5: The following table shows the number of male puppies born in 250 dog litters of size 5

Number of males	0	1	2	3	4	5
Number of litters	2	40	90	85	30	3

Jeff believes that a binomial distribution would be a suitable model for these data.

(a) Find the proportion of male puppies born in these litters of size 5

(2)

Jeff calculates expected frequencies, to 2 decimal places, as follows.

Number of males	0	1	2	3	4	5
Expected frequencies	r	41.92	79.91	76.16	36.30	6.92

(b) Find the value of r

(2)

The value of $\sum \frac{(O-E)^2}{E}$ for the given values in the table **excluding *r*** is 5.70 to 2 decimal places.

(c) Using a 5% significance level, test whether or not a binomial distribution is a suitable model for the number of male puppies born in these 250 litters.
You should state the hypotheses, the degrees of freedom and the critical value used.

(7)

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Question 5 continued

(Total for Question 5 is 11 marks)