Counting & Probability (Q 6, Paper 2)

Lesson No. 2: Permutations

2007

6 (c) (i) How many different three-digit numbers can be formed from the digits 2, 3, 4, 5, 6, if each of the digits can be used only once in each number?

(ii) How many of the numbers are less than 400?

(iii) How many of the numbers are divisible by 5?

(iv) How many of the numbers are less than 400 and divisible by 5?

2006

6 (b) Niamh uses a password formed from one letter of her name followed by four of the digits from 1 to 9. She does not use any digit more than once.

(i) How many such passwords can be formed?

(ii) How many of the passwords begin with N?

(iii) How many of the passwords end in an even digit?

(iv) How many of the passwords begin with N and use only odd digits?

2005

6 (a) (i) Evaluate 6!

2004

6 (a) The letters of the word CUSTOMER are arranged at random.

(i) How many different arrangements are possible?

(ii) How many of these arrangements begin with the letter C?

2002

6 (c) The digits 0, 1, 2, 3, 4, 5 are used to form four-digit codes. A code cannot begin with 0 and no digit is repeated in any code.

(i) Write down the largest possible four-digit code.

(ii) Write down the smallest possible four-digit code.

(iii) How many four-digit codes can be formed?

(iv) How many of the four-digit codes are greater than 4000?

2001

6 (b) (i) How many different arrangements can be made using all the letters of the word IRELAND?

(ii) How many arrangements begin with the letter I?

(iii) How many arrangements end with the word LAND?

(iv) How many begin with I and end with LAND?

2000

6 (c) (i) How many different five-digit numbers can be formed from the digits 2, 3, 4, 5, 6? Each digit can be used once only in each number.

(ii) How many of the numbers are even?

(iii) How many of the numbers are less than 40 000?

(iv) How many of the numbers are both even and less than 40 000?

1999

6 (b) (i) In how many different ways can the 5 letters of the word ANGLE be arranged?

(ii) How many of these arrangements begin with a vowel?

(iii) In how many of the arrangements do the two vowels come together?

1998

6 (c) (i) How many different numbers, each with 3 digits or less, can be formed from the digits 1, 2, 3, 4, 5? Each digit can be used only once in each number.

(ii) How many of the above numbers are even?

1997

6 (b) (i) In how many different ways can the letters of the word CARPET be arranged?

(ii) How many of these arrangements begin with A?

(iii) In how many of the arrangements do the two vowels come together?

1996

6 (b) There are 5 horses, *A*, *B*, *C*, *D* and *E*, in a race. Each horse takes a different time to complete the race. On completing the race,

(i) in how many different placing arrangements can the 5 horses finish?

(ii) if *A* is placed first and *B* last, in how many different placing arrangements can the other horses finish?

ANSWERS

2007	6 (c)	(i) 60	(ii) 24	(iii) 12	(iv) 6
2006	6 (b)	(i) 15,120	(ii) 3,024	(iii) 6,720	(iv) 120
2005	6 (a)	(i) 720			
2004	6 (a)	(i) 40,320	(ii) 5,040		
2002	6 (a)	(i) 28	(ii) 21		
2001	6 (b)	(i) 5,040	(ii) 720	(iii) 6	(iv) 2
2000	6 (c)	(i) 120	(ii) 72	(iii) 48	(iv) 30
1999	6 (b)	(i) 120	(ii) 48	(iii) 48	
1998	6 (c)	(i) 85	(ii) 34		
1997	6 (b)	(i) 720	(ii) 120	(iii) 240	
1996	6 (b)	(i) 120	(ii) 6		