# MATU9D2: PRACTICAL STATISTICS

## Spring 2017

## PRACTICAL SESSION 3

- Hand Calculations 3
  One Sample Z test and Z Interval

- Handout 1 of 2

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**ANSWER THE FOLLOWING QUESTIONS USING PEN, PAPER AND CALCULATOR - NOT COMPUTER**

1. The level of calcium in the blood in healthy young adults varies with a mean about 9.5 mg/dl and standard deviation about $\sigma = 0.4$. A clinic in a rural area measures the blood calcium level of 180 healthy pregnant women at their first visit for ante natal care. The mean is $\bar{x} = 9.57$.

   Is there evidence that the mean calcium level differs from 9.5 mg/dl?

   (a) State the null and alternative hypotheses

   (b) Perform an appropriate test, assuming that $\sigma = 0.4$ mg/dl in this population. State your conclusions.

   (c) Calculate an appropriate 95% Confidence Interval for the population mean calcium level.

2. The UK treasury is interested in the average house price of all new houses sold in the U.K. They believe that this average price is now above £160,000. They selected a random sample of 345 homes, and found their average was £176,400. Does the data support their claim? Use $\alpha = 0.01$. Assume the standard deviation of the price of all new homes sold is £26,250.