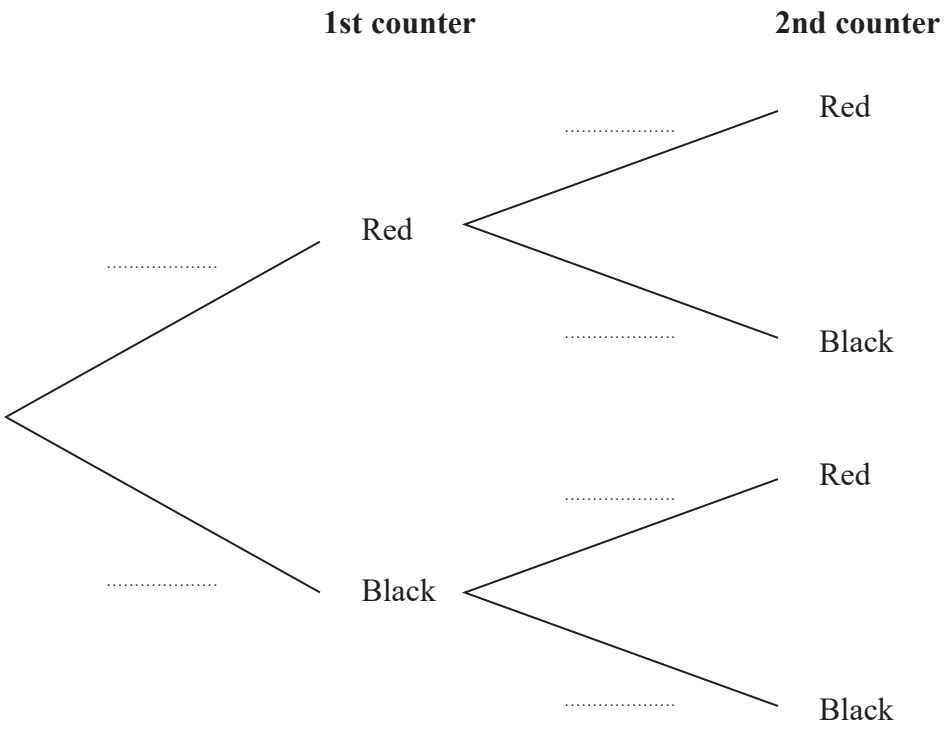
7. A box contains only red counters and black counters.

There are n red counters and $n + 1$ black counters.

Two counters are selected at random, one at a time **without** replacement, from the box.

(a) Complete the tree diagram for this information. Give your probabilities in terms of n where necessary.



(3)

(b) Show that the probability that the two counters selected are different colours is

$$\frac{n+1}{2n+1}$$

(2)

The probability that the two counters selected are different colours is $\frac{25}{49}$

(c) Find the total number of counters in the box before any counters were selected.

(2)

Given that the two counters selected are different colours,

(d) find the probability that the 1st counter is black.
You must show your working.

(2)

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Question 7 continued

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Question 7 continued

(Total for Question 7 is 9 marks)