3. A sweet shop produces different coloured sweets and mixes them to sell in small, medium or large bags.

The proportion of sweets that are blue is p

Each small bag is filled with a random sample of n sweets.

The mean number of blue sweets in a small bag is 3 and the variance of the number of blue sweets in a small bag is 2.55

(a) Find the value of n and the value of p

(3)

The proportion of sweets that are green is 0.2

Each medium bag contains a random sample of 40 sweets.

For a medium bag,

(b) find the probability that the number of green sweets exceeds the **expected** number of green sweets.

(3)

The proportion of sweets that are yellow is 0.1

Each large bag contains a random sample of 80 sweets.

(c) (i) Use a Poisson approximation to find the probability that a large bag of sweets contains at least 12 yellow sweets.

(ii) Justify why a Poisson approximation is suitable in this case.

(4)

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Question 3 continued

(Total for Question 3 is 10 marks)