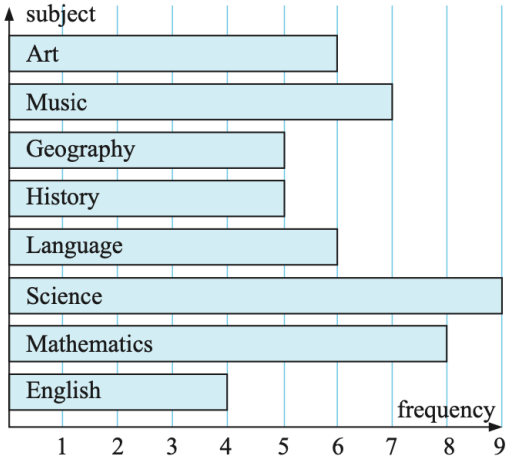
EXERCISE 13C.1

1 50 randomly selected year nine students were asked to name their favourite subject studied at school. The results of the survey are displayed in the graph shown:



- **a** What sort of graph is being used?
- **b** Which subject was the most favoured subject?
- **c** How many students chose Art as their favourite subject?
- **d** What percentage of the students named Mathematics as their favourite subject?
- **e** What percentage of the students chose either History or English as their favourite subject?

2 From a particular primary school 80 children were asked to name their favourite fruit. The following data was collected:

Type of fruit	*Frequency*
Apple	20
Banana	24
Grapes	3
Orange	11
Mandarin	10
Nectarine	7
Peach	2
Pear	3

- **a** Construct a vertical bar chart to illustrate this data.
- **b** For this group of students, which was the most favoured fruit?
- **c** Could conclusions be made about the favourite fruit of all primary school students from this survey? Give a reason for your answer.

3 A randomly selected sample of adults was asked to name the evening television news service that they watched. The following results were obtained:

News service	*Frequency*
Breakfast	40
3 News	45
One News	64
One Late Addition	25
Night Line	23
None	3

- **a** How many adults were surveyed?
- **b** Which news service is the most popular?
- **c** What percentage of those surveyed watched the most popular news service?
- **d** What percentage of those surveyed watched the news service on 3 News?
- **e** Draw a horizontal bar chart of the data.

4 100 randomly selected residents of a province have been asked in a survey to indicate the *Continent of origin of their father* and the data collected has been organised into the following frequency table:

a Display this data using a strip graph. Start with a bar 10 cm long. Make sure you use a legend or mark the segments clearly. Include an appropriate heading for your chart.

b What percentage of the sample had fathers who were born outside Australasia?

Continent of origin of father	*Frequency*
Africa	2
Asia	19
Australasia	56
Europe	17
North America	1
South America	5
Total	100

5 A survey of eye colour in a class of 30 students revealed the following results:

Eye colour	*Blue*	*Brown*	*Green*	*Grey*
Number of students	2	12	9	7

a Illustrate these results on a pie chart.

b What percentage of the class have:

i green eyes **ii** blue or grey eyes?

6 The approximate numbers of students attending several High Schools are given alongside.

a Draw a pictograph of this data with each stick figure representing 250 students.

b What percentage of the total number of students attending the above schools go to Burnside?

School	*No. Students*
Geraldine	500
Burnside	2000
Riccarton	800
Temuka	400
Pleasant Point	300

7 Students at two schools, Geraldine and Temuka, were surveyed on their favourite sports. The results are shown in the following table.

a Represent this information on a composite bar graph.

b How many students were surveyed at each school and in total?

c Which sport did the most students at both schools indicate was their favourite?

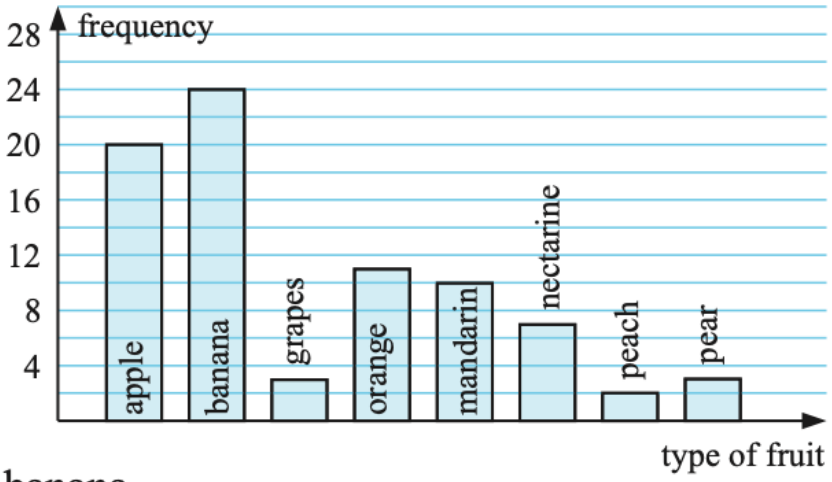
Sport	*Geraldine*	*Temuka*
Rugby	10	8
Netball	16	15
Soccer	8	12
Volleyball	12	6
Hockey	20	18

Answers Exercise 13 c.1

EXERCISE 13C.1

1 **a** horizontal bar chart **b** Science **c** 6
d 16% **e** 18%

2 **a**

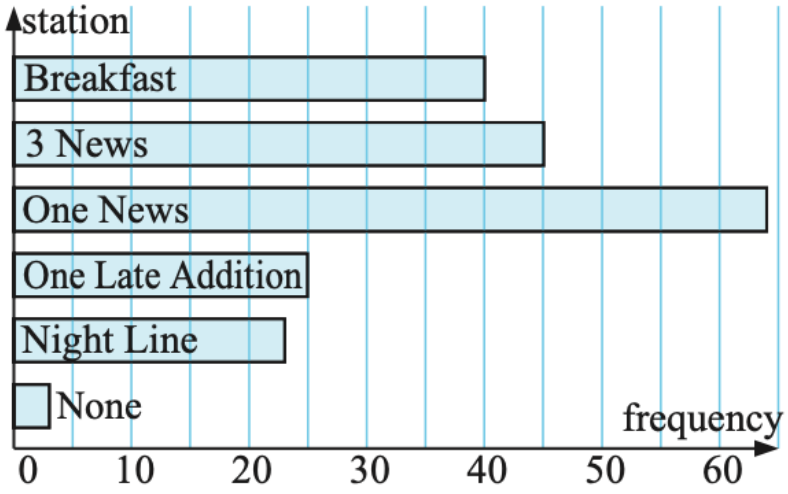


b banana

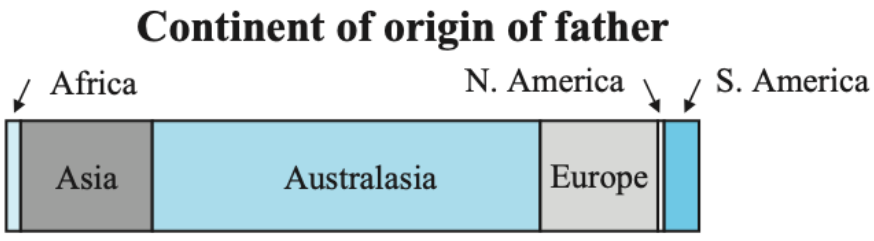
c No, this is only one school in a particular area.

3 **a** 200 **b** One news **c** 32% **d** 22.5%

e

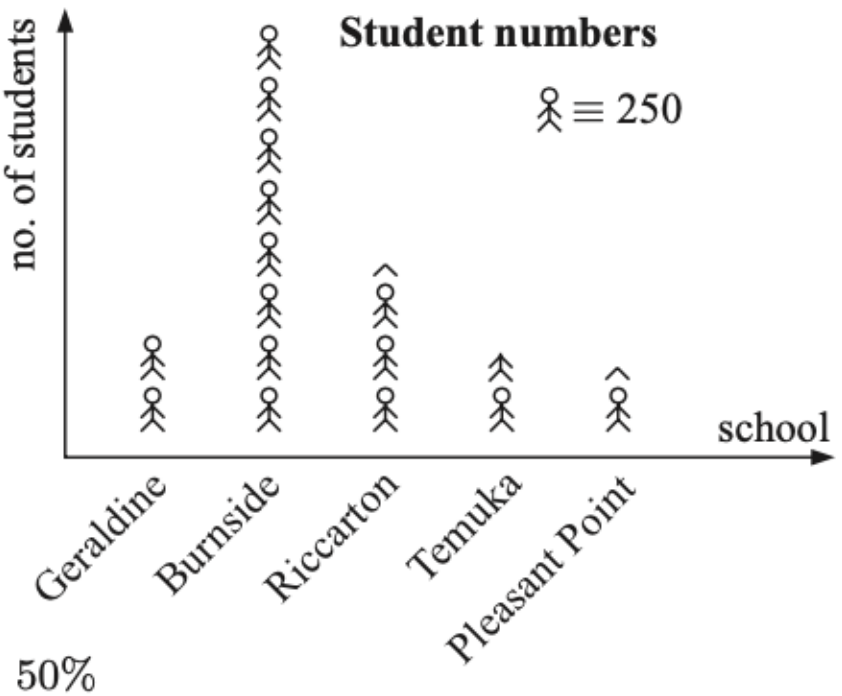


4 **a**



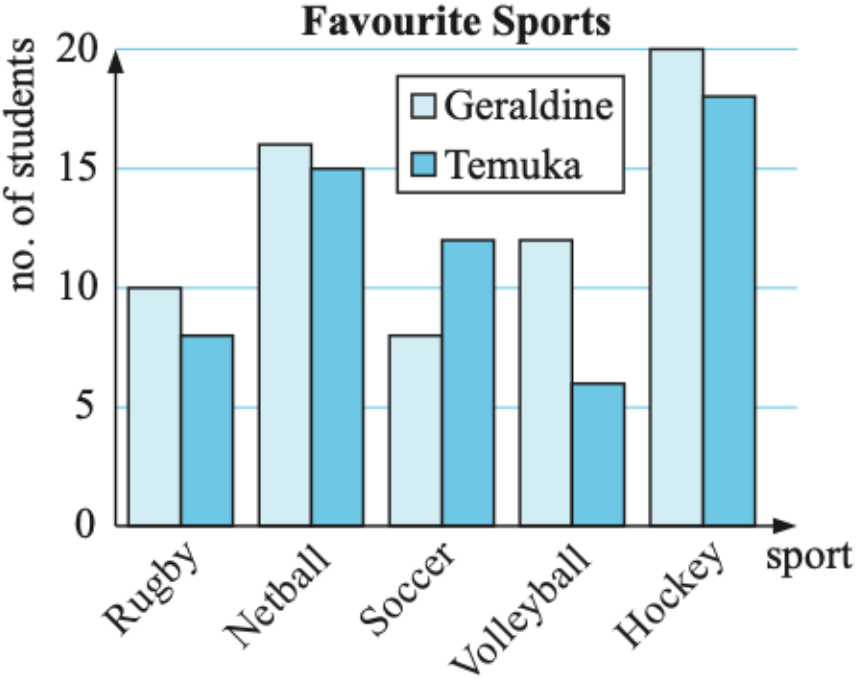
b 44%

6 **a**



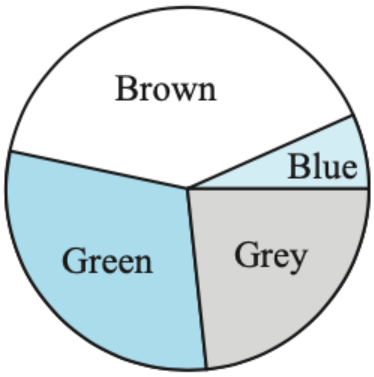
b 50%

7 **a**



b Geraldine: 66, Temuka 59, total 125 **c** Hockey

5 a



Eye colour data

b i 30%
ii 30%

EXERCISE 13D

1 The students of year 9 at Ramsayville School all ran as many laps of the school athletics track as they could in one hour. The results are recorded on this frequency table:

No. of laps	*Students completing this no. of laps*
10	1
11	2
12	4
13	6
14	3
15	10
16	17
17	8
18	13
19	2

a Draw a vertical bar graph of this data.

b How many students completed 16 laps or less?

c What fraction of the total number of students completed at least 14 laps?

2 At Meadowcroft High the year 9 students all sat a Mathematics Examination. Their results written as a percentage are given below.

Girls 25, 65, 75, 94, 72, 54, 73, 74, 82, 88, 72, 66, 35, 57, 63, 76, 75, 89, 92
Boys 34, 54, 21, 53, 75, 43, 90, 53, 42, 48, 59, 72, 74, 62, 50, 41, 33, 69, 70

a Draw a stem and leaf plot of the combined data. Use the tens digit as the stem.

b Draw a back to back stem and leaf plot with girls on one side and boys on the other.

c Which group, boys or girls, did better in the examination overall?

d Would you say the examination was a fair one? Give a reason for your answer.

3 Here is a stem and leaf plot showing the length to the nearest mm of feet of students in 9Hs. It is a back to back graph with girls on one side and boys on the other.

girls		boys
6	24	7 9
	23	4
0	22	1 2 3 7
7 3 1	21	6 7 8
	20	1
6 2	19	2 3 7
8 5 4 3	18	
	17	
2	16	0

a Identify any extreme values in the graph. (These are long or short feet.)

b On the whole which group has the longest feet?

c How many students are in 9Hs, assuming all students took part in the survey?

4 The mean daily minimum air temperature averaged for the month over the whole year in Wellington is shown in the following table. Data supplied by Met Service.

Month	Jan	Feb	Mar	Apr	May	Jun
Temp ^oC	13.4	13.5	12.6	10.8	8.6	6.8

Month	Jul	Aug	Sep	Oct	Nov	Dec
Temp ^oC	6.2	6.5	7.7	8.9	10.3	12.2

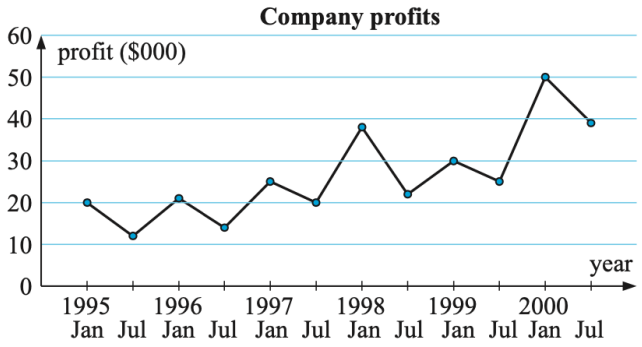
a Draw a line graph to show this data. Remember to put the months on the horizontal axis.

b What month had the highest daily minimum?

c Which was the coldest month?

d Comment on the trend of the minimum temperatures in Wellington over a year.

5 The following time series graph shows the profits recorded by a company on a six monthly basis for 5 years from 1995 to 2000.



a During which 6 month period did the company make its highest profit?

b At what times in the year does the profit seem to fall a little? Could you suggest why this could be?

c What type of goods could the company be making?

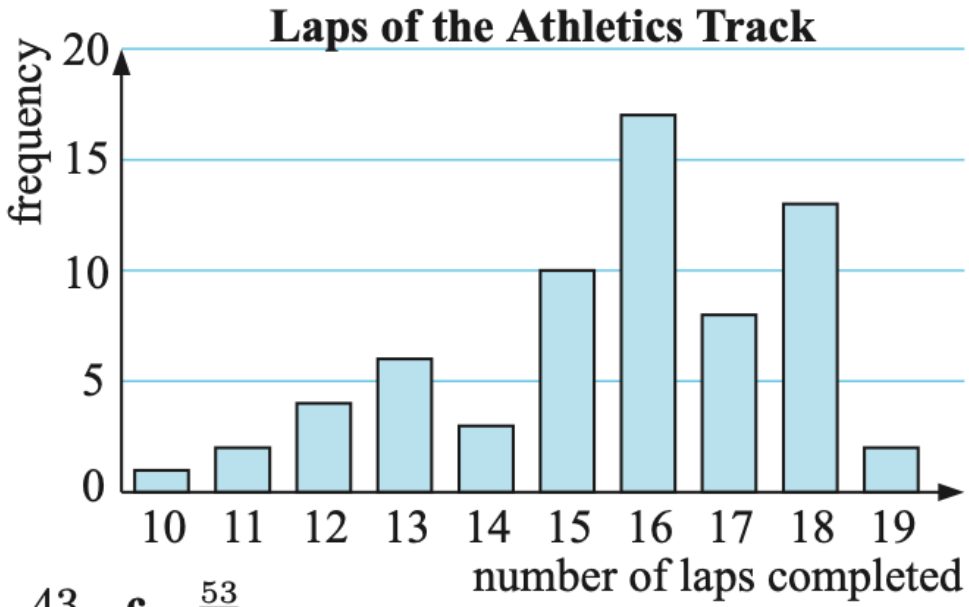
d Is the company making more or less profit on a yearly basis as time goes on? (Look for a long term trend to answer this one.)

6 Collect, over a period of time, some time series data and graph the results. Write a brief report on the trends shown in your graph. Suggested topics could be:

- temperature at a certain time each day for 10 days
- daily sunshine hours over a two week period (information in the local newspaper or on the internet)
- growth (height) of a quick growing plant on a daily basis
- value of a particular share on the share market.

EXERCISE 13D

1 **a**



b 43 **c** $\frac{53}{66}$

2 **a**

2	1 5
3	3 4 5
4	1 2 3 8
5	0 3 3 4 4 7 9
6	2 3 5 6 9
7	0 2 2 2 3 4 4 5 5 5 6
8	2 8 9
9	0 2 4

b

girls		*boys*
5	2	1
5	3	3 4
	4	1 2 3 8
7 4	5	0 3 3 4 9
6 5 3	6	2 9
6 5 5 4 3 2 2	7	0 2 4 5
9 8 2	8	
4 2	9	0

c The girls did better overall.

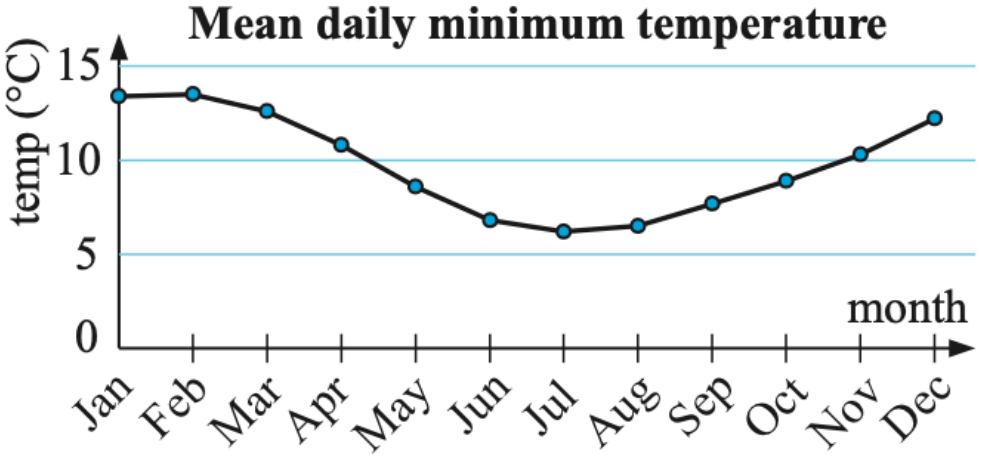
d The examination seemed to be fair as a majority of students scored over 60 percent.

3 **a** The extreme values are 160 mm for boys - very short and 246 mm for girls - very long and 162 cm - very short.

b On the whole the boys had the longest feet.

c 27

4 **a**



b February **c** July

d The minimum temperatures in Wellington are highest in February, fall to a low in the middle of winter (July) then rise again towards summer.

5 **a** From July 1999 to January 2000

b The profit seems to fall a little as the season changes from summer to winter.

c The company could be making goods which are consumed more in summer (like ice-cream and soft drink).

d As time goes on the profit is increasing on a yearly basis.