5. Cars stop at a service station randomly at a rate of 3 every 5 minutes.

(a) Calculate the probability that in a randomly selected 10 minute period,

(i) exactly 7 cars will stop at the service station,

(ii) more than 7 cars will stop at the service station.

(4)

Using a normal approximation, the probability that more than 40 cars will stop at the service station during a randomly selected n minute period is 0.2266 correct to 4 significant figures.

(b) Find the value of n
You must show all stages of your working.

(9)

(Total for Question 5 is 13 marks)

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6. A bag contains a large number of coins. It contains only 1p, 5p and 10p coins.

The fraction of 1p coins in the bag is q, the fraction of 5p coins in the bag is r and the fraction of 10p coins in the bag is s

Two coins are selected at random from the bag and the coin with the highest value is recorded. Let M represent the value of the highest coin.

The sampling distribution of M is given below

m	1	5	10
$P(M = m)$	$\frac{1}{25}$	$\frac{13}{80}$	$\frac{319}{400}$

(a) List all the possible samples of two coins which may be selected.

(2)

(b) Find the value of q, the value of r and the value of s

(7)

(Total for Question 6 is 9 marks)