

# Chance and Data

## A. Chance and data: Measures of central tendency

1 A number of people were asked how many pairs of shoes they owned. The results are as follows:

(4, 2, 3, 8, 2, 7, 2, 3, 4, 4, 3, 4, 4, 3, 5, 4, 3, 5, 6, 12)

(a) Rank the data from smallest to highest,

(b) Find the mean value. (c) Find the mode.

(d) Find the median.

2 Use the information displayed in this table to find the mean number of red cars observed per hour.

Number of red cars in one hour	Frequency
5	15
6	10
7	8

## B. Chance and data: Measures of spread

The following are a set of scores made by the masked dart champion "Bullseye Bill":

(24, 42, 13, 40, 68, 72, 25, 50, 38, 58).

Find:

1 the range of the scores

2 the mean of the scores

3 the standard deviation of the scores

## C. Chance and data: Interquartile range and box and whisker plots

The following figures represent the basketball scores shot by each player in a game:

Jenny: (4, 8, 8, 10, 11, 12, 14, 14, 20)

Josie: (1, 5, 5, 7, 9, 10, 21, 13, 16)

Find each person's interquartile range and draw a box and whisker plot for each in order to judge who should get the sharp shooters prize for the season.

## D. Chance and data: Displaying continuous data

The following data is the distance run in metres by a group of people in a three minute interval.

Tabulate the results and display them in a bar and graph using the intervals (500 to <600,

600 to < 700, 700 to < 800, 800 to < 900, 900 to < 1000, >1000).

{862, 904, 628, 639, 504, 800, 928, 1100, 850, 625, 730, 1050, 503, 842, 703, 615, 587, 602, 934, 850}

## E. Chance and data: Working with continuous data

The following data is the time taken for a group of people to jog a 2 km fun run. Set up a frequency table to determine the mode and mean time for this group of people.

Use these time groupings, in seconds: (86 to <96, 96 to <106, 106 to <116, 116 to <126, 126 to <136, 136 to <146, 146 to <157).

{93, 121, 138, 118, 123, 148, 138, 132, 99, 101, 99, 88, 107, 139, 142, 150, 116, 106, 99, 118, 148, 118, 106, 120, 132, 89, 101, 106, 138, 154, 95}

## F. Chance and data: Scatter plots and lines of best fit

The following information relates the length of steel bars (cm) to their weight

(g).

1 Plot the data on a scatter plot and find the equation of the line of best fit.

2 Use this equation to estimate the weight of a bar of length of 100 cm.

Length	Weight
5	150
20	250
24	290
40	360
54	410
60	450

## Chance and Data.

### Q. **Chance and data: Probability of a single and complementary events**

Disks with the following numbers are placed in a bag:

(1, 1, 2, 3, 3, 4, 4, 5, 5, 5, 5, 5)

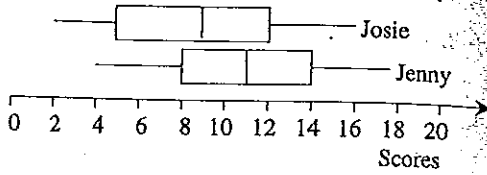
- 1 Find the probability of selecting an even numbered disk.
- 2 Describe the event which is complementary to 1 and find its probability.
- 3 Find the probability of choosing a disk which is less than 3 or divisible by 5.

# Chance and Data Answers

- A. 1 (a) (2, 2, 2, 3, 3, 3, 3, 3, 4, 4, 4, 4, 4, 4, 5, 5, 6, 7, 8, 12)  
 (b) 4.4 (c) 4 (d) 4  
 2  $\frac{199}{33} = 5.79$  cars in an hourly interval

- B. 1 59 2 43 3 19.32

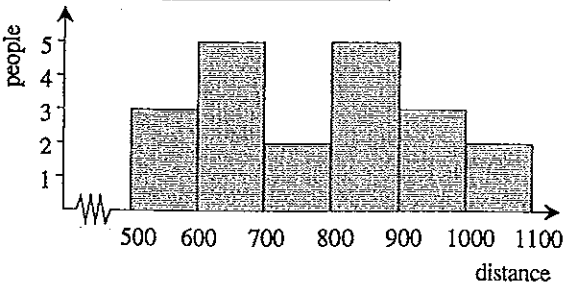
C. Interquartile range:  
 Jenny 6 Josie 75.



Jenny's scores are generally higher and more consistent (box smaller) than Josie's so Jenny gets the prize.

D.

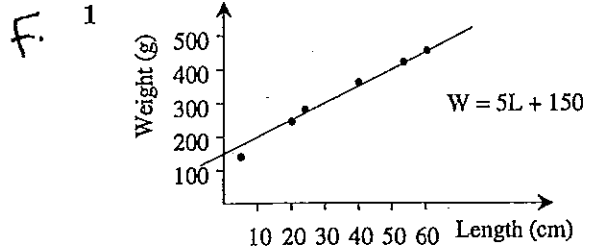
Distance	Frequency
500 to < 600	3
600 to < 700	5
700 to < 800	2
800 to < 900	5
900 to < 1000	3
1000 to < 1100	2



E.

Range	Freq.	Middle of group	Value
86 to < 96	4	91	364
96 to < 106	5	101	505
106 to < 116	3	111	333
116 to < 126	7	121	847
126 to < 136	2	131	262
136 to < 146	5	141	705
146 to < 156	4	151	604
Total			3620

Mode (116 to < 126), Mean  $\frac{3620}{30} = 120.67$



2 650 g

- G. 1  $\frac{1}{4}$  2 Selecting an odd numbered disk  $\frac{3}{4}$   
 3  $\frac{2}{3}$