1. Nov/2022/Paper_9709_51/No.2

   The residents of Persham were surveyed about the reliability of their internet service. 12% rated the service as 'poor', 36% rated it as 'satisfactory' and 52% rated it as 'good'.

   A random sample of 8 residents of Persham is chosen.

   (a) Find the probability that more than 2 and fewer than 8 of them rate their internet service as poor or satisfactory. [3]

   A random sample of 125 residents of Persham is now chosen.

   (b) Use an approximation to find the probability that more than 72 of these residents rate their internet service as good. [5]

Three fair 6-sided dice, each with faces marked 1, 2, 3, 4, 5, 6, are thrown at the same time repeatedly. The score on each throw is the sum of the numbers on the uppermost faces.

(a) Find the probability that a score of 17 or more is first obtained on the 6th throw. [3]

(b) Find the probability that a score of 17 or more is obtained in fewer than 8 throws. [2]

3.

At a company's call centre, 90% of callers are connected immediately to a representative.

A random sample of 12 callers is chosen.

(a) Find the probability that fewer than 10 of these callers are connected immediately. [3]

A random sample of 80 callers is chosen.

(b) Use an approximation to find the probability that more than 69 of these callers are connected immediately. [5]

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(c) Justify the use of your approximation in part **(b)**. [1]

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