1. Bhavna produces rolls of cloth. She knows that faults occur randomly in her cloth at a mean rate of 1.5 every 15 metres.

(a) Find the probability that in 15 metres of her cloth there are

(i) less than 3 faults,

(ii) at least 6 faults.

(3)

Each roll contains 100 metres of Bhavna's cloth.
She selects 15 rolls at random.

(b) Find the probability that exactly 10 of these rolls each have fewer than 13 faults.

(4)

Bhavna decides to sell her cloth in pieces.

Each piece of her cloth is 4 metres long.
The cost to make each piece is £5.00
She sells each piece of her cloth that contains no faults for £7.40
She sells each piece of her cloth that contains faults for £2.00

(c) Find the expected profit that Bhavna will make on each piece of her cloth that she sells.

(4)

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Question 1 continued

(Total for Question 1 is 11 marks)