JC Syllabus: Probability

Topic	Description of topic Students learn about	Learning outcomes Students should be able to
1.1 Counting	Listing outcomes of experiments in a systematic way, such as in a table, using sample spaces, tree diagrams.	– list all possible outcomes of an experiment – apply the fundamental principle of counting
1.2 Concepts of probability	The probability of an event occurring: students progress from informal to formal descriptions of probability. Predicting and determining probabilities. Difference between experimental and theoretical probability.	– decide whether an everyday event is likely or unlikely to occur – recognise that probability is a measure on a scale of 0-1 of how likely an event is to occur **– use set theory to discuss experiments, outcomes, sample spaces** – use the language of probability to discuss events, including those with equally likely outcomes – estimate probabilities from experimental data – recognise that, if an experiment is repeated, there will be different outcomes and that increasing the number of times an experiment is repeated generally leads to better estimates of probability – associate the probability of an event with its long-run, relative frequency
1.3 Outcomes of simple random processes	Finding the probability of equally likely outcomes.	– construct sample spaces for two independent events – apply the principle that, in the case of equally likely outcomes, the probability is given by the number of outcomes of interest divided by the total number of outcomes (examples using coins, dice, spinners, containers with different coloured objects, playing cards, sports results, etc.) **– use binary / counting methods to solve problems involving successive random events where only two possible outcomes apply to each event**

JCOL 2011 Sample Paper

Question 6 **(suggested maximum time: 10 minutes)**

A bag contains red disks, blue disks and white disks. In an experiment, each student in a class of 24 takes out a disk, records the colour and replaces it. This is repeated ten times.
The results from the class are recorded in the table below.

Colour	Red	Blue	White	Total
Frequency	123	78	39	
Relative frequency: $\frac{\text{frequency}}{\text{total}}$				
% of total (Relative frequency × 100)				

(a) In your opinion, why is the number for red greater than for blue or white?

(b) Complete the table above.

(c) Use the results from the table above to estimate the probability of getting each colour when a disk is taken from the bag.

Colour	Red	Blue	White
Probability			

(d) Anne says that she thinks there are ten disks in the bag. Is this a reasonable suggestion? Explain your answer.

(e) Based on the information in the table, how many disks of each colour do you think are in the bag?