6. A bag contains a large number of counters with an odd number or an even number written on each.

Odd and even numbered counters occur in the ratio 4 : 1

In a game a player takes a random sample of 4 counters from the bag.

The player scores

5 points for each counter taken that has an even number written on it

2 points for each counter taken that has an odd number written on it

The random variable X represents the total score, in points, from the 4 counters.

(a) Find the sampling distribution of X

(6)

A random sample of n sets of 4 counters is taken. The random variable Y represents the number of these n sets that have a total score of exactly 14

(b) Calculate the minimum value of n such that $P(Y \geqslant 1) > 0.95$

(3)

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(Total for Question 6 is 9 marks)