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5. The discrete random variable X represents the score when a biased spinner is spun. The probability distribution of X is given by

x	-2	-1	0	2	3
$\mathrm{P}(X = x)$	p	p	q	$\frac{1}{4}$	p

where p and q are probabilities.

(a) Find $\mathrm{E}(X)$.

(2)

Given that $\mathrm{Var}(X) = 2.5$

(b) find the value of p.

(5)

(c) Hence find the value of q.

(1)

Amar is invited to play a game with the spinner.
The spinner is spun once and X_1 is the score on the spinner.

If $X_1 > 0$ Amar wins the game.

If $X_1 = 0$ Amar loses the game.

If $X_1 < 0$ the spinner is spun again and X_2 is the score on this second spin and if $X_1 + X_2 > 0$ Amar wins the game, otherwise Amar loses the game.

(d) Find the probability that Amar wins the game.

(4)

Amar does not want to lose the game.
He says that because $\mathrm{E}(X) > 0$ he will play the game.

(e) State, giving a reason, whether or not you would agree with Amar.

(2)

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Question 5 continued

(Total 14 marks)

Q5