

12Ma Statistics Mini Test 01

Sampling and Probability

Question 1

A dance studio has 800 dancers of which

- 452 are beginners
- 251 are intermediates
- 97 are professionals

(a) Explain in detail how a stratified sample of size 50 could be taken.

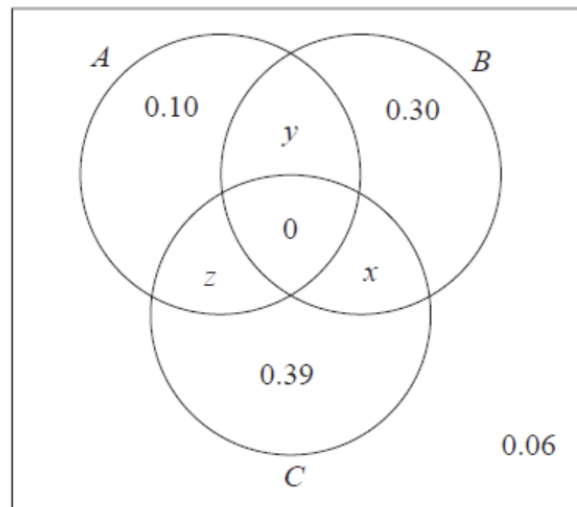
[3]

(b) State an advantage of stratified sampling rather than simple random sampling in this situation.

[1]

Question 2

The Venn diagram shows three events, A , B and C , and their associated probabilities.



- Events B and C are mutually exclusive.
- Events A and C are independent.

Showing your working, find the value of x , the value of y and the value of z .

[5]

Question 3

A manufacturer carried out a survey of the defects in their soft toys. It is found that:

- The probability of a toy having poor stitching is 0.03
- A toy with poor stitching has a probability of 0.7 of splitting open
- A toy without poor stitching has a probability of 0.02 of splitting open.

(a) Draw a tree diagram to represent this information.

[3]

(b) Find the probability that a randomly chosen soft toy has exactly one of the two defects, poor stitching or splitting open.

[3]

The manufacturer also finds that soft toys can become faded with probability of 0.05 and that this defect is independent of poor stitching or splitting open. A soft toy is chosen at random.

(c) Find the probability that the soft toy has exactly one of these 3 defects.

[4]