Year 12 PROBABILITY

1. A cheese factory sells cheese in 750g blocks. It is found that the mean of 240 blocks of cheese taken at random is 752g with a standard deviation of 2g.

   a) Find the number of blocks of cheese that weigh less than 754g.

   b) If a block of cheese is chosen at random, between what two weights is it very likely to be ?

   c) What is the probability of finding a block of cheese that weighs more than 756g ?

2. The length of time a person speaks on the phone is normally distributed with a mean of 3min 25secs(205secs) and a standard deviation of 1min 10secs(70secs).

   a) What is the probability that a phone call lasts less than 2min 30secs ?

   b) What is the probability that a phone call lasts between 2min 30secs and 4 min ?

3. The number of people on the trains travelling out from Wellington to Paraparaumu, who are caught without a valid ticket, are counted over a period of a few days. The Mean and standard deviation were 23 and 4.5 respectively.

   a) Calculate the probability that, on a day selegted at random, more than 20 people are caught without a valid ticket.

   b) Find the expected lower and upper limits for 85% of the number of people caught travelling without tickets.

4. Use to table to answer the following questions.

   a) $P(0 < Z < 1.80)$
   b) $P(-2.4 < Z < 1.83)$
   c) $P(Z < -1.32)$

5. The results of a Maths test are normally distributed with a mean of 52% and a standard deviation of 15%. The top 5% of students gain a Distinction certificate and the next 10% below gain a Merit certificate.

   Calculate a) the minimum mark required to gain a Distinction certificate.

   b) the mark interval required to gain a Merit certificate.