9. The weights of apples in a certain shipment are normally distributed with mean weight 150 g and standard deviation 25 g. Supermarkets classify apples as 'medium' if their weights are between 120 g and 170 g.

(a) What proportion of apples in this shipment are 'medium'?

(b) In a bag of 10 apples, what is the probability that there are at least 8 medium apples? *[6 marks]*

10. The wingspan of a species of pigeon is normally distributed with mean 60 cm and standard deviation 6 cm. A pigeon of this species is chosen at random.

(a) Find the probability that its wingspan is greater than 50 cm.

(b) Given that this pigeon's wingspan is greater than 50 cm, find the probability that it is greater than 55 cm. *[6 marks]*

11. Grains of sand are believed to have normally distributed widths with mean 2 mm and variance 0.25 mm².

(a) Find the probability that a randomly chosen grain of sand is wider than 1.5 mm.

(b) The sand is passed through a filter which blocks grains wider than 2.5 mm. The sand that has passed through the filter is examined. What is the probability that a randomly chosen grain of filtered sand is wider than 1.5 mm? *[6 marks]*

12. The amount of paracetamol per tablet of a pain-relieving medicine is normally distributed with mean 500 mg and standard deviation 160 mg. A dose containing less than 300 mg is ineffective in alleviating toothache. In a trial of this medicine on 20 people suffering from toothache, what is the probability that two or more people get less than the effective dose? *[6 marks]*