

L11QUE: Quantitative Economics
L11QUM: Quantitative Methods
L11MES: Mathematical and Economic Statistics

Tutorial 2

1. The manager of a music store finds that 30% of customers entering the store ask an assistant for help, and 20% of customers entering the store make a purchase before leaving. Also, 15% of customers entering the store both ask an assistant for help and make a purchase before leaving.

- (a) What is the probability that a customer entering the store will ask an assistant for help or make a purchase or both?
- (b) What is the probability that a customer that asks an assistant for help will make a purchase before leaving?
- (c) Consider the events “asks assistant for help” and “makes purchase”
 - (i) Are these events mutually exclusive?
 - (ii) Are they collectively exhaustive?
 - (iii) Are they independent?

2. Suppose there are 21 seats available in a classroom. It is known from past experience that the probability that a student who has registered for the module attends the class is 80%. There are 25 students registered.

- (a) What is the probability that there won't be enough seats?
- (b) What is the probability that there will be at least one empty seat?
- (c) What are the assumptions behind your answer? Discuss how realistic they are for this particular case.

3. Consider the joint probability distribution

		Y	
		1	2
X	0	0.30	0.20
	1	0.25	0.25

where X represents the number of exams a student has in a day during final examinations and Y represents the number of snacks eaten by the student during the same day.

- (a) Find the marginal probability distributions for X and Y .
- (b) Calculate the expected value and variance of X and Y .
- (c) Calculate the probability of having one exam conditional on eating two snacks.