5. A carpenter produces three sizes of table, small, medium and large.

The information below shows the quantity of wood required for each size of table, the production time, the profit on each table and the totals available.

	Quantity of wood required	**Production time**	**Profit**
Small	1.2 m^2	4 hours 20 minutes	£275
Medium	2.5 m^2	7 hours 30 minutes	£425
Large	4.0 m^2	9 hours	£650
Total available	60 m^2	200 hours	

The tables produced should meet the following conditions

- at least 40% of the tables must be small
- there must be at least twice as many small tables as medium tables
- no more than 30% of the tables must be large

The carpenter wishes to maximise the profit from the sale of the tables.

Let x be the number of small tables, y be the number of medium tables and z be the number of large tables produced.

Formulate this as a linear programming problem. You should clearly state the objective function and give the constraints as simplified inequalities with integer coefficients.

(Total for Question 5 is 8 marks)

5.

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

Question 5 continued

(Total for Question 5 is 8 marks)