Question Number		Scheme	Marks
1.	(a)	25 small sq' = 5 tomatoes or 1 large square = 5 tomatoes or fd=5 for 2~3 or $\frac{5}{25}\times 20$ or 5×0.8 or 2×2 $= \underline{\mathbf{4}}$	M1 A1 (2)
	(b)	$100-(5+'4')$ or $16+32+25+10+8$, so probability $= \frac{91}{100}$ (condone 91%)	M1, A1 (2)
	(c)	$\frac{(7-6.25)\times 16+25+10+8}{100}$ or $1-\frac{(a)+5+16+(6.25-5)\times 16}{100}$ =, $\frac{55}{100}$	M1, A1 (2)
	(d)	Since '0.55' > 0.5 (or equivalent reason) and state median > 6.25	B1 (1)
	(e)	Median > mean, so negative skew	B1 (1)
	(f)	Freq. for $(5.5 < \text{weight} < 7) = (7-5.5)\times '16'$ or $\frac{3}{4}\times '32'$, probability $= \frac{24}{100}$ P (both weigh between 5.5 and 7) $= \frac{24}{100}\times\frac{23}{99} = \frac{46}{825}$ (o.e.) or **awrt 0.056**	M1, A1 M1 A1 (4) [12 marks]

Question Number		Scheme	Marks
1.	(a)	$[61\times 15 =]$ **915**	B1 (1)
	(b)	$[\text{Var}_A] = \frac{59610}{10} - 77^2$ $= \underline{\mathbf{32}}$ $[\text{Var}_B] = \frac{58035}{15} - 61^2$ $= \underline{\mathbf{148}}$	M1 A1 A1 (3)
	(c)	Class *B* since its variance is larger	B1ft (1)
	(d)(i)	$\text{Mean}_{AB} = \frac{770+"915"}{25} = 67.4$ or $\frac{10}{25}\times 77 + \frac{15}{25}\times 61 =$ **67.4**	M1 A1
	(ii)	$\text{Var}_{AB} = \frac{59\,610+58\,035}{25} - "67.4"^2 = 163.04$ **awrt 163**	M1 A1 (4)
	(e)(i)	No effect on the variance of class *A* since addition does not change variance (Var $(X+b)$ = Var (X))	B1
	(ii)	The mean will increase since the total score has increased or mean of *A* increased but mean of *B* stayed the same	B1
	(iii)	The variance of the entire group will increase since the mean of class *A* is now further away from the mean of class *B*	B1 (3) [12 marks]

Question Number	Scheme	Marks
4. (a)	$P(W<120)=P\left(Z<\frac{120-165}{35}\right)$	M1
	$=P(Z<-1.2857\ldots)=1-0.9015$ or $1-0.9007285\ldots$	M1
	$=0.09927\ldots=$ awrt **0.0985~0.0994**	A1
		(3)
(b)	e.g. $P(W>x)=\frac{1}{3}$ gives $\frac{x-165}{35}=\pm 0.43$ (calculator 0.430727…)	M1B1
	Limits 149.9245… to 180.0754… awrt **150** to **180**	A1, A1
		(4)
(c)	$P(W<200 \mid W>\text{“180”})$ or $\frac{P(\text{“180”}<W<200)}{P(W>\text{“180”})}$ or $\frac{1}{3}$	M1
	$=\frac{0.8413(44739\ldots)-\frac{2}{3}}{\frac{1}{3}}$	A1 (num)
	$=0.52403\ldots$ **(0.523~0.5264)**	A1
		(3)
(d)	$\frac{1}{3}\times\frac{1}{3}\times\frac{1}{3};\times 3!$	M1;M1
	$=\frac{2}{9}$	A1
		(3)
		[13 marks]

Question Number	Scheme	Marks
5 (a)	$P(X<38.8)=P\left(Z<\frac{38.8-40}{4}\right)\left[=P((Z<-0.3)\right]$	M1
	$=1-0.6179=0.3821$ *	A1*
		(2)
(b)	$P(\text{Qualify})=1-(0.3821)^3$ or $1-0.3821+0.3821\times(1-0.3821)+0.3821^2\times(1-0.3821)$	M1
	$[=0.9442]$	
	$P(X>44)=P\left(Z>\frac{44-40}{4}\right)\left[=P((Z>1)\right]$	M1
	$[=1-0.8413]=0.1587$	A1
	$P(X>44 \text{ on 2nd attempt} \mid \text{Qualify})=\frac{0.3821\times\text{'0.1587'}}{\text{'0.9442'}}$	M1
	0.06422... awrt 0.0642	A1
		(5)
	Notes	**Total 7**