(25 Marks)

North Dublin Oils LTD supply home heating oil to homes in Dublin and the surrounding hinterland. Over the last 30 days, the volume, in litres, of oil purchased per home visit, was recorded and analysed. The random variable, *X*, where *X* is the volume of oil purchased, follows a normal distribution with mean 520 litres and standard deviation of 80 litres. A customer is chosen at random.

(a) Use the Empirical Rule to estimate the percentage of households that purchased over 680 litres of home heating oil.

(b) Find $P(460 \leq X \leq 700)$.

(c) The price of oil remained constant at €0·89 per litre during this time period. Given that 90% of customers spent more than €N on oil, find the value of N correct to the nearest cent.