Q1.　　　Mary plays a game of throwing a ball at a target.

The table shows information about the probability of each possible score.

Score	0	1	2	3	4	5
Probability	0.09	x	$3x$	0.16	0.21	0.30

Mary is 3 times as likely to score 2 points than to score 1 point.

(a)　　Work out the value of x.

....

(3)

Mary plays the game twice.

(b)　　Work out the probability of Mary scoring a total of 8.

....

(3)
(Total 6 marks)

M1.

	Working	**Answer**	**Mark**	**Additional Guidance**
(a)	1 – (0.3 + 0.21 + 0.16 + 0.09) 0.24 ÷ 4	0.06	3	**M1** for 1 – (0.3 + 0.21 + 0.16 + 0.09) or 1 – 0.76 or 0.24 **M1** dep for "0.24" ÷ 4 **A1** cao
(b)	0.3 × 0.16 + 0.16 × 0.3 + 0.21 × 0.21	0.1401	3	**M1** for one correct product or 3 correct pairs identified by scores or probabilities. Ignore 4 + 4 repeated with no other errors. **M1** for all correct products with intention to add **A1** for 0.1401
				Total for Question: 6 marks

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For part (a) most candidates were able to add the probabilities to obtain 0.76. Many understood that the probabilities should add to 1 and were able to subtract to get 0.24 but then this was commonly divided by 3 rather than 4. The divide by 3 resulted from the 3x in the table which suggests that centres need to be aware of the link to algebra rather than the old style tables which required finding the missing box. Those who did manage to divide by 4 often got an answer of 0.6 rather than 0.06. Some failed to note the decimal point and divided 24 by 4, without noting that this was then a percentage.

Few candidates gained full marks in part (b). Many scored one mark for one correct product, most thinking that the only possibilities were 3 + 5 and 4 + 4.

Many did not consider 5 + 3 as well. Four pairs were often identified rather than three. Having made a choice of pairs, candidates frequently added the probabilities rather than multiplying. Common wrong answers seen were 0.46 and 0.42. A minority used a two-way table clearly showing the three ways of scoring 8 but generally assumed the probabilities in the table were all equally likely, ignoring the information in part a and thus producing an incorrect answer.