ALEVEL Statistics Induction Work:

Please complete these questions over the summer ready for your first lesson. Please look at the attached teacher answers and mark your work accordingly. If you need some help with the topics, here are some links to videos…

Averages from Frequency Tables

https://corbettmaths.com/2012/08/19/means-from-frequency-tables/

https://corbettmaths.com/2012/08/19/estimated-means-from-grouped-data/

https://corbettmaths.com/2013/03/16/median-for-a-frequency-table/

https://corbettmaths.com/2012/08/23/medians-and-quartiles-from-grouped-frequency-tables-and-histograms/

Stem and Leaf, Box Plots and Comparing Data

https://corbettmaths.com/2012/08/02/reading-stem-and-leaf-diagrams-video/

https://corbettmaths.com/2013/05/15/drawing-and-reading-box-plots/

https://corbettmaths.com/2013/05/15/comparing-box-plots/

Histograms:

https://corbettmaths.com/2012/08/20/drawing-histograms/

https://corbettmaths.com/2012/08/19/finding-frequencies-from-histograms/

https://corbettmaths.com/2012/08/23/reading-histograms-and-a-gcse-questions/

Probability

https://corbettmaths.com/2013/05/07/tree-diagrams/

https://corbettmaths.com/2013/06/18/conditional-probability/

There are other good probability videos on corbettmaths as well.

1. Eighty motorists were asked to estimate the distance they each drive in a year.
The results are summarised in the table.

Distance in miles (m thousands)	Frequency
$0 < m \leq 5$	16
$5 < m \leq 10$	38
$10 < m \leq 15$	18
$15 < m \leq 20$	6
$20 < m \leq 25$	2

(a) Calculate an estimate of the **mean** distance.

..... thousand miles

[4]

(b) Explain how you can use the table to justify this statement.

The median distance is in the interval $5 < m \leq 10$.

.....

.....

.....

[1]

2. These are the weekly wages, in pounds (£), paid to 11 workers.

275 160 842 275 420 359 315 275 740 280 195

Jermaine says the average wage is £280.
Jane says the average wage is £376.

Show how they can both be correct.

.....

.....

.....

.....

.....

.....

[5]

3. Three friends keep a record of their scores at ten-pin bowling.

(a) These are Ben's scores for 8 games.

104 118 156 78 110 162 176 144

(i) Work out the mean of Ben's scores.

.....

[3]

(ii) Work out the range of Ben's scores.

.....

[1]

(b) This table shows the mean and range for Ben's two friends, Chris and Denzil.

	Chris	Denzil
Mean	135	160
Range	46	72

Which of the **three** players is the most consistent?
Give a reason for your decision.

..... because

.....

.....

[1]

4. The ages of people in a group are shown below.

39	16	36	21	43	24	28	38
8	20	40	34	27	38	18	26
19	49	15	12	9			

(a) Complete the stem and leaf diagram.

0	.....
1	.....
2	.....
3	.....
4	.....

Key : 2 | 7 = 27

Key : 2 | 7 = 27

[3]

(b) For these ages, find

(i) the median,

.....

[1]

(ii) the range.

.....

[1]

5. The pulse rates, in beats per minute, of 20 people were recorded as they left work.

The results are shown in this stem and leaf diagram.

6	2 3 3 5 7 9
7	1 4 5 8 8
8	1 1 2 4 6
9	2 9
10	1 2

Key 8 | 1 represents 81 beats per minute

(a) Work out the range of the pulse rates.

.....

[1]

(b) The pulse rates of another 20 people were recorded as they left an aerobics class. These are the results:

97 130 136 136 115 121 137 129 128 124

129 102 132 135 135 110 124 129 128 108

Show these results in a stem and leaf diagram.

9	.....
10	.....
11	.....
12	.....
13	.....

[2]

(c) Make two comments comparing the pulse rates of the two groups.

1 .....

.....

.....

2 .....

.....

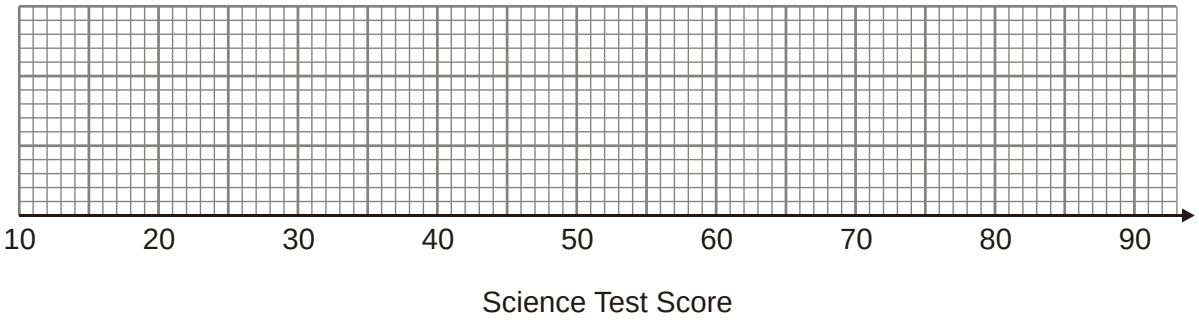
.....

[2]

6. The scores in a science test are summarised in the table below.

Minimum mark	19
Range	60
Median	60
Lower quartile	42
Interquartile range	28

Use this information to draw a box plot.

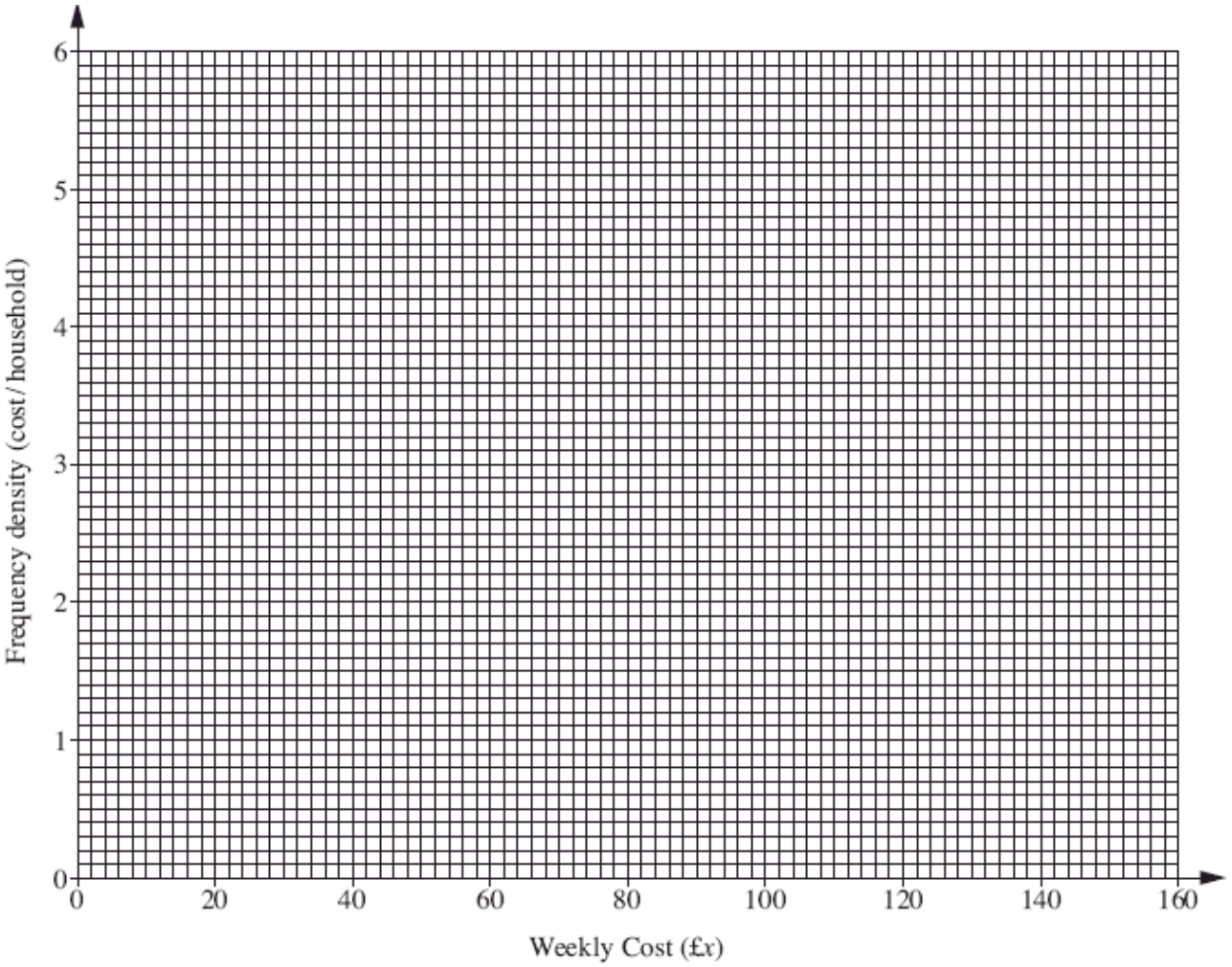


[3]

7. This table shows the distribution of the weekly costs, £x, of groceries for a sample of 200 households in the UK.

Weekly Cost (£x)	Frequency
$20 < x \leq 40$	18
$40 < x \leq 50$	50
$50 < x \leq 80$	96
$80 < x \leq 140$	36

Draw a histogram to illustrate the data in the table.



[3]

8. In a city 33% of the people have been vaccinated against influenza. A person who has been vaccinated has a 6% chance of catching influenza.
A person who has not been vaccinated has a 41% chance of catching influenza.

What is the probability that a person in that city, selected at random, will catch influenza?

.....

[3]

9. The probability that a train is late is 1/7. During the next three days, what is the probability:

a) It is late once

……[2]

b) On time for the next six days.

……[2]

10. Out of 20 people, four are wearing spectacles.
If three are selected at random, find
the probability that:

a) They all wear spectacles

……[2]

b) None wear spectacles.

……[2]