Exercise Sheet 4 - Lecture 4 (03/11/02)

1. State the condition under which the Binomial distribution arises?

2. If $X \sim \text{Bin}(12, 0.7)$ calculate

   (a) $P(X = 9)$

   (b) $P(X > 10)$

   (b) $P(X \leq 11)$

3. A lecturer uses a laptop to give a series of 8 lectures. There is a 5% chance that the laptop causes problems in any given lecture. What is the probability of observing 2 out of 8 lectures in which the laptop exhibits 'technical difficulties'.

4. Two groups of twelve children are taught two different methods of arithmetic. (Assume that a child in group one is matched in terms of their arithmetic ability with a child in group 2 before the start of the study). What is the probability that at least 9 children from one of the groups will obtain higher scores than the other group? What other assumptions have you made?

5. Two teams, A and B, play a series of games. If team A has probability 0.4 of winning each game, is to it's advantage to play the best three out of five games or the best four out of seven? Assume outcomes of succesive games are indepedent.

Exam Paper Questions The table below lists past exam paper *question numbers* that involve the Binomial distribution (useful for revision). NB. bracketed question numbers indicate that only part of the question involves the Binomial distribution.

	Human Sciences	Psychology		
Year	TT	MT	HT	TT
2001	3		3	3
2000	3	(3)	4	3
1999	(4)(6)	3	(3)	(4)(6)
1998			3	
1997	(9)		(4)	(9)