

- 2 A fair six-sided dice with faces labelled 1, 2, 3, 4, 5, 6 is thrown repeatedly until a 6 is obtained.

(a) Find the probability that a 6 is obtained for the first time on the 8th throw.

[1]

(b) Find the probability that a 6 is obtained for the third time on the 7th throw.

[1]

(b) Find the probability that a 6 is obtained for the third time on the 7th throw. [3]

[2]

- 6 A factory produces chocolate bars. The weights of the bars are normally distributed with mean 155 g and standard deviation 6 g. A random sample of 350 of these bars is chosen.

(a) How many of these 350 bars would you expect to weigh between 148 g and 160 g? [4]

[illegible]

- The annual salary of an employee at Browns is denoted by x thousand dollars and the annual salary of an employee at Greens is denoted by y thousand dollars. It is given that, for the 27 employees at each of the companies,

(b) Find the mean and standard deviation of the annual salaries of these 54 employees. [5]

A second factory also produces chocolate bars. The weights of these bars are normally distributed with mean μ g and standard deviation σ g. Tests show that 8% of the bars weigh more than 114.0 g and 20% weigh less than 99.5 g.

- (b) Find the value of μ and the value of σ . [5]

5

- 7 (a) How many different arrangements are there of the 10 letters in the word SEYCHELLES? [1]

[illegible]

- (b) How many different arrangements are there of the 10 letters in the word SEYCHELLES in which there are exactly two letters between the Ss and one of these two letters is C? [3]

[illegible]

(c) How many different arrangements are there of the 10 letters in the word SEYCHELLES in which there is an S at the beginning, an S at the end and the three Es are **not** all next to each other? [3]

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5 letters are selected at random from the 10 letters in the word SEYCHELLES.

(d) Find the probability that these 5 letters include the three Es. [3]

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Additional page

If you use the following page to complete the answer to any question, the question number must be clearly shown.

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