5. A newsvendor buys a weekly teenage magazine from a publisher for a unit price of £2.50 and sells it to members of the public for £4.50. Any magazines left over at the end of the week the newsvendor passes to his daughter who sells them to her friends at school for £0.30. Past experience indicates that the demand for this magazine from members of the public is expected to be a rectangular distribution with the two extremes of the distribution being 30 and 70 copies per week.

If the newsvendor would like to maximise his profit how many copies of the magazine should he order from the publisher?

Suppose now that the demand from the public is taken to be a Normal distribution with mean 60 copies and variance 10. By making use of the table associated with the standard Normal distribution (with mean zero and variance one) presented at the end of this examination paper what now would be your advice on how many copies the newsvendor should order from the publisher?

The newsvendor also sells packets of sweets which he orders from a supplier. He pays his supplier £1 for each packet and sells them to his customers for £1.25. Currently he sells 250 packets per week. He estimates that the costs associated with making an order are £2.30 and interest rates are currently 4% per annum. His supplier offers a quantity discount such that if he were to order 1500 packets at a time he would get a 3% discount, only paying £0.97 per packet. What advice can you offer the newsvendor?

6. The following table defines the various activities in a small project:

Activity	Completion time (weeks)
A	5
B	7
C	3
D	5
E	5
F	3
G	9
H	4
I	9
J	1

The immediate precedence relationships are:

Activity		Activity	
A	must be finished before	H	can start
J		D	
I		B,C	
G		E,J,A,I,F	

In addition there must be a time lag of at least 4 weeks between the end of activity A and the start of activity D.

(question continues on next page)

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