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6. A machine is designed to cut bolts. The length, in millimetres, of each bolt is uniformly distributed over the interval [39.5, 40.5]

Bolts longer than 40.45 millimetres cannot be used.

One bolt is selected at random.

(a) Find the probability that the bolt **can** be used.

(1)

In a random sample of 10 bolts,

(b) find the probability that at least 9 bolts can be used.

(3)

In a random sample of 120 bolts,

(c) find, using a suitable approximation, the probability that more than 117 bolts can be used.

(4)

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