MATU9D2 : PRACTICAL STATISTICS

Spring 2017

PRACTICAL SESSION 7

- By Hand :
  Chisquared Interval
  F test - to compare variances
  Scatter Plots
  Correlation

- Handout 1 of 2

C.A. Howie
Computing Science & Maths
Faculty of Natural Sciences
University of Stirling

ANSWER THE FOLLOWING QUESTIONS USING PEN, PAPER AND CALCULATOR

1. Here are measurements (in mm) of a critical dimension for 16 car engine crankshafts:

224.22	224.01	224.02	223.98	223.99	223.96
223.96	224.09	223.99	223.98	223.90	223.95
225.00	224.06	223.91	224.00		

From Practical 6

$\bar{x} = 224.064$ $s = 0.2608$

Is there evidence that the standard deviation is not 0.35mm? Calculate a 95% Confidence Interval for the standard deviation to answer this question

2. The following data show the abrasiveness of two brush on denture cleaners, A and B, measured by weight loss in milligrammes.

A	:	10.2	11.0	9.6	9.8	9.9
		10.5	11.2	9.5	10.1	11.8
B	:	9.6	8.5	9.0	9.8	
		10.7	9.0	9.5	9.9	

From Practical 6

$\bar{x}_A = 10.36$ $s_A = 0.756$

$\bar{x}_B = 9.50$ $s_B = 0.676$

Perform an appropriate test to check whether the variances are equal.

3. We are given the following data and required to answer the 2 questions below.

x	10	12	14	16	18	20	22	24	26	28
y	25	24	22	20	19	17	13	12	11	10

(a) Take the data given above and construct a scatter diagram.
(b) Find the correlation coefficient (r) for this data. Further, calculate R^2 and explain what this means.

4. We are given the following data and required to answer the 2 questions below.

x	24	22	20	18	16	14	12	10
y	25	24	22	20	19	17	13	12

(a) Take the data given above and construct a scatter diagram.
(b) Find the correlation coefficient (r) for this data. Further, calculate R^2 and explain what this means.
(c) Is the correlation significantly different to zero?