<table>
<tr><td>1(a)</td><td>

$4k + k + 4k + 9k = 1, k = \frac{1}{18}$

x	–2	1	2	3
$P(X = x)$	$\frac{4}{18}$	$\frac{1}{18}$	$\frac{4}{18}$	$\frac{9}{18}$

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<tr><td>1(b)</td><td>$[E(X) = 28k =]\ \frac{14}{9}, 1.56$</td></tr>
<tr><td></td><td></td></tr>
<tr><td>1(c)</td><td>$P(X \neq 2 \mid X > 0) = \dfrac{\frac{10}{18}}{\frac{14}{18}}$</td></tr>
<tr><td></td><td>$= \frac{5}{7}, 0.714$</td></tr>
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2(a)	$\left[\frac{1}{6}\left(\frac{5}{6}\right)^7 = \right]0.0465$
2(b)	$\left(\frac{5}{6}\right)^4\left(\frac{1}{6}\right)^3 \times {}^6C_2$
	0.0335

3(a)	Median = [$]32400
	[IQR = $]33500 – [$]31300
	= [$]2200

3(b)	[Mean =] $\frac{878.3+896.5}{54}\left[=32.867\right]$
	so [\$]32900
	[Variance =] $\left[\frac{28616.09+29815.63}{54}-\left(\frac{1774.8}{54}\right)^2=\right]$ $\frac{58431.72}{54}-\left(\frac{1774.8}{54}\right)^2$
	= 1.8511
	σ = 1.36, so σ = [\$]1360

6(a)	$P(\frac{148-155}{6} < Z < \frac{160-155}{6})$
	[= P(– 1.1667 < Z < 0.8333) $= \Phi(1.1667)+\Phi(0.8333)-1$] = 0.7975 + 0.8784 – 1 Or (0.7975 – 0.5) + (0.8784 – 0.5) Or 0.2975 + 0.3784
	= 0.6759
	[Expected number = 0.6759 $\times 350 = 236.565$] 236

6(b)	$\frac{114-\mu}{\sigma}=1.406$ $\frac{99.5-\mu}{\sigma}=-0.842$
	Solve, obtaining values for μ and σ $\mu=105,\ \sigma=6.45$

7(a)	$\left[\frac{10!}{2!2!3!}=\right]151200$

7(b)	**Method 1**[SC_ S _ _ _ _ _ _]
	$\frac{7!}{2!3!} \times 2 \times 7$
	$= 5880$
	Method 2 Considering each case separately [SC-S, S-CS]
	With Y $\frac{6!}{2!3!} \times 2 \times 7 = 840$ With H $\frac{6!}{2!3!} \times 2 \times 7 = 840$ With E $\frac{6!}{2!2!} \times 2 \times 7 = 2520$ With L $\frac{6!}{3!} \times 2 \times 7 = 1680$
	$840 + 840 + 2520 + 1680$
	$= 5880$

7(b)	**Method 3** Considering each case separately [SC-S, S-CS]
	SCYS $\frac{7!}{2!3!} \times 2 = 840$ SCHS $\frac{7!}{2!3!} \times 2 = 840$ SCES $\frac{7!}{2!2!} \times 2 = 2520$ SCLS $\frac{7!}{3!} \times 2 = 1680$
	840 + 840 + 2520 + 1680
	= 5880
7(c)	**Method 1** Total arrangements with Ss at ends – arrangements with
	$\frac{8!}{2!3!} - \frac{6!}{2!}$ [= 3360 – 360]
	= 3000

7(d)	**Method 1**	
	[Number of ways with 3 Es =] ${}^{7}C_{2}$ (= 21)	
	[Total number of ways is] ${}^{10}C_{5}$ (= 252)	
	[Probability =] $\frac{21}{252}, \frac{1}{12}$	
	Method 2	
	$\frac{3}{11} \times \frac{2}{6} \times \frac{3}{11} \times {}^{5}C_{2}$	
	[Probability =] $\frac{21}{252}, \frac{1}{12}$	