

**MATU9D2 : PRACTICAL STATISTICS
WEEKLY ASSIGNMENT 6**

This should be submitted via my box outside **room 4B89**. Ensure that you have the Course Name, your Name and Practical Group clearly marked on your answers. Your answers should be submitted by ..

Tuesday Group:

12noon on Friday 10 March

Thursday Group:

4pm on Tuesday 14 March

Friday Groups:

4pm on Wednesday 5 March

Complete the following questions both questions by hand and by Minitab.

You must show the full working by hand so that I have proof that you can perform the analysis by hand and by computer!!

1. How accurate are radon detectors of a type sold to homeowners? To answer this question, university researchers placed 12 detectors in a chamber that exposed them to 105 picocuries per litre of radon. The detectors readings were as follows :

91.9	97.8	111.4	122.3	105.4	95.0
103.8	99.6	96.6	119.3	104.8	101.7

$$\sum x = 1249.6 \qquad \sum x^2 = 131096$$

Is there convincing evidence that the mean reading of all detectors of this type differs from the true value 105?

- (i) Perform an appropriate hypothesis test
- (ii) Calculate a 95% confidence interval for the mean reading and interpret.

(Questions 2 and 3 over the page)

2. Attitudes to 'Green' issues can be characterised into conservative and radical. During the building of a new airport, the percentages who held radical views on the possible harmful effects on the environment were canvassed in the local towns and villages, and are recorded in the table below :

Percentages holding radical views									
Villages	31	39	50	10	12	17	19	17	22
	22	23	27	42	17	5	6	8	24
Towns	30	18	25	41	37	30	29	43	41
	31	15							

Is there a difference in the level of support for a radical view between the villages and the towns?

3. A commercial educational software producer advertises a software program designed to improve scores on a verbal test. A random sample of 10 students took the verbal test before and after using this software. The results appear below:

Score Before	430	600	480	500	610	380	570	490	540	370
Score After	450	640	490	550	630	420	610	490	575	400

Should we conclude that the software improves the verbal scores?