**4.** Four identical six-sided dice were rolled 200 times. On each occasion the number of sixes landing upwards, $X$, was recorded.

The results were as follows.

| **Number of sixes** | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| **Frequency** | 110 | 64 | 18 | 5 | 3 |

Assuming that each face is equally likely to land upwards,

(a) write down a suitable model for $X$

**(1)**

(b) Using a 1% significance level, test the suitability of your model for these data. You should clearly state your hypotheses, the degrees of freedom and the critical value used.

**(10)**

(c) If it had **not** been assumed that each face is equally likely to land upwards,

(i) state how this would change the answer to part (a)

(ii) explain another change that would be needed to your test procedure in part (b)

**(2)**

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**Question 4 continued**

**(Total for Question 4 is 13 marks)**