<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Guidance</th></tr>
<tr><td rowspan="4">(a)</td><td>$k = \frac{1}{18}$ $(4k + k + 4k + 9k = 18k = 1)$</td><td>B1</td><td>SOI</td></tr>
<tr><td rowspan="2"><table><tr><td>x</td><td>–2</td><td>1</td><td>2</td><td>3</td></tr><tr><td>P($X=x$)</td><td>$\frac{4}{18}$</td><td>$\frac{1}{18}$</td><td>$\frac{4}{18}$</td><td>$\frac{9}{18}$</td></tr></table></td><td>M1</td><td>Table with correct x values and at least one probability accurate using their k.
Values need not be in order, lines may not be drawn, may be vertical, x and P($X=x$) may be omitted.
Condone any additional X values if probability stated as 0.</td></tr>
<tr><td>A1</td><td>Remaining probabilities correct.</td></tr>
<tr><td></td><td>3</td><td></td></tr>
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Question	Answer	Marks	Guidance
(b)	$\left[\mathrm{E}(X)=\frac{4\times-2+1\times1+4\times2+9\times3}{18}=\right]$ $\frac{-8+1+8+27}{18}$	**M1**	$-8k+k+8k+27k$ May be implied by use in Variance. Accept unsimplified expression. FT *their* table if probabilities sum to 1 or 0.999. **SC B1** $28k$.
	$\left[\mathrm{Var}(X)=\frac{4\times(-2)^2+1\times1^2+4\times2^2+9\times3^2}{18}-(\textit{their}\,\mathrm{E}(X))^2=\right]$ $=\frac{16+1+16+81}{18}-\left(\textit{their}\frac{28}{18}\right)^2$	**M1**	$16k+k+16k+81k-(\textit{their}$ mean$)^2$ FT *their* table even if probabilities not summing to 1. Note: If table is correct, $\frac{114}{18}-(\textit{their}\,\mathrm{E}(X))^2$ M1. **SC B1** $114k-(\textit{their}$ mean$)^2$.
	E(X) = $\frac{14}{9}$, $1\frac{5}{9}$, 1.56, Var (X) = $\frac{317}{81}$, $3\frac{74}{81}$, 3.91	**A1**	Answers for E(X) and Var(X) must be identified. $3.91 \leqslant \mathrm{Var}(X) \leqslant 3.914$
		3	