6. A bag contains a large number of counters with one of the numbers 5, 10 or 20 written on each of them in the ratio $5 : 2 : a$

A jar contains a large number of counters with one of the numbers 5 or 10 written on each of them in the ratio $1 : 3$

One counter is selected at random from the bag and then two counters are selected at random from the jar.
The random variable R represents the range of the numbers on the 3 counters.

Given that $P(R = 15) = \frac{63}{256}$

(a) by forming and solving an equation in a, show that $a = 9$

(3)

(b) find the sampling distribution of R

(6)

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Question 6 continued

(Total for Question 6 is 9 marks)