e boxes above, write k that you have the c	your centre number, candidate number, your surname, initials and signature orrect question paper.	e.	c) Some evidence to suggest pr	ositive
er ALL the question must write your answ	s. er for each question in the space following the question.		correlation so the higher	the preud
es from the statistical wen to an appropriate	tables should be quoted in full. When a calculator is used, the answer should egree of accuracy.	ld	The higher the temperature	
mation for Con V	dates		As pressore lucraces tours	cating 1
oklet 'Mathematical I	formulae and Statistical Tables' is provided.		I marchies cemper	more inc
narks may be obtained	d for answers to ALL questions. uestions and the parts of questions are shown in round brackets: e.g. (2).			
are 24 pages in this	question paper. Any blank pages are indicated.			
ce to Candidates				
must ensure that your should show sufficien	answers to parts of questions are clearly labelled. t working to make your methods clear to the Examiner.			
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34279A 6481557570 35543 2. On a randor	H 3 4 2 7 9 A 0 1 2 4 Control of the second by car, by	excel	2     1      1	II bservations are give
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<ul> <li>2. On a randor or on foot is methods of t</li> <li>(a) Draw a</li> <li>(b) Find the</li> <li>(i) Bill</li> <li>(c) Given th</li> </ul>	have a constraint of the probability that Bill travels to school by car, by $\frac{1}{2}$ , $\frac{1}{6}$ and $\frac{1}{3}$ respectively. The probability of being late when using ravel is $\frac{1}{3}$ , $\frac{2}{5}$ and $\frac{1}{10}$ respectively. The probability that on a randomly chosen day travels by foot and is late, is not late. at Bill is late, find the probability that he did not travel on foot. $\frac{1}{10} = \frac{1}{10} = \frac{1}{20}$	exercise title exercise characterises	2 3. The variable x was measured to the nearest whole number. Forty of the table below. $\frac{x  10-15  16-18  19}{\text{Frequency}  15  9  11}$ A histogram was drawn and the bar representing the 10 - 15 class is a height of 5 cm. For the 16 - 18 class find (a) the width, (b) the height of the bar representing this class. 10 - 1S  16 - 16 - 16 - 16 - 16 - 16 - 16 - 16	bservations are give 9 - 16 has a width of 2 cm 18 9 18 18 18
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<ul> <li>2. On a randor or on foot is methods of t</li> <li>(a) Draw a</li> <li>(b) Find the</li> <li>(i) Bill</li> <li>(c) Given th</li> </ul>	And the probability that Bill travels to school by car, by $\frac{1}{2}$ , $\frac{1}{6}$ and $\frac{1}{3}$ respectively. The probability of being late when using ravel is $\frac{1}{5}$ , $\frac{2}{5}$ and $\frac{1}{10}$ respectively. The probability of being late when using ravels by foot and is late, is not late. at Bill is late, find the probability that he did not travel on foot. $\frac{1}{10} = \frac{1}{30} = \frac{1}{$	Arring, changing lives	2 3. The variable x was measured to the nearest whole number. Forty of the table below. $\frac{x  10-15  16-18  19}{\text{Frequency}  15  9  11}$ A histogram was drawn and the bar representing the 10-15 class for a height of 5 cm. For the 16-18 class find (a) the width, (b) the height of the bar representing this class. 10 - 1S  16 - 16 - 16 - 18 - 16 - 16 - 18 - 16 - 16	$18$ $9 - 16$ has a width of 2 cm $18$ $9 + 1.5$ $= 6 \text{ cm}^2$
<ul> <li>2. On a randor or on foot is methods of t</li> <li>(a) Draw a</li> <li>(b) Find the</li> <li>(i) Bill</li> <li>(c) Given th</li> </ul>	All chosen day the probability that Bill travels to school by car, by $\frac{1}{2}, \frac{1}{6}$ and $\frac{1}{3}$ respectively. The probability of being late when usin ravel is $\frac{1}{5}, \frac{2}{5}$ and $\frac{1}{10}$ respectively. rece diagram to represent this information. probability that on a randomly chosen day travels by foot and is late, is not late. at Bill is late, find the probability that he did not travel on foot. $\frac{1}{16} = \frac{1}{10} = \frac{1}{10} = \frac{1}{10}$ $\frac{1}{16} = \frac{1}{10} = \frac{1}{10} = \frac{1}{10}$	Arring, changing lives	2 3. The variable x was measured to the nearest whole number. Forty of the table below. $\frac{x  10-15  16-18  19}{\text{Frequency}  15  9  11}$ A histogram was drawn and the bar representing the 10 - 15 class a height of 5 cm. For the 16 - 18 class find (a) the width, (b) the height of the bar representing this class. 10 - 1S  16 - 16 - 16 - 16 - 16 - 16 - 16 - 16	$\frac{18}{9 + 1.5} = \frac{6000}{2000}$
<ul> <li>2. On a randor or on foot is methods of t (a) Draw a</li> <li>(b) Find the (i) Bill (ii) Bill</li> <li>(c) Given th</li> </ul>	have a constraint of the probability that Bill travels to school by car, by $\frac{1}{2} \cdot \frac{1}{6}$ and $\frac{1}{3}$ respectively. The probability of being late when using ravel is $\frac{1}{5} \cdot \frac{2}{5}$ and $\frac{1}{10}$ respectively. The probability that on a randomly chosen day travels by foot and is late, is not late. at Bill is late, find the probability that he did not travel on foot. $\frac{1}{16} = \frac{1}{30}$ $\frac{1}{16} = \frac{1}{30}$	exercise characteristic constraints and the second constraints and the seco	2 3. The variable x was measured to the nearest whole number. Forty of the table below. $\frac{x  10-15  16-18  19}{\text{Frequency}  15  9  1}$ A histogram was drawn and the bar representing the 10 - 15 class I a height of 5 cm. For the 16 - 18 class find (a) the width, (b) the height of the bar representing this class. 10 - 1S  16 - 16 - 16 - 16 - 16 - 16 - 16 - 16	$\frac{18}{9}$
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<ul> <li>2. On a randor or on foot is methods of t (a) Draw a</li> <li>(b) Find the (i) Bill (ii) Bill (c) Given th</li> </ul>	h $3$ $4$ $2$ $7$ $9$ $A$ $0$ $1$ $2$ $4$ h $3$ $4$ $2$ $7$ $9$ $A$ $0$ $1$ $2$ $4$ h $3$ $4$ $2$ $7$ $9$ $A$ $0$ $1$ $2$ $4$ h $3$ $4$ $2$ $7$ $9$ $A$ $0$ $1$ $2$ $4$ h $3$ $4$ $2$ $7$ $9$ $A$ $0$ $1$ $2$ $4$ h $3$ $4$ $2$ $7$ $9$ $A$ $0$ $1$ $2$ $4$ h $3$ $4$ $2$ $7$ $9$ $A$ $0$ $1$ $2$ $4$ h $3$ $4$ $2$ $7$ $9$ $A$ $0$ $1$ $2$ $4$ h $3$ $4$ $2$ $7$ $9$ $A$ $0$ $1$ $2$ $4$ h $3$ $4$ $2$ $7$ $9$ $A$ $0$ $1$ $2$ $4$ h $3$ $4$ $2$ $7$ $9$ $A$ $0$ $1$ $2$ $4$ h $4$ $4$ $1$ $1$ h $4$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$	exercise title exercise characteristics	2 3. The variable x was measured to the nearest whole number. Forty of the table below. $\frac{x  10-15  16-18  19}{\boxed{\text{Frequency}}  15  9  11}$ A histogram was drawn and the bar representing the 10 - 15 class is a height of 5 cm. For the 16 - 18 class find (a) the width, (b) the height of the bar representing this class. 10 - 1 S  16 - 16 - 18  16 - 16 - 16 - 18  16 - 16 - 18  16  16  16  16  16  16  16	$18$ $9 - 16$ has a width of 2 cm $18$ $9 + 1.5$ $= 6cm^{2}$ $m = 18.5$ $= 3$
<ol> <li>On a randor or on foot is methods of t (a) Draw a</li> <li>(b) Find the (i) Bill (ii) Bill</li> <li>(c) Given th</li> </ol>	h $3$ $4$ $2$ $7$ $9$ $A$ $0$ $1$ $2$ $4$ h $3$ $4$ $2$ $7$ $9$ $A$ $0$ $1$ $2$ $4$ h $3$ $4$ $2$ $7$ $9$ $A$ $0$ $1$ $2$ $4$ h $3$ $4$ $2$ $7$ $9$ $A$ $0$ $1$ $2$ $4$ h $3$ $4$ $2$ $7$ $9$ $A$ $0$ $1$ $2$ $4$ h $3$ $4$ $2$ $7$ $9$ $A$ $0$ $1$ $2$ $4$ h $3$ $4$ $2$ $7$ $9$ $A$ $0$ $1$ $2$ $4$ h $3$ $4$ $2$ $7$ $9$ $A$ $0$ $1$ $2$ $4$ h $3$ $4$ $2$ $7$ $9$ $A$ $0$ $1$ $2$ $4$ h $3$ $4$ $2$ $7$ $9$ $A$ $0$ $1$ $2$ $4$ h $3$ $4$ $0$ $1$ $2$ $4$ h $3$ $4$ $2$ $7$ $9$ $A$ $0$ $1$ $2$ $4$ h $4$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$	Arring, changing lives	2 3. The variable x was measured to the nearest whole number. Forty of the table below. $\frac{x  10 - 15  16 - 18  19}{\text{Frequency}  15  9  11}$ A histogram was drawn and the bar representing the 10 - 15 class to a height of 5 cm. For the 16 - 18 class find (a) the width, (b) the height of the bar representing this class. 10 - 1S  16 - 16 - 18 - 16 - 16 - 16 - 16 - 16 -	18 9 18 9 18 9 18 9 18 9 18 9 18 9 18 9
<ol> <li>2. On a randor or on foot is methods of t</li> <li>(a) Draw a</li> <li>(b) Find the</li> <li>(i) Bill</li> <li>(c) Given th</li> <li>(c) Given th</li> <li>(c) Given th</li> </ol>	All choices day the probability that Bill travels to school by car, by $\frac{1}{2}, \frac{1}{6} \text{ and } \frac{1}{3} \text{ respectively. The probability of being late when using ravel is \frac{1}{5}, \frac{2}{5} \text{ and } \frac{1}{10} \text{ respectively.}rece diagram to represent this information.probability that on a randomly chosen daytravels by foot and is late,is not late.at Bill is late, find the probability that he did not travel on foot.\frac{1}{1/6} = \frac{1}{30} = \frac{1}{30} \frac{1}{1/6} = \frac{1}{30} = \frac{1}{30}$	Arring, changing lives	2 3. The variable x was measured to the nearest whole number. Forty of the table below. $\frac{x  10 - 15  16 - 18  19}{ Frequency  15  9  11}$ A histogram was drawn and the bar representing the 10 - 15 class is a height of 5 cm. For the 16 - 18 class find (a) the width, (b) the height of the bar representing this class. 10 - 1S  16 - 16 - 18 - 16 - 16 - 16 - 18 - 16 - 16	$\frac{18}{9}$ $\frac{18}{9}$ $\frac{18}{1 \cdot 1 \cdot 5}$ $= 6 \text{ Cm}^2$ $\frac{18 \cdot 5}{3}$ $= 3$
<ul> <li>2. On a randor or on foot is methods of t</li> <li>(a) Draw a</li> <li>(b) Find the</li> <li>(i) Bill</li> <li>(c) Given th</li> <li>(c) Given th</li> <li>(c) F(f, f, f, f, c) P(f, f, f)</li> </ul>	All chancing the probability that Bill travels to school by car, by $\frac{1}{2}, \frac{1}{6} \text{ and } \frac{1}{3} \text{ respectively. The probability of being late when using the travels is \frac{1}{5}, \frac{2}{5} and \frac{1}{10} respectively.The diagram to represent this information.probability that on a randomly chosen daytravels by foot and is late,is not late.at Bill is late, find the probability that he did not travel on foot.\frac{1}{1/6} = \frac{1}{30} \frac{1}{1/6} = \frac{1}{1/6} = \frac{1}{30}$	Arring, changing lives	2 3. The variable x was measured to the nearest whole number. Forty of the table below. $\frac{x  10-15  16-18  19}{\text{Frequency}  15  9  11}$ A histogram was drawn and the bar representing the 10-15 class is a height of 5 cm. For the 16-18 class find (a) the width, (b) the height of the bar representing this class. 10 - 1S  16 - 16 - 18  class  find = 10 - 15  class  find = 10  class  clas	$\frac{18}{9}$ $\frac{18}{9}$ $\frac{18}{2}$ $\frac{9}{10}$ has a width of 2 cm $\frac{18}{2}$ $\frac{9}{10}$ $\frac{18}{2}$ $\frac{9}{10}$ $\frac{18}{2}$ $\frac{9}{10}$ $\frac{18}{2}$ $\frac{9}{10}$ $\frac{18}{2}$ $\frac{18}{2}$ $\frac{9}{10}$ $\frac{18}{2}$ $\frac{18}{2}$ $\frac{9}{10}$ $\frac{18}{2}$
<ol> <li>On a randor or on foot is methods of t (a) Draw a</li> <li>(b) Find the (i) Bill (ii) Bill (ii) Bill (c) Given th</li> <li>b) P(fr</li> <li>c) P(fr</li> <li>3</li> </ol>	have day the probability that Bill travels to school by car, by $\frac{1}{2} \cdot \frac{1}{6}$ and $\frac{1}{3}$ respectively. The probability of being late when using ravel is $\frac{1}{5}, \frac{2}{5}$ and $\frac{1}{10}$ respectively. rece diagram to represent this information. probability that on a randomly chosen day travels by foot and is late, is not late. at Bill is late, find the probability that he did not travel on foot. $\frac{1}{1/c} = \frac{1}{30}$ $\frac{1}{10} \frac{1}{10} 1$	Arring, changing lives	2 3. The variable x was measured to the nearest whole number. Forty of the table below. $\frac{x  10-15  16-18  19}{\text{Frequency}  15  9  1}$ A histogram was drawn and the bar representing the 10-15 class is a height of 5 cm. For the 16-18 class find (a) the width, (b) the height of the bar representing this class. $10 - 1S  16 - 16 - 18 \text{ class} \text{ find} = 10 - 15 \text{ class} \text{ find} = 10 \text{ cm}^2 \text$	$\frac{18}{9}$ $\frac{18}{9}$ $\frac{18}{9}$ $\frac{18}{9}$ $\frac{18}{9}$ $\frac{18}{2}$
<ul> <li>2. On a randor or on foot is methods of t (a) Draw a</li> <li>(b) Find the (i) Bill (ii) Bill (ii) Bill (c) Given th</li> <li>b) P(free c) P(free c) P(free c) C (free c) C (free</li></ul>	H = 3 + 4 + 2 + 7 + 9 + 4 + 0 + 1 + 2 + 4 edge advancing to hy chosen day the probability that Bill travels to school by car, by $\frac{1}{2}, \frac{1}{6}$ and $\frac{1}{3}$ respectively. The probability of being late when using ravel is $\frac{1}{5}, \frac{2}{5}$ and $\frac{1}{10}$ respectively. ree diagram to represent this information. probability that on a randomly chosen day travels by foot and is late, is not late. at Bill is late, find the probability that he did not travel on foot. $\frac{12 - \frac{3}{2}}{12 - \frac{1}{2}} = \frac{10 + \frac{3}{2}}{12 - \frac{10}{2}} = \frac{10 + \frac{3}{2}}{12 - \frac{10}{2}} = \frac{10 + \frac{3}{2}}{12 - \frac{10}{2}} = \frac{10 + \frac{10}{2}}{12 - \frac{10}{2}} = \frac{10 + \frac{10}{2}} = \frac{10 + \frac{10}{2}}{12 - \frac{10}{2}} = \frac{10 + \frac{10}{2}}{$		2 3. The variable x was measured to the nearest whole number. Forty of the table below. $\frac{x  10-15  16-18  19}{\boxed{\text{Frequency}  15  9  1}}$ A histogram was drawn and the bar representing the 10-15 class is a height of 5 cm. For the 16-18 class find (a) the width, (b) the height of the bar representing this class. 10 - 1S  16 - 16 - 18  class  find (b) the height of the bar representing this class. 10 - 1S  16 - 16 - 18  class  fire q = 15  fore q = 15	$18$ $9 - 16$ has a width of 2 cm $18$ $9 + 1.5$ $= 6 cm^{2}$ $= 3$ $= 1  width$ $= 6  Area = 6$
<ul> <li>2. On a randor or on foot is methods of t (a) Draw a</li> <li>(b) Find the (i) Bill (ii) Bill (ii) Bill (c) Given th (b) P (f c) P</li></ul>	h $3$ $4$ $2$ $7$ $9$ $A$ $0$ $1$ $2$ $4$ h $3$ $4$ $2$ $7$ $9$ $A$ $0$ $1$ $2$ $4$ h $3$ $4$ $2$ $7$ $9$ $A$ $0$ $1$ $2$ $4$ h $3$ $4$ $2$ $7$ $9$ $A$ $0$ $1$ $2$ $4$ h $3$ $4$ $2$ $7$ $9$ $A$ $0$ $1$ $2$ $4$ h $3$ $4$ $2$ $7$ $9$ $A$ $0$ $1$ $2$ $4$ h $3$ $4$ $2$ $7$ $9$ $A$ $0$ $1$ $2$ $4$ h $3$ $4$ $2$ $7$ $9$ $A$ $0$ $1$ $2$ $4$ h $4$ $2$ $4$ h $4$ $2$ $7$ $9$ $A$ $0$ $1$ $2$ $4$ h $4$ $2$ $4$ h $4$ $2$ $7$ $9$ $A$ $0$ $1$ $2$ $4$ h $4$ $4$ h $4$ $4$ $2$ $7$ $9$ $A$ $0$ $1$ $2$ $4$ h $4$ h $4$ $4$ $1$ $1$ h $1$ h $1$ $1$ h $1$ h $1$ $1$ h $1$		2 3. The variable x was measured to the nearest whole number. Forty of the table below. $\frac{x  10-15  16-18  19}{\boxed{\text{Frequency}  15  9  1}}$ A histogram was drawn and the bar representing the 10-15 class is a height of 5 cm. For the 16-18 class find (a) the width, (b) the height of the bar representing this class. $10 - 1 S \qquad 16 - \frac{16 - 9}{\boxed{\text{freq}}} = \frac{15}{\boxed{\text{freq}}} = \frac{15}{\boxed{\text{freq}}}$	$\frac{18}{9}$ $\frac{18}{9}$ $\frac{18}{9}$ $\frac{18}{9}$ $\frac{18}{1} \cdot 1 \cdot 5$ $= 6 \text{ Gem}^2$ $= 3$ $= 1  \text{width}$ $= 6  \text{Area}$ $\frac{18 \cdot 5}{1} \cdot 5$ $= 3$
<ul> <li>2. On a randor or on foot is methods of t (a) Draw a</li> <li>(b) Find the (i) Bill (ii) Bill (ii) Bill (c) Given th</li> <li>(c) Given th</li> &lt;</ul>	$\frac{1}{12} + \frac{1}{30} + \frac{1}{2} + \frac{1}{7} + \frac{1}{9} + \frac{1}{9} + \frac{1}{9} + \frac{1}{2} + \frac{1}{2} + \frac{1}{9} + \frac{1}{2} + \frac{1}{9} + \frac{1}{2} + \frac{1}{9} + \frac{1}{10} +$	Arring, changing lives	2 3. The variable x was measured to the nearest whole number. Forty of the table below. $\frac{x  10-15  16-18  19}{\text{Frequency}  15  9  1}$ A histogram was drawn and the bar representing the 10-15 class is a height of 5 cm. For the 16-18 class find (a) the width, (b) the height of the bar representing this class. 10 - 1 S  16 - 16 - 18  class = 15 - 18  class = 16 - 18  class = 15 - 18  class = 16 - 18  class = 16 - 18  class = 16 - 18  class = 15 - 18  class = 16 - 18  class = 16 - 18  class = 16 - 18  class = 15 - 18  class = 15 - 18  class = 15 - 18  class = 16 - 18  class = 15 - 18  class = 16 - 18  class = 15 - 18  class = 15 - 18  class = 16 - 18  class = 15 - 18  class = 16 - 18  class = 18 - 18  class = 18 - 18 - 18 - 18 - 18 - 18 - 18 - 18	18 9 18 9 18 9 18 9 18 9 18 9 18 9 18 9

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The	lenguis	are summ	arised	in the i	table b	elow.		0			
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no gaj	ps	MP,2	× 10 ≤	1 < 12		-		5	C	•	
-	$\rightarrow$	14.5	12 ≤	1 < 17			5	53	5		
		18	17 ≤	1 < 19			2	29	-5	8←	- 60#
		20	19 ≼	1 < 21			1	5	8	7	
		22	21 ≤	1 < 23			1	1	1	02	
		24	23 ≤	1 < 25				7		3	
(A) 11									13	20	
(a) U	se inter	polation t	to estir	nate the	e media	an of th	is distri	bution.			(2)
(b) C	alculate	actimata	e for th								(2)
(0) C	alculate	estimates	s for tr	he mean	and the	ne stand	ard dev	viation o	f these	data.	(6)
One m	easure (	of skewn	ere ir i	vivan hr							(0)
	and a c	- one will		siven oy	,	3(man	- mad	lian)			
		Coeffic	ient of	skewn	ess =	standar	d devia	tion			
(c) Ev	aluate t	his cooff									
(0) 20	aruate t	ins coeffi	icient a	ind com	iment	on the s	kewnes	is of the	se data.		(3)
ten-yea (d) Usi	r-old ch	ildren. value fou	nd in p	part (c),	comm	ent on (	Greg's s	suggesti	on, givi	ng a re	ason for
ten-yea (d) Usi you (a) $\pm \Omega$	r-old ch ing the variant answer r = 60	ildren. value fou er.	nd in p	oart (c),	comm ( - 17 58 4 4	ent on ( 2 (22 60 2	Greg's s	suggestin 19	$\frac{Q_2 - 1}{2}$	ing a re $1 = \frac{1}{9}$	ason for (2) 2
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## C) Shew = 3(17.13-17.14) = -0.0093.28

Symmetrical shew

d) yes normal distribution seems approprie Since symmetrical skew mean 2 median

> 95% of data should lie within  $x \pm 20$ 17.13  $\pm$  6.56 (10.6 - 23.7) which seems to be the case.

	b = x = 3	
(a) Find $P(X=2)$ and	complete the table below. $\Sigma P = 1 \Rightarrow 6c$	1+1
	x 0 1 2 3 (X	3)
	$P(X = x)$ 3a 2a $\land$ b	
	E(x) = 0 + 2a + 2a + 3b	(1
Given that $E(X) = 1.6$	= + 4a + 3b = 1.6	
(b) Find the value of a	and the value of b.	
		(5
Find	$\chi^{2}$ 0 1 4 9	
(c) $P(0.5 < X < 3)$ ,	P 0.3 0.2 0.1 0.4	
	F(x2)= 0+0.2+0.4+3.6	(2
(d) $E(3X-2)$ .		-
	E(x2)= +.0	(2
(e) Show that the Var(.	K) = 1.64	(3)
(f) Calculate Var(3Y-	2)	(0)
(i) culculate fai(5) =	<i>~</i> ).	(2)
	2	_
1 10 . 21		
b) $18a + 3b =$	-1.4	
b) $18a+3b=$ 4a+3b=		_
b) $18a+3b = 4a + 3b = 14a = 1.4$	$\Rightarrow a = 0.1 \Rightarrow b = 0.4$	
b) $18a+3b = \frac{4a+3b}{18a+3b} = \frac{4a+3b}{14a} = 1.4$	$\Rightarrow a = 0.1 \Rightarrow b = 0.4$	
b) $18a+3b = 4a+3b = 18a+3b = 18a+3a+3b = 18a+3b = 18a+3$	$\Rightarrow a = 0.1 \Rightarrow b = 0.4$ 3) = $P(1) + P(2) = 3a = 0.3$	
b) $18a+3b = 4a+3b = 18a+3b = 18a+3a+3b = 18a+3b = 18a+3$	$= 1.46$ $= 0.1 \Rightarrow 6 = 0.44$ $= 0.1 \Rightarrow 6 = 0.44$ $= 0.3 = 0.3$	
b) $18a+3b = 4a+3b = 18a+3b = 18a+3a+3b = 18a+3b = 18a+3$	$\frac{1}{2} = 0.1 \Rightarrow b = 0.4$ 3) = $P(1) + P(2) = 3a = 0.3$ 3 $\in (x) - 2 = 3 \times 1.6 - 2 = 2.8$	
b) $18a + 3b = 4a + 3b = 14a = 1.4$ c) $P(0.5 < x < 2b < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 160 < 1$	$\frac{1}{2} = 0.1 \Rightarrow b = 0.4$ 3) = $P(1) + P(2) = 3a = 0.3$ $3 \in (x) - 2 = 3 \times 1.6 - 2 = 2.8$ $-1 - f(x)^{2} = 4.2 - 1.6^{2} = 1.64$	
b) $18a + 3b = 4a + 3b = 14a + 3b = 14a = 1.4$ c) $P(0.5 < x < 4) \in (3x-2) = 2$	$\Rightarrow a = 0.1 \Rightarrow b = 0.4$ 3) = P(1)+P(2) = 3a = 0.3 3 E(x)-2 = 3x1.6-2 = 2.8 -)-E(x) <sup>2</sup> = 4.2-1.6 <sup>2</sup> = 1.64	

(You may use  $S_{ii} = 33.381$   $S_{wi} = 59.99$   $S_{wiv} = 120.1$ ) (a) Find the equation of the regression line of w on l in the form w = a + bl. (5) (b) Use your regression line to estimate the weight of a newborn turtle of length 60 mm. (2) (c) Comment on the reliability of your estimate giving a reason for your answer. (2) w = a + bly = a + bxw=y l=x b= Sxy = Sew -59.99 = 1.797 Sel 33.381 SXX a= y-ba =) a= w-be w = 2w = S18.3 = S1.83 10 n I = 21 = 32-7= 3.27 0 10 a = 51.83 - 1.797 × 3.27 = -60.445  $\omega = -60.445 + 1.7971$  $\omega = 47.37Sg$ b) l=60 c) Unreliable, no evidence to support this since max length in our data was 54.5m

