Exercise 15J

EXAM-STYLE QUESTIONS

1 Households in Portugal spend an average of €100 per week on groceries with a standard deviation of €20. Assuming that the distribution of grocery expenditure follows a normal distribution, what is the probability of a household spending:

    a less than €130 per week

    b more than €90 per week

    c between €80 and €125 per week.

2 A machine produces bolts with diameters distributed normally with a mean of 4 mm and a standard deviation of 0.25 mm. Bolts are measured accurately and any which are smaller than 3.5 mm or bigger than 4.5 mm are rejected. Out of a batch of 500 bolts how many would be acceptable?

3 The length of time patients have to wait in Dr. Barrett's waiting room is known to be normally distributed with mean 14 minutes and standard deviation 4 minutes.

    a Find the probability that I will have to wait more than 20 minutes to see the doctor.

    b What proportion of patients wait less than 10 minutes?

4 Packets of 'Flakey flakes' breakfast cereal are said to contain 550 g. The production of packets of 'Flakey flakes' is such that the masses are normally distributed with a mean of 551.3 g, and standard deviation 15 g. What proportion of packets will contain more than the stated mass?

5 The mass of packets of washing powder is normally distributed with a mean of 500 g and standard deviation of 20 g.

    a Find the probability that a packet chosen at random has a mass of less than 475 g.

    b Three packets are chosen at random. What is the probability that all packets have a mass which is less than 475 g?