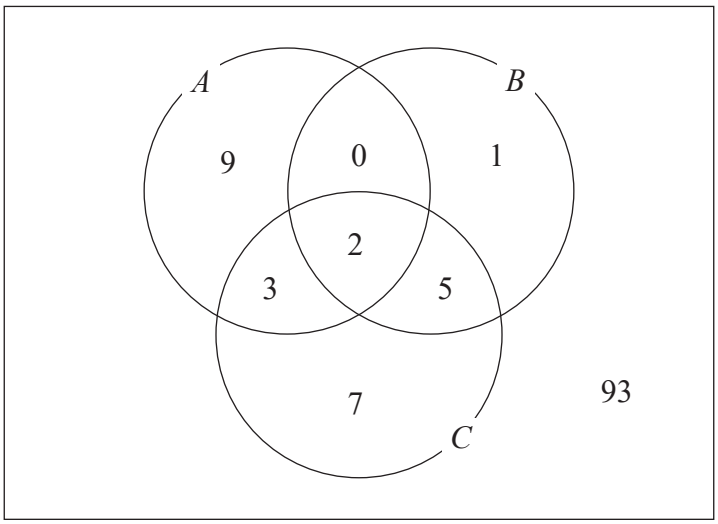
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1. A factory produces shoes.

A quality control inspector at the factory checks a sample of 120 shoes for each of three types of defect. The Venn diagram represents the inspector's results.

A represents the event that a shoe has defective stitching
B represents the event that a shoe has defective colouring
C represents the event that a shoe has defective soles



One of the shoes in the sample is selected at random.

(a) Find the probability that it does **not** have defective soles.

(1)

(b) Find P($A \cap B \cap C'$)

(1)

(c) Find P($A \cup B \cup C'$)

(2)

(d) Find the probability that the shoe has at most one type of defect.

(2)

(e) Given the selected shoe has at most one type of defect, find the probability it has defective stitching.

(2)

The random variable X is the number of the events A, B, C that occur for a randomly selected shoe.

(f) Find E(X)

(3)

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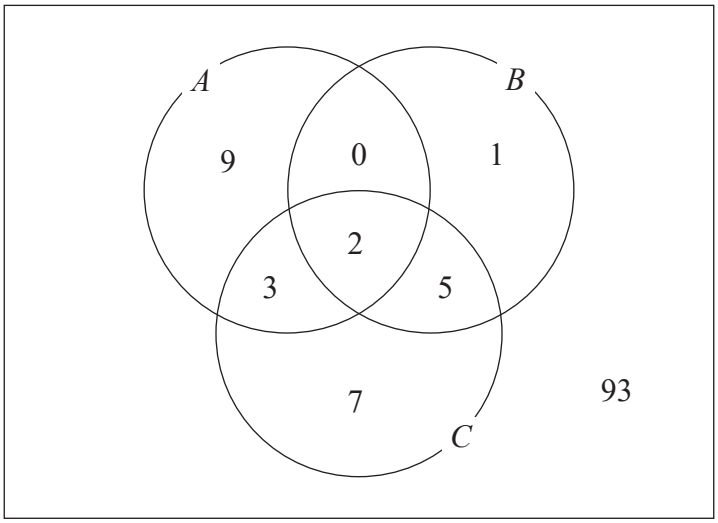
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Question 1 continued

This is a copy of the Venn diagram for this question.



Q1

(Total 11 marks)