INTRODUCTORY MATHEMATICAL STATISTICS
(STAT2001/6039)

Tutorial 5

Problem 1

A die is rolled once. Let Y be the number which comes up.

(a) Write down and sketch Y's pdf (probability density function).
(b) Compute Y's mean, variance and standard deviation.

Problem 2

John and Kate play a game where Kate pays John $11 and rolls a die. John then pays Kate three times as many dollars as the number which comes up.

(a) How much money can Kate expect to gain overall? Is the game fair?
(b) What is the variance of Kate's net gain?

Problem 3

Suppose that Y has a geometric distribution with parameter p.

(a) Find Y's mgf (moment generating function).
(b) Use Y's mgf to find Y's mean and variance.

Problem 4

John and Kate are about to play the following game. Kate will pay John $100 for the privilege of rolling a die repeatedly until the first 6 comes up. John will then pay Kate twice as many dollars as the square of the number of rolls.

(a) How much money can Kate expect to gain overall?
(b) What is the probability that Kate's net gain will be positive?