Godalming College

Statistics 3 – Coding

Please **complete** this homework by _____. Start it early. If you can't do a question you will then have time to ask your teacher for help or go to a drop in session.

Section 1 – Review of previous topics. Please complete all questions.

Remember to use your calculator as often as you can in the most efficient way!

Q1. Lucy is investigating the daily minimum temperature for Leeming in the months of May to August (inclusive) 2015

The data Lucy collected are summarised as follows:

$n = 30$ $\quad \sum x = 248$ $\quad \sum x^2 = 2361$

Calculate the mean and standard deviation of Lucy's sample.

Q2. The mean and standard deviation of the length of each of Hannah's 'phone calls, in minutes, in a week is given as $\bar{h} = 45.2$ and $\sigma_h = 11.3$ and for the same week Tom's results are summarised by $\bar{t} = 12.7$ and $\sigma_t = 20.5$.
Compare the amount of time Hannah and Tom spend on the 'phone in this week.

Q3. Show that $\frac{3+\sqrt{24}}{3-\sqrt{6}}$ can be written in the form $a + b\sqrt{c}$

Q4. Solve the simultaneous equations

$$2x + y = 3$$
$$x^2 + y^2 = 18$$

Section 2 – Consolidation of this week's topic. Please complete all questions.

Q1. The daily temperatures, in degrees Celsius, recorded during one week in March are as follows:

18 21 10 17 14 20 12.

(a) Calculate the mean and standard deviation of these values.

(3 marks)

Given that, if C is the temperature in Celsius and F is the temperature in Fahrenheit, then

F = 1.8 C + 32.

(b) Find the mean and standard deviation for these same days when they are measured in degrees Fahrenheit. *(2 marks)*

Q2. The grouped frequency distribution for the life (in hours) of 200 electric light bulbs are given below.

Life (hours)	590-599	600-609	610-619	620-629	630-639	640-649	650-659	660-669
L (midpoint)								
x								
Frequency	4	9	23	41	81	29	9	4

a) Complete the table to find the mid points of the groups. (L) *(2 marks)*

b) Use the code $x = \frac{L-594.5}{10}$ to complete the row of values for x. *(2 marks)*

c) Estimate the mean and standard of x. *(2 marks)*

d) Now use the code $x = \frac{L-594.5}{10}$ to find mean and standard deviation of the standard life expectancy (L) of a light bulb in this sample. *(4 marks)*

Q3. a) Give 2 reasons to use a code for a set of data

b) Is it inaccurate to use a code for data? Give a reason for your answer.

(3 marks)

Q4. In a sample of size 20 $\sum(x-\bar{x})^2 = 158$, and $\bar{x} = 65$

a) Write down the value of S_{xx} *(1 mark)*

b) Calculate the standard deviation of x *(2 marks)*

The code $x = \frac{p}{5} - 3$ is applied to the data.

c) Calculate

i) $\bar{p}$ *(2 marks)*

ii) σ_p *(2 marks)*

Total Marks = 25 marks

Section 3 – Large Data Set question. If you are aiming for a top grade, you should attempt these questions.

Q1. Create a code that would work with this data and use it to find the mean and standard deviation of the daily mean visibility.

Daily mean visibility in Camborne May 1987

Daily Mean Visibility (Dm)	
2000	2900
3200	2300
3600	1900
4100	1600
2700	2700
1000	2600
600	1400
2400	1000
900	2500
4100	1500
2500	500
2400	1600
4600	1500
3100	900
4500	1400
3700	