

Statistics 4 – Representing data

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.

Q1. Find the mean and standard deviation of these numbers.

24, 35, 67, 25, 36, 62, 21, 13, 0, 54

Q2. Enter this data into your calculator and find the mean and variance of the data.

x	Frequency
5	3
6	7
7	12
8	11
9	8
10	6
11	3

Q3. The mean and standard deviation the daily rainfall in mm for the first 10 days June in the UK are 12 and 5.2 respectively.
The mean and standard deviation the daily rainfall in mm in the last 20 days of June in the UK are 9.3 and 4.6 respectively.

Calculate the mean and standard deviation of the daily rainfall in mm in the whole of June.

Q4. a) **Use your calculator** to calculate the mean and standard deviation of the numbers

11, 12, 13, 14 and 15

Using your values from a), **write down** the mean and standard deviation of the following numbers.

b) 111, 112, 113, 114 and 115

c) 110, 120, 130, 140 and 150

d) 25, 27, 29, 31 and 33

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

Q1. In a study of how students use their mobile phones, the phone usage of a random sample of 11 students was examined for a particular week. The total length of calls, y minutes, for the students were: 17, 23, 35, 36, 51, 53, 54, 55, 60, 77, 110

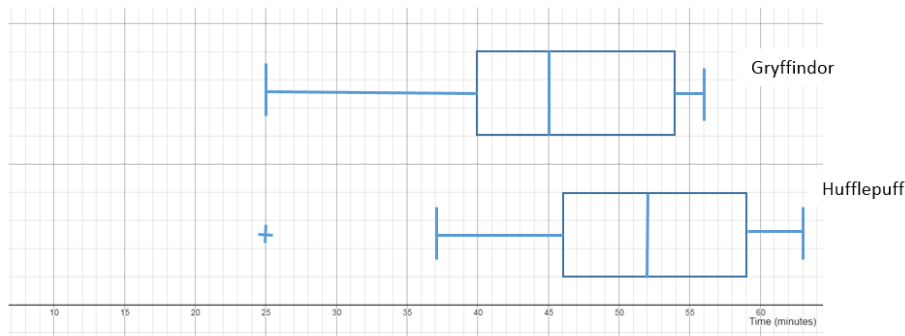
a) Find the median and quartiles for these data (3 marks)

A value that is greater than Upper Quartile + 1.5 x (IQR) or smaller than Lower quartile – 1.5 x (IQR) is defined as an outlier.

b) Show that 110 is the only outlier. (3 marks)

c) Using Graph paper draw a box plot for these data, indicating clearly the position of the outlier. (5 marks)

Q2. Children from Gryffindor house and Hufflepuff house took part in a run. The times, to the nearest minute, taken by the students in each house are summarised below in box plots.



a) Write down the time by which 75% of the students in Gryffindor had completed the run. (1 mark)

b) Write down the time by which 50% of the students in Hufflepuff had completed the run. (1 mark)

c) Compare and contrast these two box plots (2 marks)

d) Give one advantage and one disadvantage of comparing distributions using box plots. (2 marks)

Q3. Aeroplanes fly from City A to City B. Over a long period of time the number of minutes delay in take-off from City A was recorded. The minimum delay was 5 minutes and the maximum delay was 63 minutes. A quarter of all delays were at most 12 minutes, half were at most 17 minutes and 75% were at most 28 minutes. Only one of the delays was longer than 45 minutes.

An outlier is an observation that falls either 1.5 x (IQR) above the upper quartile or 1.5 x (IQR) below the lower quartile.

a) On graph paper draw a box plot to represent these data. (5 marks)

b) Comment on how the data might be interpreted by a passenger who frequently flies from City A to City B. (2 marks)

Q4. Carla is a telephone sale assistant. The length and frequency of telephone calls made by

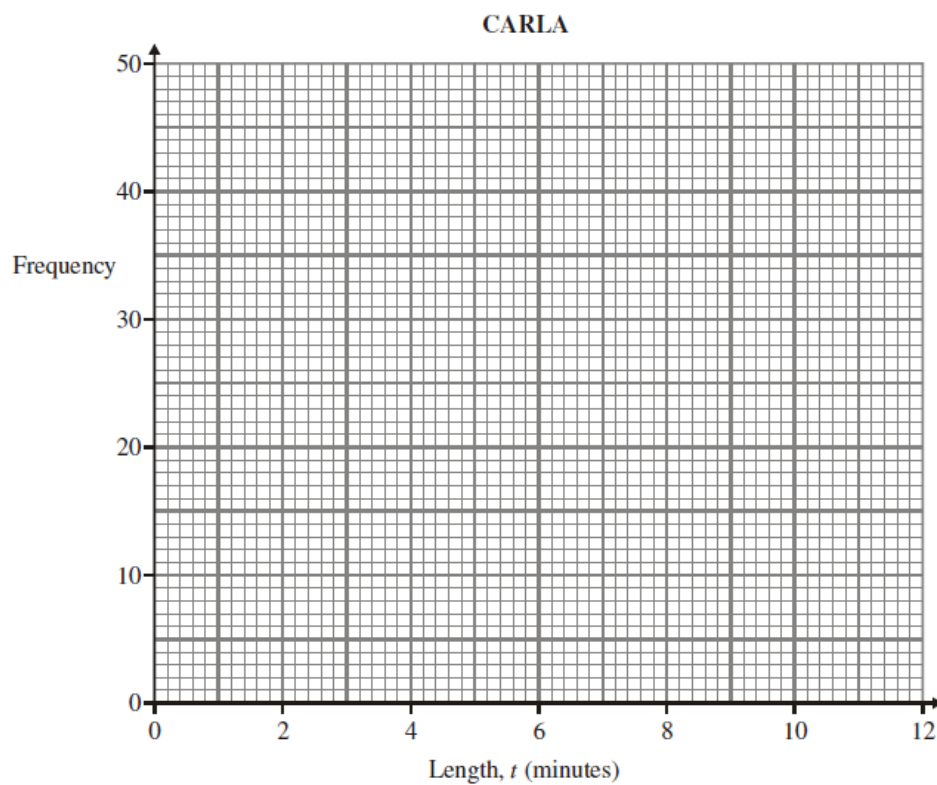
Carla during one day are shown in the table.

Length, t (minutes)	Frequency
$0 < t \leq 2$	25
$2 < t \leq 4$	40
$4 < t \leq 6$	18
$6 < t \leq 8$	10
$8 < t \leq 10$	4

- a) Draw a frequency polygon for these data.
b) What is the modal group?

(2 marks)

(1 mark)



Total marks = 27 marks

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

Q1.

Using the Large Data set provided by Edexcel, compare the daily mean air temperature for Jacksonville May – Oct 1987 with Beijing May – Oct 1987 in June, July and August by plotting comparative cumulative frequency graphs on the same axes, finding values of the median and quartiles and plotting box plots for each set of data too.

Creating and completing a table like this for each data set will be necessary.

Mean Daily air temperature	Frequency	Cumulative frequency
$15 \leq t < 17$		
$17 \leq t < 19$		
Etc...		