1 There are 720 different 5-digit numbers that can be formed using the digits 1, 2, 3, 5, 7 and 8, if each digit may be used only once in any number.

How many of these 5-digit numbers are even and greater than 30 000?

[4]

[Total: 4]

2 In an examination, candidates must select 2 questions from the 5 questions in section A and select 4 questions from the 8 questions in section B. Find the number of ways in which this can be done.

[2]

[Total: 2]

3 The digits of the number 6 378 129 are to be arranged so that the resulting 7-digit number is even. Find the number of ways in which this can be done.

[2]

[Total: 2]

4 A team of 3 people is to be selected from 4 men and 5 women. Find the number of different teams that could be selected which include at least 2 women.

[2]

[Total: 2]

5 Jess wants to arrange 9 different books on a shelf. There are 4 mathematics books, 3 physics books and 2 chemistry books. Find the number of different possible arrangements of the books if

(a) there are no restrictions,

[1]

(b) a chemistry book is at each end of the shelf,

[2]

(c) all the mathematics books are kept together and all the physics books are kept together.

[3]

[Total: 6]

6 A team of 8 players is to be chosen from 6 girls and 8 boys. Find the number of different ways the team may be chosen if

(a) there are no restrictions,

[1]

(b) all the girls are in the team,

[1]

(c) at least 1 girl is in the team.

[2]

[Total: 4]

7 An arithmetic progression has a second term of −14 and a sum to 21 terms of 84. Find the first term and the 21st term of this progression.

[5]

[Total: 5]

8 Expand $(2 - x)^5$, simplifying each coefficient.

[3]

[Total: 3]

9 DO NOT USE A CALCULATOR IN THIS QUESTION.

Find the term independent of x in the binomial expansion of $\left(3x - \frac{1}{x}\right)^6$.

[2]

[Total: 2]

10 The sum of the first two terms of a geometric progression is 10 and the third term is 9.

Find the possible values of the common ratio and the first term.

[5]

[Total: 5]