Counting & Probability (Q 6, Paper 2)

Lesson No. 5: Special Probability Problems

2005

6 (c) Seven horses run in a race.
All horses finish the race and no two horses finish the race at the same time.

(i) In how many different orders can the seven horses finish the race?

(ii) A person is asked to predict the correct order of the first three horses to finish the race. How many different such predictions can be made?

(iii) A person is asked to predict, in any order, the first three horses to finish the race. How many different such predictions can be made?

(iv) A person selects two of the seven horses at random. What is the probability that the selected horses are the first two horses to finish the race?

2003

6 (c) In a certain school the examination subjects for senior students are grouped as follows:

Compulsory Subjects	Block A	Block B	Block C
Irish English mathematics	French German	biology home economics construction studies accounting	business organisation history physics

As well as taking all three of the compulsory subjects, each student must choose *one* subject from Block A, *two* from Block B and *one* from Block C.

(i) In choosing two subjects from Block B, how many different selections are possible?

(ii) In choosing the full range of subjects, how many different selections are possible?

(iii) One student has already decided to do German and construction studies. How many different selections of the remaining subjects are possible for this student?

(iv) If the student referred to in part **(iii)** selects her remaining subjects at random, what is the probability that she will select both biology and physics?

2002

6 (b) A meeting is attended by 23 men and 21 women.
Of the men, 14 are married and the others are single.
Of the women, 8 are married and the others are single.

(i) A person is picked at random. What is the probability that the person is a woman?

(ii) A person is picked at random. What is the probability that the person is married?

(iii) A man is picked at random. What is the probability that he is married?

(iv) A woman is picked at random. What is the probability that she is single?

2000

6 (b) In a class, there are 15 boys and 13 girls. Four boys wear glasses and three girls wear glasses.
A pupil is picked at random from the class.

(i) What is the probability that the pupil is a boy?

(ii) What is the probability that the pupil wears glasses?

(iii) What is the probability that the pupil is a boy who wears glasses?

A girl is picked at random from the class.

(iv) What is the probability that she wears glasses?

ANSWERS

2005	6 (c)	(i) 5040	(ii) 210	(iii) 35	(iv) $\frac{1}{21}$
2003	6 (c)	(i) 6	(ii) 36	(iii) 9	(iv) $\frac{1}{9}$
2002	6 (b)	(i) $\frac{21}{44}$	(ii) $\frac{1}{2}$	(iii) $\frac{14}{23}$	(iv) $\frac{13}{21}$
2000	6 (b)	(i) $\frac{15}{28}$	(ii) $\frac{1}{4}$	(iii) $\frac{1}{7}$	(iv) $\frac{3}{13}$