1) This graph shows the number of hours the sun shone on different days in a week.

a) On which day did the sun shine longest?

b) On which day did the sun shine for 3 hours?

c) For how long did the sun shine on Sunday?

2) This graph shows the amount of pocket money given to various pupils.

a) How much money was Ian given?

b) How much money was Mary given?

c) Which BOY received least money?

d) How many pupils are shown on the graph?
3) This graph shows which sandwiches were sold in Subway during Friday lunchtime.

![Sandwich Sales Graph]

**Sales**

<table>
<thead>
<tr>
<th>Sandwich</th>
<th>Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spicy Meatball</td>
<td>7</td>
</tr>
<tr>
<td>Chicken Tikka</td>
<td>5</td>
</tr>
<tr>
<td>Italian Special</td>
<td>4</td>
</tr>
<tr>
<td>Tuna Mayo</td>
<td>3</td>
</tr>
<tr>
<td>Steak and Cheese</td>
<td>2</td>
</tr>
<tr>
<td>Ham Salad</td>
<td>8</td>
</tr>
<tr>
<td>Turkey Breast</td>
<td>6</td>
</tr>
</tbody>
</table>

**Questions:**

a) Which flavour sold 2 sandwiches?

b) How many steak and cheese sandwiches were sold?

c) Which sandwich was the most popular?

d) How many sandwiches in total were sold?

4) This graph shows the different X Box 360 games bought one week in HMV.

![Game Sales Graph]

**No. of Games sold**

<table>
<thead>
<tr>
<th>Games</th>
<th>No. of Games sold</th>
</tr>
</thead>
<tbody>
<tr>
<td>World of Warcraft</td>
<td>50</td>
</tr>
<tr>
<td>Football Manager</td>
<td>20</td>
</tr>
<tr>
<td>Fifa</td>
<td>40</td>
</tr>
<tr>
<td>Pga Golf</td>
<td>10</td>
</tr>
<tr>
<td>Skyrim</td>
<td>60</td>
</tr>
<tr>
<td>Call of Duty</td>
<td>40</td>
</tr>
</tbody>
</table>

**Questions:**

a) How many Fifa games were bought?

b) Which 2 games sold exactly 40 copies?

c) Which game sold the least?

d) What was the total sale of all these games?
5) In a survey the number of pupils coming to Larkhall Academy by school bus was recorded. The information is shown on the graph below.

a) How many pupils were on the bus from Ashgill?

b) Which bus had the most pupils?

c) How many pupils in total used the buses that day?

d) The buses from Crosshouse and Netherburn were held up in traffic. How many pupils arrived late because of this?

6) A class of 1st year pupils were asked what they had for breakfast this morning. The histogram displays the information gathered.

a) How many pupils had Cornflakes?

b) What was the most popular breakfast?

c) How many pupils are in the class?

d) How many pupils had cereal for breakfast?
Exercise 1 (B)

1) Here is a histogram showing the colour of cars passing a school.

a) How many blue cars passed the school?

b) What was the total number of cars passing the school?

c) What number of cars were white?

d) How many more brown cars were there than blue?

e) How many of the cars were NOT blue?

f) How many of the cars were green?

2) This graph gives the amount of rain which fell on each day of a week.

a) Which day had the highest rainfall?

b) Which day had the lowest?

c) On what days did the same amount fall?

d) Give the rainfall for each day?

e) What was the total rainfall for the week?
3) A survey was carried out and a bar chart is made of a large number of television viewers’ favourite soap opera.

a) How many people said their favourite soap was Emmerdale?

b) How many people said their favourite soap was East Enders?

c) What is the combined amount of people whose favourite was Hollyoaks and Neighbours?

d) In total how many people took part in the survey?

e) How many people said Coronation Street was not their favourite soap?

![Bar Chart](chart.jpg)

4) A histogram shows the favourite sports played by 1C1.

a) How many pupils chose football as their favourite sport?

b) How many preferred badminton?

c) What was the total amount of pupils in the class?

d) How many pupils chose a racket sport as their favourite?

e) How many pupil’s favourite sports are played using a ball?

![Histogram](histogram.jpg)
5) This histogram shows the amount of pocket money given to various pupils.

a) How much did Alice and Brian receive in total?

b) How many pupils received more than 60 pence?

c) What is the total amount of money of the 3 pupils who received the most pocket money?

d) What is the total of the 4 least?

e) What was the total amount received by all the pupils combined?

6) A bar chart is pictured showing the number of times pupils bought lunch from the school canteen in a normal week.

a) How many times did Euan use the canteen?

b) What are the names of all the pupils who use the canteen every day?

c) How many days did Peter not use the canteen?

d) Make 2 suggestions why Mark never uses the canteen?
Exercise 1(C)

1) Here is a bar chart showing class attendances for a week.
   a) Which day had the best attendance?
   b) Which day had the lowest attendance?
   c) How many were present each day?
   d) What was the total attendance for the week?
   e) What was the average attendance?

2) A school class wrote down the titles of 6 CDs.
   Each pupil was asked to vote for their favourite CD.
   The bar graph shows the number of votes each CD received.
   a) How many voted for each CD?
   b) How many votes were there altogether?
   c) What percentage of pupils voted for each CD?
3) This graph shows which sandwiches were sold in Subway during Friday lunchtime.

a) What was the sale of the following sandwiches?
   i) Spicy Meatball
   ii) Turkey Breast
   iii) Tuna Mayo
   iv) Chicken Tikka
   v) Steak and Cheese
   vi) Ham Salad
   vii) Italian Special

b) What was the total amount of sandwiches sold?

c) What percentage of people bought the following sandwiches?
   i) Spicy Meatball
   ii) Turkey Breast
   iii) Tuna Mayo
   iv) Chicken Tikka
   v) Steak and Cheese
   vi) Ham Salad

4) A group of runners were asked how many days they trained each week. The information is shown in the graph.

a) How many trained 4 days or more?

b) Who trained the least?

c) List the runners who trained less than 5 days?

d) What is the total number of training days?

e) Calculate each runner’s percentage of the total.

f) If you add up all the percentages what total should you reach?

g) Now add all the percentages together
5) This Bar chart was made following a survey of an S1 class asking the pupils their favourite subject and their 2nd favourite subject.

a) How many pupils are in the class (careful)?

b) How many pupils chose as their favourite subject?

c) How many pupils chose Maths as their 2nd favourite subject?

d) How many pupils chose PE as their favourite or their 2nd favourite subject?

e) How many pupils did not choose Drama as either their favourite or their 2nd favourite subject?

f) Calculate the percentages of pupils for all the favourite subjects.

g) Calculate the percentages of pupils for all the 2nd favourite subjects.

h) Does the total of (f) and (g) come to 200?

Exercise 2 (A)

1) This pie chart shows how a group of pupils come to school.

a) What is the most popular method of travelling to school?

b) What is the least popular method of travelling to school?

c) What percentage of pupils travel to school by car?
2) This pie chart shows the favourite subjects of some pupils
   a) Put the subjects in order of most to least
   b) What percentage of pupils said Maths was their favourite subject?

3) This pie chart shows pupils favourite sport
   a) What sport is the least popular?
   b) Which sport did half of the pupils say was their favourite?
   c) 150 pupils were surveyed, how many said football was their favourite sport?

Exercise 2 (B)

1) This pie chart shows how a group of pupils come to school.
   What percentage of pupils come by
   a) bus
   b) car
   c) walking?
   d) What are the benefits of walking to school?
2) This pie chart shows the favourite sport of some pupils.

What percentage of pupils have swimming as their favourite sport?

3) This pie chart shows the different ingredients of a breakfast cereal.

There is the same amount of barley and wheat in the cereal.

What percentage of the cereal is barley?

4) The pie chart shows the holiday arrangements for a group of people.

a) What percentage went touring if touring had 10% fewer people than seaside?

b) If camping and at home have the same percentage then what is the percentage

5) This pie chart shows the favourite drink of a group of first year pupils.

Water, Irn Bru and Lemon were equally popular.

Coke was the favourite drink of half the pupils in the group.

What percentage of pupils has the following drinks as their favourite?

a) Irn Bru    b) Coke    c) Orange
6) This pie chart shows how a family use their income. They use 19% of their money for savings. They spend ¼ of their income on entertainment. They also spend ⅕ of their income on travel. They spend twice as much on food as on rent.

a) Write down the percentages spent on:
   i) entertainment  ii) travel.

b) Write down the total percentage for entertainment, travel and savings.

c) Therefore write down the total percentage for food and rent.

d) Now calculate the percentage for:
   i) rent  ii) food.

Exercise 3 (A)

1) The teachers and pupils in a school were asked to state which TV channel they preferred. The results were:

   BBC1  30%
   BBC2  10%
   ITV   40%
   Channel 4  .....%  

   a) Write down the percentage of people who preferred Channel 4.

   b) On your Worksheet show this information on Pie Chart 1.

2) The information below shows the percentages of pupils with 1, 2, 3 or 4 brothers/sisters in their family.

   1    40%
   2    25%
   3    15%
   4    .....%

   a) Write the percentage of pupils who come from a family with 4 brothers/sisters.

   b) On your Worksheet show this information on Pie Chart 2.
3) The information below shows how a pupil spends her time during a Maths lesson.

- Working 50%
- Talking 10%
- Listening 30%
- Getting ready 5%
- Packing up .......

a) Write down the percentage of time she spends packing up.

b) On your Worksheet show this information on Pie Chart 3.

4) The information below shows the percentages of where pupils went on their summer holidays.

- Spain 35%
- Tenerife 25%
- Lanzarotte 20%
- America 10%
- Portugal .....%
- Other .....%

The percentages for Portugal and Other were the same.

a) Write down the percentage for Portugal and Other.

b) On your Worksheet show this information on Pie Chart 4.
Exercise 3 (B)

1) How do you get to school each day?
   a) Collect raw data from class.
      Copy out the table and complete using the raw data.

      | Method of Transport | Bus | Car | Foot |
      |--------------------|-----|-----|------|
      | Number/Frequency   |     |     |      |

   b) Copy and complete the following table using the instructions given.

      | Method | Frequency | Fraction of total | Angle |
      |--------|-----------|-------------------|-------|
      | Bus    |           |                   |       |
      | Car    |           |                   |       |
      | Foot   |           |                   |       |
      | Total  |           |                   |       |

   Instructions
   - Find the total for each method of transport
   - Find the fraction of each by dividing by the total frequency
   - Multiply the fraction by 360°

   c) Plot the information on a pie chart

2) A survey of types of cars using a car park is made with the following results:

      Ford  Vauxhall  Nissan  Other
      60     40        30       50

   Show this information on a pie chart.

3) A survey was carried out to find out what 72 pupils did at the end of 5th year.
   16 went into 6th year
   24 went into employment
   20 went to college
   12 were unemployed

   Show this information on a pie chart.
Exercise 3 (C)

1) The pie chart illustrates what type of pets pupils have. There are 840 pets in total. Find the number of each type of pet.

2) The votes cast in the 2010 General election in South Lanarkshire are shown. There were 19,568 votes cast in total.
   a) What percentage of the vote did each party receive?
   b) By how many votes did Labour win?

3) A survey was carried out in a school to find out pupils' favourite TV programs. The results were as follows:

   X Factor 35%
   Britain’s Next Top Model 10%
   Dr Who 25%
   Sponge Bob Square Pants 17%
   The Simpson’s 13%

Show this information on a pie chart.
4) A survey was carried out in a school to find out pupils' favourite food. The results were as follows:

- Pasta: 22%
- Chicken: 17%
- Pizza: 29%
- Curry: 14%
- Fish: 8%
- Steak: ......%

Show this information on a pie chart.

Exercise 4(A)

1) The graph shows the temperature measured over a 24 hour period.

a) What was the highest temperature recorded?

b) What was the lowest temperature recorded?

c) What was the temperature at 12 noon?

d) How much did the temperature drop between 1 pm and 8 pm?
2) The graph shows the average monthly rainfall in Scotland.

a) Which month was the driest month of the year?

b) Which month was the wettest month of the year?

c) What was the rainfall in July?

d) What was the total rainfall from January to March?

3) The graph shows the average number of hours of sunshine per day during the year in Glasgow.

a) Which month was the sunniest?

b) In which month was there 8 hours of sunshine?

c) Between which two months was the biggest increase?
4) A lorry travels 10 miles on every 1 gallon of diesel.

a) Complete the table below:

<table>
<thead>
<tr>
<th>Diesel (gallons)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance (miles)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

b) Copy the set of axes below, plot the points from the table and draw a straight line through them with your ruler.
5) An aeroplane travels an average distance of 2 kilometres on 1 gallon of fuel.
   a) Complete the table below

<table>
<thead>
<tr>
<th>Fuel (gallons)</th>
<th>50</th>
<th>100</th>
<th>150</th>
<th>200</th>
<th>250</th>
<th>300</th>
<th>350</th>
<th>400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance (kms)</td>
<td>100</td>
<td>300</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

b) Copy the set of axes below, plot the points from the table and draw a straight line through them with your ruler.
Exercise 4(B)

1) Francine and Mike work for the same company but have different patterns of overtime during the year.

a) In which months was Francine's overtime more than Mike's?

b) In which months was their overtime the same?

c) How much overtime did each work from January to December?
2) This graph shows the monthly sales of petrol at the Green Giant filling station.

a) What were the sales of leaded petrol in May?

b) Estimate the sales of unleaded petrol in May?

c) Estimate as best you can the total sales of petrol in October.

d) Write a few sentences about the two line graphs, giving reasons for the way they look.
3) The graph below shows the depth of water, measured in centimetres, in a certain harbour for up to 12 hours after midnight.

![Graph showing depth of water over time.](image)

a) During which hours was the depth of water increasing?
b) During which hours was the depth of water decreasing?
c) What was the maximum depth of water?
d) What was the minimum depth of water?
e) What was the depth of water at 6 am?
f) What was the depth of water at 5 am?
g) What was the depth of water at 10.30 am?
h) At what times was the depth of water 200 cm?
i) At what times was the depth of water 3.25 m?
j) Write a sentence explaining what happens to the depth of water during the 12 hour period shown on the graph.
4) The annual rainfall in Glasgow and Edinburgh is shown in the table.

<table>
<thead>
<tr>
<th>Month</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glasgow</td>
<td>150</td>
<td>160</td>
<td>130</td>
<td>100</td>
<td>65</td>
<td>50</td>
<td>50</td>
<td>59</td>
<td>75</td>
<td>80</td>
<td>105</td>
<td>110</td>
</tr>
<tr>
<td>Edinburgh</td>
<td>175</td>
<td>170</td>
<td>150</td>
<td>100</td>
<td>55</td>
<td>55</td>
<td>58</td>
<td>59</td>
<td>70</td>
<td>90</td>
<td>115</td>
<td>135</td>
</tr>
</tbody>
</table>

a) On the same diagram draw a line graph of each set of data.
b) Which is the driest month in each city?
c) Which month was the rainfall the same for both cities?
d) Describe the overall trend of the graphs.

5) The table shows male and female life expectancy from 1900 to 2000.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>45</td>
<td>50</td>
<td>60</td>
<td>60</td>
<td>55</td>
<td>55</td>
<td>60</td>
<td>70</td>
<td>75</td>
<td>75</td>
<td>78</td>
</tr>
<tr>
<td>Female</td>
<td>50</td>
<td>55</td>
<td>60</td>
<td>65</td>
<td>65</td>
<td>75</td>
<td>78</td>
<td>78</td>
<td>79</td>
<td>80</td>
<td>80</td>
</tr>
</tbody>
</table>

a) On the same diagram draw two line graphs to show male and female life expectancy.
b) By how much did female life expectancy increase from 1950 to 2000?
c) What was the smallest difference in years between male and female life expectancy?
d) Why do you think the life expectancy of males dropped between 1940 and 1950?
e) Describe the overall trend of the graphs. Discuss why you think the change in life expectancy is so great between 1900 and 2000.
Exercise 4(C)

1) Mr and Mrs Jones decide to hire a car for a week.

   The car hire company charges **£110 per week** plus **8 pence per mile**.

   a) Copy and complete the table below to show the hire costs for different distances:

<table>
<thead>
<tr>
<th>Number of miles</th>
<th>0</th>
<th>250</th>
<th>500</th>
<th>750</th>
<th>1000</th>
<th>1250</th>
<th>1500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost in £</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   b) Draw the axes for a line graph in your jotter to show the information in your completed table

   ![Graph](image)

   Remember to label the axes
   (only one has been done for you).

   c) Plot the points and draw a line through them.

   Use your completed graph to answer (d) and (e).

   d) How much will it cost to hire the car for the following distances travelled:

      i) 200 miles        ii) 700 miles        iii) 950 miles?

   e) How many miles are travelled if the hire cost was £190?
A Pop Group hires a recording studio for a fixed price of £180 for up to 5 days, plus £20 per day for each additional day.

a) Copy and complete the table below to show the hire costs for different numbers of days:

<table>
<thead>
<tr>
<th>Number of days</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hire cost (£)</td>
<td>180</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

b) Draw the axes for a line graph in your jotter to show the information in your completed table.

Remember to label the axes (only one has been done for you).

c) Plot the points and therefore draw the graph.

d) How much would it cost to hire the studio for:
   i) 12 days   ii) 20 days?

e) How many days would the studio have been hired for if the bill was:
   i) £300   ii) £420?
Look at this drawing of a suspension bridge.

There are uprights every 10 metres as you go across the bridge.

a) How far is it from the North Tower to the South Tower?

b) How high is the top of the North Tower above the road?

c) How high is the top of the South Tower above the water level?

d) Copy and complete this table. It shows the height of the cable above the water level.

<table>
<thead>
<tr>
<th>Distance from North Tower (metres)</th>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height of cable above water level (metres)</td>
<td>28</td>
<td>22</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

e) Draw a suitable set of axes in your jotter, remembering to extend the axes the correct distance.

f) Plot the points in your table on your graph.

g) Draw a curve through all the points you have marked.

It should look like the curve of the cable in the picture at the top of this page.

h) Use your curve to estimate the height of the cable at the following distances from the North Tower:

i) 5 m  

ii) 12 m  

iii) 65 m

i) What do you notice about your answers to (i) and (iii) in part (h)? Why is this?

j) At what distances from the North Tower is the height of the cable

i) 26 metres  

ii) 17 metres
4) Fiona boiled a beaker of water for a science experiment. She placed the beaker near an open window to cool and recorded the water temperature every 10 minutes. Here are her results.

<table>
<thead>
<tr>
<th>Time (minutes)</th>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature (°C)</td>
<td>100</td>
<td>60</td>
<td>40</td>
<td>30</td>
<td>24</td>
<td>22</td>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>

a) Draw a set of axes in your jotter, remembering to extend the axes the correct distance.

b) Plot the points in the table on your graph.

c) Draw a curve through all the points you have marked.

d) Use your graph to estimate the water temperature after:
   i) 4 minutes
   ii) 24 minutes

e) How long did the water take to reach a temperature of:
   i) 52°C
   ii) 28°C
   iii) 20°C?

f) The water temperature did not fall below 20°C. Explain.
5) The table below show the depth of the water in a tidal river from 6 am to 6 pm on a certain day.

<table>
<thead>
<tr>
<th>Time</th>
<th>6am</th>
<th>7am</th>
<th>8am</th>
<th>9am</th>
<th>10am</th>
<th>11am</th>
<th>12 noon</th>
<th>1pm</th>
<th>2pm</th>
<th>3pm</th>
<th>4pm</th>
<th>5pm</th>
<th>6pm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depth (m)</td>
<td>7.9</td>
<td>6.8</td>
<td>5.3</td>
<td>3.6</td>
<td>2.3</td>
<td>1.8</td>
<td>2.2</td>
<td>3.2</td>
<td>4.7</td>
<td>6.4</td>
<td>7.6</td>
<td>8.2</td>
<td>7.9</td>
</tr>
</tbody>
</table>

a) Draw a set of axes in your jotter, remembering to extend the axes the correct distance.

b) Plot the points in the table on your graph.

c) Draw a curve through all the points you have marked.

d) Use your graph to estimate the depth of water at:
   i) 7.30 am  ii) 8.30 am  iii) 1.30 pm

e) At what times is the depth of water
   i) 3 metres  ii) 7.4 metres?

f) At what time is the depth
   i) a minimum  ii) a maximum?

g) Find, as accurately as you can, the earliest time after 6 am when a yacht whose mast requires a clearance of 5.2 metres under a bridge 10 metres above the bed of the river.