# *INTRODUCTORY MATHEMATICAL STATISTICS (STAT2001/6039)*

## Tutorial 4

**Problem 1**

Two dice are to be rolled together five times.

Let *Y* be the number of square totals which will result.

**(a)** What is *Y*'s probability distribution?
Write down *Y*'s pdf (probability density function).

**(b)** Calculate, tabulate and sketch *Y*'s pdf.

**(c)** What's the probability that the five rolls will result in at least one square total?

**(d)** If the two dice are to be rolled only once, what is another name for *Y*'s probability distribution?

**Problem 2**

Two dice are to be rolled together repeatedly until the first square total comes up.

Let *Y* be the number of rolls.

**(a)** What is *Y*'s probability distribution? Write down *Y*'s pdf.

**(b)** What's the probability that the first square total will occur on the third roll?

**(c)** What's the probability that the dice will be rolled an even number of times?

**Problem 3**

Four accidents occurred at an intersection over the last three years.

Let *Y* be the number of accidents which will occur over the next month.

**(a)** What is *Y*'s probability distribution (approximately)?
Write down *Y*'s pdf.

**(b)** Find the probability that there will be:

**(i)** exactly one accident over the next month

**(ii)** at least one accident over the next month

**(iii)** at least one accident over the next two months.

**Problem 4**

A bag contains 5 white balls and 7 black balls.

Four balls are to be drawn randomly from the bag.

Let *Y* be the number of white balls amongst the four drawn.

**(a)** What is *Y*'s probability distribution?
Write down *Y*'s pdf.

**(b)** What's the probability that at least half the balls drawn will be white?