

PRACTICE 3.3 – Presenting Data 1

* It is not necessary that you complete all problems below.

If you understand a concept, move on to the next problem. Manage your time.

* Full, worked solutions can be found in the folder linked on the Course Website ☺

Exercise 3G

- 1 The table shows the average times, in minutes, that 100 people waited for a train.

Time (x minutes)	Frequency
$0 \leq x < 2$	5
$2 \leq x < 4$	11
$4 \leq x < 6$	23
$6 \leq x < 8$	31
$8 \leq x < 10$	19
$10 \leq x < 12$	8
$12 \leq x < 14$	3

- Construct a cumulative frequency table for this data.
- Sketch the cumulative frequency curve.
- Use your graph to find estimates for the median and interquartile range.
- Find the 10th percentile.

The train company will refund the fare if customers have to wait 11 minutes or more for a train.

- Determine how many customers can claim for a refund of their fare.

- 2 Nuria recorded the number of words in a sentence in one chapter of her favourite book. The results are shown in the table.

Number of words (x)	Frequency
$0 \leq x < 4$	5
$4 \leq x < 8$	32
$8 \leq x < 12$	41
$12 \leq x < 16$	28
$16 \leq x < 20$	22
$20 \leq x < 24$	12
$24 \leq x < 28$	7
$28 \leq x < 32$	3

- Construct a cumulative frequency table for this data.
 - Sketch the cumulative frequency curve.
 - Use your graph to find estimates for the median and interquartile range.
 - Determine whether there are any outliers.
 - Find the 90th percentile.
 - The smallest sentence had 1 word and the longest sentence had 31 words. Draw a box-and-whisker plot to represent this data.
 - A children's book has, on average, 8 words in a sentence and an adult book has, on average, 15 words in a sentence. State the type of book you think Nuria is reading, justifying your answer.
- 3 A tourist attraction is open 350 days of the year. The number of visitors each day for the 350 days was recorded and the results are shown in the table.

Number of visitors (n)	Frequency
$100 \leq n < 200$	24
$200 \leq n < 300$	36
$300 \leq n < 400$	68
$400 \leq n < 500$	95
$500 \leq n < 600$	73
$600 \leq n < 700$	38
$700 \leq n < 800$	16

- Draw a suitable graph to represent this data.
- Use your graph or the data to find estimates for the median and interquartile range.
- Determine whether or not there are any outliers.

- d** The smallest number of visitors was 185 and the largest number was 792. Draw a box-and-whisker plot to represent this data.

If the number of tourists is fewer than 350 in a day, then the attraction loses revenue.

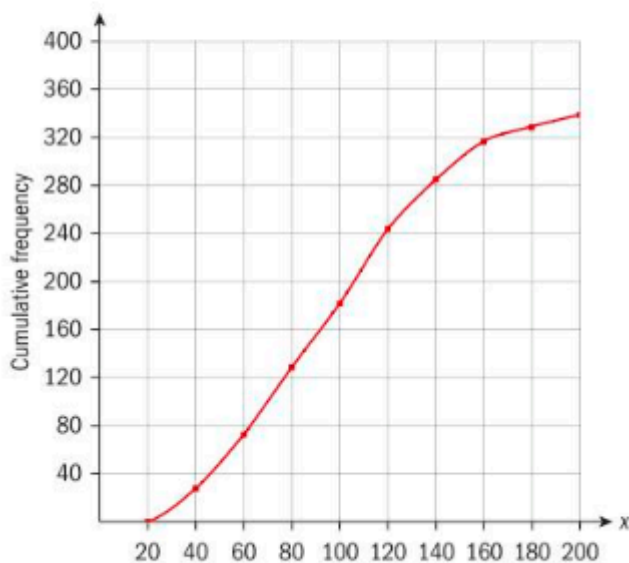
- e** Determine the number of days on which the attraction loses revenue.

- 4** The table shows the number of points that 120 students received on their IB diploma.

Number of points (n)	Boys	Girls
$21 \leq x < 24$	2	1
$24 \leq x < 27$	8	5
$27 \leq x < 30$	10	8
$30 \leq x < 33$	15	18
$33 \leq x < 36$	9	12
$36 \leq x < 39$	8	5
$39 \leq x < 42$	4	8
$42 \leq x < 45$	4	3

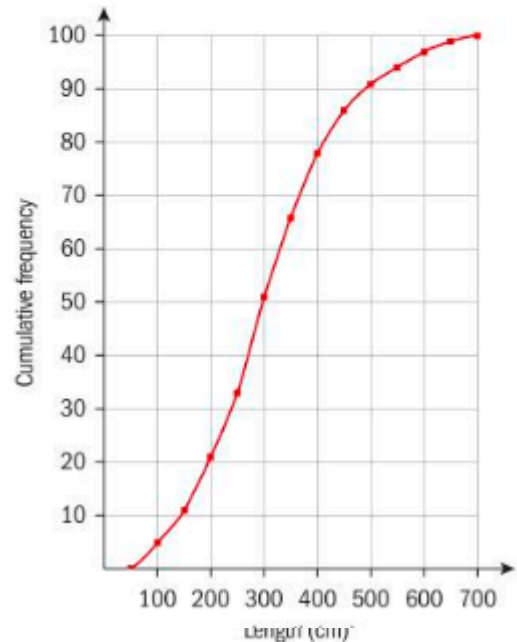
- a** Draw suitable graphs to represent this data.
- b** Use your graphs to compare the results for the boys and the girls.
- c** Mary and Martin both score 29 points. Compare their points with the other students of their gender.

5



- a** Using the cumulative frequency curve, write down estimates for:
- the median
 - the interquartile range
 - the 90th percentile.
- b** Determine whether there are any outliers.

6



The cumulative frequency curve shows the lengths, in cm, of 100 snakes in a zoo.

- a** Write down estimates for the median, the lower quartile and the upper quartile.
- b** The smallest snake is 9 cm long and the longest is 650 cm long. Draw a box-and-whisker plot to represent this data.
- c** Construct a frequency table for the lengths of the snakes.
- d** Find estimates for the mean and standard deviation of the lengths of the snakes.

3.4 – Bivariate Data

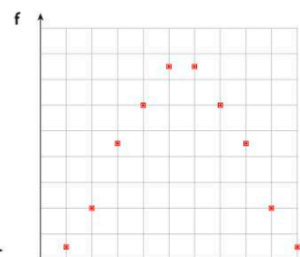
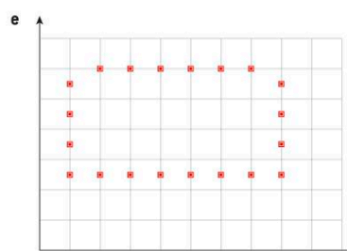
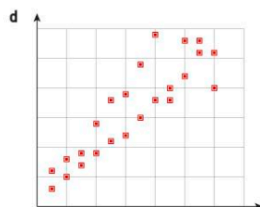
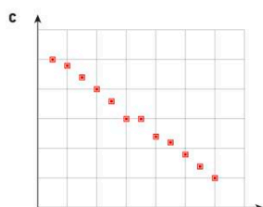
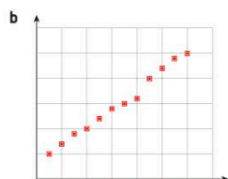
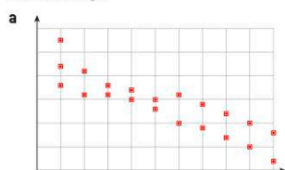
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Exercise 3H

- 1 For the following scatter graphs, describe the type of correlation and the strength of the relationship.



- 2 The table gives the heights, in cm, and weights, in kg, of 11 football players selected at random.

Height (h cm)	161	173	154	181	172	184	176	169	165	180	173
Weight (w kg)	74	76	61	80	76	88	79	76	75	83	75

- Plot the points on a scatter diagram.
- Comment on the type of correlation. Interpret what this means in terms of the football players.
- State whether the correlation might indicate a causation in this instance. Justify your answer.

- 3 The table shows the size, in inches, of 10 laptop screens and the cost, in euros, of the laptop.

Size (inches)	11.6	11.6	13.3	14	14	14	15	15.6	15.6	15.6
Cost (euros)	145	170	700	450	370	175	320	500	420	615

- Plot the points on a scatter diagram.
 - Describe the correlation.
 - State whether you think that the size has an influence on the cost.
- 4 Twelve students took tests in English and mathematics. The results are shown in the table.

English	44	66	71	33	87	90	55	76	65	95	40	58
Mathematics	71	75	58	63	55	87	54	58	77	54	56	51

- Plot the points on a scatter diagram.
 - Describe the correlation.
 - State whether you think that the grade for the English test has an influence on the grade for the mathematics test.
- 5 The data in the table shows the position in the league and the number of goals scored for each team in a hockey league.

Position	1	2	3	4	5	6	7	8	9	10	11	12
Goals scored	52	50	47	44	43	37	36	24	16	12	10	7

- Plot the points on a scatter diagram.
 - Describe the correlation.
 - State whether you think that the position in the league has an influence on the number of goals scored.
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