5. A researcher is looking into the effectiveness of a new medicine for the relief of symptoms. He collects random samples of 8 people who are taking the medicine from each of 50 different medical practices. The number of people who say that the medicine is a success, in each sample, is recorded. The results are summarised in the table below.

Number of successes	0	1	2	3	4	5	6	7	8
Number of practices	4	6	3	12	10	7	4	2	2

The researcher decides to model this data using a binomial distribution.

(a) State two necessary assumptions that the researcher made in order to use this model.

(2)

(b) Show that the mean number of successes per sample is 3.54

(2)

He decides to use this mean to calculate expected frequencies. The results are shown in the table below.

Number of successes	0	1	2	3	4	5	6	7	8
Expected frequency	0.47	2.96	8.23	13.07	f	8.23	3.27	0.74	g

(c) Calculate the value of f and the value of g. Give your answers to 2 decimal places.

(4)

(d) Stating your hypotheses clearly, test at the 10% level of significance, whether or not the binomial distribution is a suitable model for the number of successes in samples of 8 people.

(8)

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