12 A manufacturer of steel rods checks the length of each rod in randomly selected batches of 10 rods.

100 batches of 10 rods are checked and x, the number of rods in each batch which are too long, is recorded.

Summary statistics are as follows.

$n = 100 \qquad \Sigma x = 210 \qquad \Sigma x^2 = 604$

(a) Calculate

- the mean number of rods in a batch which are too long,
- the variance of the number of rods in a batch which are too long. **[3]**

Layla decides to use a binomial distribution to model the number of rods which are too long in a batch of 10.

(b) Write down the parameters that Layla should use in her model. **[2]**

(c) Use Layla's model to determine the expected number of batches out of 100 in which there are exactly 2 rods which are too long. **[3]**