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#Jenny



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Cool! I'am really happy

#Markus Jensen



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#Diego Butler



so many fake sites. this is the first one which worked! Many thanks

Question Number	Scheme	Marks												
2.(a)	$p + q + 0.2 + 0.3 + p = 1$ i.e. $2p + q = 0.5$ (o.e.)	B1												
(b)	$E(X) = -2p - q + \frac{1}{2}(0.2) + \frac{1}{3}(0.3) + 2p$ [o.e.] i.e. $-q + 0.1 + 0.45 = [-0.4]$ $q = 0.45$	M1A1 A1												
(c)	$2p + 0.15 = 0.5$ (o.e.) $p = 0.175$	M1 A1												
(d)	$[Var(X)] = 2.275 - (0.4)^2$ $= 2.115$ (Accept 2.12)	M1 A1												
(e)	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td>r</td> <td>$-\frac{1}{2}$</td> <td>$-\frac{1}{3}$</td> <td>$\frac{2}{3}$</td> <td>$\frac{1}{2}$</td> <td>$\frac{1}{3}$</td> </tr> <tr> <td>$P(R=r)$</td> <td>p</td> <td>q</td> <td>0.2</td> <td>0.3</td> <td>p</td> </tr> </table> $E(R) = -\frac{1}{2}p - q + 0.4 + 0.2 + 1p = 0.6 - q = 0.15$ (or $\frac{3}{20}$)	r	$-\frac{1}{2}$	$-\frac{1}{3}$	$\frac{2}{3}$	$\frac{1}{2}$	$\frac{1}{3}$	$P(R=r)$	p	q	0.2	0.3	p	M1 dM1 A1B
r	$-\frac{1}{2}$	$-\frac{1}{3}$	$\frac{2}{3}$	$\frac{1}{2}$	$\frac{1}{3}$									
$P(R=r)$	p	q	0.2	0.3	p									
(f)(i)	$S > R$ when $s = 1.5$ and 2 $P(\text{Sarah wins}) = 0.3 + p = 0.475$ (or $\frac{19}{40}$)	M1 A1B												
(ii)	$R > S$ when $s = -2$ and $\frac{1}{2}$ or $s = -\frac{1}{2}$ and 2 $P(\text{Rebecca wins}) = 0.2 + p = 0.375$ (or $\frac{3}{8}$)	M1 A1B												
		(4)												
		[15 marks]												
Notes														
(a)	B1 for any correct equation based on sums of probs. = 1 Correct answer only in (b), (c), (d), (e) or (f) scores full marks for that part.													
(b)	M1 for an attempt at an expression based on $E(X)$. At most 2 errors or omissions. 1 st A1 for a correct equation. [May be implied by a correct answer] 2 nd A1 for $q = 0.45$ or exact equivalent e.g. $\frac{9}{20}$													
(c)	M1 for correct equation or using their equation from (a) with their q , provided $q \in [0, 1]$ A1 for $p = 0.175$ or exact equivalent e.g. $\frac{7}{40}$													
(d)	M1 for a correct numerical expression but M0 if followed by division by k (e.g. $k = 5$) A1 for 2.115 or accept errat 2.12 (also accept exact equivalent e.g. $\frac{423}{200}$)													
(e)	1 st M1 for correct values for R , allow 1 error, and allow un-simplified. Condense no label if not used as probabilities. If seen in table on QP allow, but must be labelled. Just writing the sum Σr is M0 but adding later can score 1 st M1													
(f)	2 nd dM1 dependent on 1 st M1. For an attempt at an expression based on $E(R)$, ft p and q (if probabilities) ft their r values. At least 3 correct (or correct B) products seen for 0.45 or (0.6 - their q) provided q is a probability. Answers for (f) must be clearly labelled or take 1 st as (i) and 2 nd as (ii)													
(f)(i)	M1 for identifying the correct values of X A1B for 0.475 or 0.1 + their p , provided answer is a probability													
(f)(ii)	M1 for identifying the correct values of X or R A1B for 0.375 or 0.2 + their p or 1 - their 0.475 - their q , provided ans. is a probability													
SC1, N1, N2	They use two values of X : (i) for $P(S > R) = 0.445$ (B1) (ii) for $P(R > S) = 0.4625$ (B1). No ft													
SC2 on map	Answers wrong way round: (i) $P(S > R) = 0.375$ and (ii) $P(R > S) = 0.475$ (B1)	No ft												
Flags	On open record SC1 as (i), M0A1, (ii) M0A1, and SC2 as M0A0M0A1													

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