

MATU9D2 : PRACTICAL STATISTICS WEEKLY ASSIGNMENT 7

This should be submitted via your tutor's 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 17 March

Thursday Group:

4pm on Tuesday 21 March

Friday Groups:

4pm on Wednesday 22 March

Complete the following questions both questions by hand (including full working) and by Minitab.

- 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 standard deviation reading of all detectors of this type differs from 9.2 picocuries per litre?

- 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							

Are the variances equal?

3. Manatees are large sea creatures that live in the shallow water along the coast of Florida. Many manatees are injured or killed by power boats. The following are data on the number of manatees killed and the number of power boat registrations (in thousands of boats) in Florida over a 10 year period.

Powerboat Registrations (x)	Number of Manatees killed (y)
447	13
460	17
481	24
498	21
513	24
512	20
526	28
559	31
585	33
600	35

Summary Statistics :

$$\begin{aligned}\sum y_i &= 246 & \sum x_i &= 5181 \\ \sum y_i^2 &= 6510 & \sum x_i^2 &= 2707469 \\ \sum x_i y_i &= 130547\end{aligned}$$

- (i) Plot the data to examine any relationship between the number of manatees killed and the number of powerboat registrations.
- (ii) Calculate the correlation coefficient between powerboat registrations and the number of manatees killed.