## Mathletics

## F Student



## Data Representation



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## Series F - Data Representation

## Contents

Topic 1 - Types of graphs 1 (pp. 1-6)
Date completed

- picture graphs $\qquad$
$\square$
- column graphs


Topic 2 - Types of graphs 2 (pp. 7-11)

- pie charts $\qquad$
$\square$
- divided bar graphs $\qquad$ / /

Topic 3 - Types of graphs 3 (pp. 12-17)

- reading line graphs $\qquad$
$\square$
- constructing line graphs $\qquad$
$\square$
- travel graphs $\qquad$
$\square$

Topic 4 - Collecting and analysing data (pp. 18-23)


Topic 5 - Data investigations (pp. 24-28)

- whodunnit? - solve $\qquad$
$\square$
- data disaster - create $\qquad$
$\square$
- hello, holidays! - solve $\qquad$
$\square$

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## Types of graphs 1 - picture graphs

Picture graphs are used to display large amounts of data. A symbol is chosen to represent a specific amount. Picture graphs have a title that tells us what data has been collected, category labels and a key to show the value of the symbol.

How many chocolate cupcakes were sold?

$$
4+4+4+4+2=18
$$

(1) At the bus terminal buses arrive and depart at regular intervals. This picture graph shows the number of buses that departed the bus terminal in one week. Use the graph and the key to answer the following:

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0 | - 0 | 0 | -0000000 | 0 | 0 | - |
| $\square$ | $\square$ | $\square$ | $\square$ | $\bigcirc$ | $\square$ | $\square$ |
| $\square$ | $\square$ | $\square$ | - 0 | $\square$ | $\square$ | $\square$ |
| $\square$ | $\square$ | 0 | 0 | $\bigcirc$ | $\square$ | - |
|  | $\bigcirc$ | $\square$ |  |  |  |  |
|  |  |  | $\begin{aligned} & 00 \\ & 0=0 \end{aligned}$ | -0 | - |  |

a On which day did 55 buses depart?

c How many buses depart on this day? $\square$
e How many more buses depart on Friday than Saturday? $\square$
d How many buses leave on Tuesday?
b Which is the terminal's busiest day?

$\square$

2 This graph shows the number of tickets bought at the local cinema.

| Movie Classification | Tickets Bought |
| :---: | :---: |
| Comedy |  |
| Children |  |
| Horror |  |
| Action/Drama |  |

a How many tickets were bought for Comedy and Children movies? $\square$
b What was the total amount of tickets bought?



## Types of graphs 1 - picture graphs

3 $5 F$ put on their own version of "So You Think You Can Dance". Use the graph and key to answer the following:


4 In a scandal that rocked the school, it was found that ticket sales data were fudged. The maximum attendees for any one week was actually 60.
a How many tickets does each symbol now represent? $\square$
b How many tickets were really sold during the entire sales period? $\square$

## Types of graphs 1 - picture graphs

(5) Students sold chocolates to raise money for charity. This picture graph shows their collection for the first week. Use this graph to answer the following:

Week 1 Chocolate Sale Key: Kint $=4$ bars

a Who sold 56 chocolate bars?

c Mia sold

c $\square$ chocolate bars.
b Who sold $\frac{1}{2}$ dozen bars?
$\square$
$\square$
d How many bars did Ethan sell?
e How many bars were sold altogether?
$\square$
f If each bar sold for \$2, how much money did the group raise for charity?
$\square$

6 Bars sold in Week 2 of the charity drive appear in the tally column of this table. Represent this information using symbols. The first student has been done for you:

Week 2 Chocolate Sale
Key: $=4$ bars

| Student | Tally | Picture Graph |
| :---: | :---: | :---: |
| Ethan | HH HH HH HH IIII |  |
| Claire | HH HH HH III |  |
| Pablo | HH HH HHI |  |
| Heba | HY HH II |  |
| Reece | HY III |  |
| Mia | HH HH HHI |  |
| Rania | HY HH II |  |
| Hassan | HH HH HY HY HH HH II |  |

a During Week 2, how much money was raised altogether? Each chocolate bar is \$2.
b A prize was given at the end of the two weeks to the student who raised the most money. Who won? $\square$

## Types of graphs 1 - column graphs

We often use column graphs when we want to compare data. All column graphs have a title and each axis is labelled.

From this we can quickly see that 16 white cars were sold in March and that this was the most popular colour choice.


1 Answer the questions about this column graph:
a Which city had the highest rainfall in October?
$\square$
b What was this city's rainfall? $\square$
c Which cities had a rainfall between 70 mm and 90 mm ?
$\square$
d How many more millimetres of rain did Rome have than Paris? $\square$

2. Below are the November figures for the same cities. Add them to the graph (above). Think first how best to do this:
Paris 65 mm London 40 mm Sydney 95 mm Tokyo 60 mm Rome 30 mm
a Will you use the same colour columns?
b Will you need to change anything else on the graph?

3 Write a problem using the new data for a partner to solve:

## Types of graphs 1 - column graphs

4 The after care kids are staging a mutiny. They are over watching the same DVDs and making popcorn every day and want to do something new and exciting on Wednesdays. This table shows the activities they'd prefer.
a Help them present a case to the principal by completing the column graph:

| Activity | Number of <br> Students |
| :--- | :---: |
| No change | 1 |
| Swimming | 30 |
| Art | 11 |
| Football | 18 |
| Dancing | 23 |

Name your graph and both axes
$\square$ Select and label an appropriate scale


b What are some key issues on the graph you'd point out? Work in a small team to come up with a solution. Pretend your teacher or another group is the principal and present your case.

5

## Types of graphs 1 - column graphs

5 5D decide to run a recycling campaign and collect cans in and around the school. They recorded how many cans were collected each week and started constructing this column graph. In Week 3 they collected 40 cans and in Week 4 they collected 10 cans.

a Add Week 3 and 4 data to the graph.
b There was a soft drink special at the local store during one of the weeks. Which week do you think it was and why?
$\qquad$
$\qquad$
$\qquad$
c How many cans were collected in all?

d If each can is worth 5 c, how much money did 5D make from the campaign? $\square$

6 The same information can be represented in different graphs.
a Design a column graph to represent the data shown in this picture graph.


| Type of Movie | Ticket Sales |
| :---: | :---: |
| Comedy |  |
| Children |  |
| Horror | WONI 日 |
| Action/Drama |  |


b If you ran a cinema and wanted to plan your weekly movie schedule, which graph would you prefer? Which type of graph makes it easier to analyse and compare data?

## Types of graphs 2 - pie charts

A pie chart, also known as a sector graph, shows data as parts of a whole. The circle represents the total amount while the segments are the parts. When we compare the parts to the whole, we're looking at proportion. This is often written as a fraction.

This pie chart shows the favourite ice cream flavours of 10 people.

## Favourite ice cream flavours of 10 people



The table below summarises the information displayed on this graph.

| Category | Amount | Fraction |
| :--- | :---: | :---: |
| Vanilla | 3 | $\frac{3}{10}$ |
| Strawberry | 2 | $\frac{2}{10}$ |
| Mango | 1 | $\frac{1}{10}$ |
| Choc-chip | 4 | $\frac{4}{10}$ |
| Total | 10 | $\frac{10}{10}$ |

1 Colour and label this pie chart according to the information in the table:
Favourite colours of 10 people


| Category | Amount | Fraction |
| :--- | :---: | :--- |
| Red | 3 |  |
| Blue | 2 |  |
| Yellow | 5 |  |
| Total |  |  |

2 A group of students was surveyed to find out what they spend their pocket money on. This pie chart shows the results. Circle True or False next to each statement.
a More than half the students surveyed spent their money on a mobile phone.

True / False
b $\frac{4}{20}$ surveyed spent their money on food.
True / False
c 20 students were surveyed in total.
True / False

What do students spend their pocket money on?


## Types of graphs 2 - pie charts

(3) 5 F and 5 H were planning a pizza party and conducted a survey of favourite toppings. This pie chart shows the results.
a Complete the summary table if there are 40 students altogether.

| Category | Amount | Fraction |
| :--- | :---: | :---: |
| Chicken |  |  |
| Ham |  |  |
| Beef |  |  |
| Total | 40 | $\frac{10}{10}$ |

## Pizza Topping Survey


b Their teacher said they could order 10 pizzas. How many of each flavour should they get?


4 To boost ratings, Radio Non-Stop-Hits ran a promotion where they gave away prizes every hour. This pie chart shows the distribution of $\mathbf{6 0}$ prizes that they gave away.

a How many of each prize were given out?

b The radio station's accountant realised the pie chart was correctly divided but there'd been a miscalculation in the number of prizes given out. There'd actually been 25 money prizes given away. Calculate the actual amounts:


5 The total amount that this graph is representing is 40. What could this be about? Give this pie chart a title and describe it by completing the table below:

| Category | Amount | Fraction |
| :--- | :--- | :--- |
|  |  |  |
|  |  |  |
|  |  |  |
| Total |  |  |



Data Representation

## Types of graphs 2 - pie charts

6 Create your own pie chart.
a Ask 10 students to choose which of these gaming consoles they like best.

b Use the table below to collect your data.
c Show the results on a clearly labelled pie chart.

| Gaming Console | Tally | Amount |
| :--- | :--- | :--- |
| Wii |  |  |
| Xbox 360 |  |  |
| Playstation 3 |  |  |
| Nintendo Game Cube |  |  |


d What fraction of the group surveyed chose Wii?
(7) Survey $\mathbf{1 0}$ children on the topic of favourites. You can ask about favourite foods, TV shows, music or whatever you like.
a Write the topic at the top of the first column.
b Write 4 options to choose from underneath.
c Record your results in the frequency table below.

d Transfer the data from the frequency table to the pie chart.
e Label all sections correctly.

|  | Tally | Amount |
| :--- | :--- | :--- |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |


f Write a statement about what your pie chart shows:

9

## Types of graphs 2 - divided bar graphs

A divided bar graph is used to show how a total is divided.
It's similar to a pie chart except it's a rectangle divided into parts that represent the information.
This divided bar graph shows the favourite food of 10 children.


1 The Nicholls' family grocery budget is $\boldsymbol{\$} \mathbf{2 0 0}$ per week. This table shows how the money is spent:

| Fruit | Vegetables | Meat | Snacks | Drinks |
| :---: | :---: | :---: | :---: | :---: |
| $\$ 20$ | $\$ 40$ | $\$ 60$ | $\$ 40$ | $\$ 40$ |

a Show the information in this table as a divided bar graph. Each space represents \$20.

b What was $\frac{3}{10}$ of the budget spent on? $\square$

2 This divided bar graph shows how Paula spent $\$ 360$ on her party. Answer the questions below about how much she spent on each category. You may use a calculator.

| Entertainment |  | Food and drink |  | Decorations |  |
| :---: | :---: | :---: | :---: | :---: | :---: |

a What is each segment worth? $\square$
b $\frac{1}{3}$ was spent on decorations. How much is this? $\square$
c $\frac{2}{9}$ was spent on food and drink. How much is this? $\square$
d How much was spent on entertainment? Show your workings below:

## Types of graphs 2 - divided bar graphs

3 You want to try snowboarding and you need to ask your parents for \$1000 to buy all the gear. Understandably, they want to know how their hard earned cash will be spent.


Complete a divided bar graph to show them. Colour in each category a different colour, label it clearly and include a title.

Title $\square$


## Types of graphs 3 - reading line graphs

Line graphs show how something changes over time in relation to something else. In this topic, we'll look at different examples of line graphs. Look at the line graph below. See how the more time passed, the higher the water got?
In which hour was the water 8 metres deep? Look below for how we read this information:


1 Look carefully at this line graph and answer the questions:

a How many square kilometres of forest was lost in 1996? $\square$
b How many square kilometres of forest was lost in 2000? $\square$
c In which year were 7000 square kilometres of forest lost? $\square$
d How much more forest was lost in 2000 than in 2008? $\square$
e Use the graph to estimate the forest loss in 1999. $\square$
f Use the graph to estimate the forest loss in 2003. $\square$

## Types of graphs 3 - reading line graphs

2 Polly and her friend Molly were practising reading a thermometer for homework. They boiled water in a kettle and then took turns measuring the temperature every minute as it cooled down. To make this more interesting, they made it a guessing game.
Look at the graph and answer the questions to see how they went:
a Polly guessed that after 1 minute the temperature would be $46^{\circ} \mathrm{C}$. Was she right?
$\square$
b Molly guessed that after 2 minutes the temperature would be $34^{\circ} \mathrm{C}$. Was she right?


Look closely at the graph they made showing the temperature of the water in the kettle.
c What is the value of each small division on the temperature axis?


d By how much did the water cool down between 2 minutes and 4 minutes? $\square$
e How long did the water take to cool to $19^{\circ} \mathrm{C}$ ?

(3) This graph shows a kite's height at different times. Answer the questions below:
a What was the kite's height at 65 seconds?


b How long did the kite take to rise from 25 metres to 40 metres?

c Estimate the height of the kite at 1 minute.

d If the kite continued to rise, how high do you think it would be after 90 seconds?
$\square$

## Types of graphs 3 - constructing line graphs

Let's see how to build a line graph from a data table.
This data shows the rate of filling a fish tank with water.

| Minutes | 1 | 2 | 3 | 4 | 5 |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Litres | 15 | 30 | 45 | 60 | 75 |

## Step 1

Carefully plot the data from the table.


## Step 2

Join the points with straight lines.

## Rate of Filling a Fish Tank



1 The average rate that water evaporates from an indoor swimming pool is 6 mm a month.
a Complete this table to show how much water will evaporate over 6 months:

| Millimetres | 6 |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Month | January | February | March | April | May | June |

b Label the vertical axis with an appropriate scale, then plot the points and join the points with a ruler. What else do you need to add to make this graph complete?

c Write 2 questions about this graph and write the answers.

## Types of graphs 3 - constructing line graphs

(2) A car uses 8 litres of petrol for every 50 km travelled.
a Complete this table to show how much petrol is needed for a journey:

| Litres | 8 | 16 | 24 | 32 | 40 | 48 | 56 | 64 | 72 | 80 |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Kilometres | 50 |  |  |  |  |  |  |  |  |  |

b Complete this line graph:


## Litres

c How far can the car go on 32 litres of petrol? $\square$
d How many litres of petrol are needed to travel 450 km ? $\square$
e How far would a car travel on 12 litres of petrol? $\square$
f How far would you have travelled if you used 96 litres of petrol? $\square$
g If this car's fuel tank had a capacity of 40 litres, how many times would you need to fill it if you wanted to travel 500 km ? $\square$

## Types of graphs 3 - travel graphs

A travel graph is a type of line graph that shows the distance travelled and the time taken to travel that distance. We can tell a lot about a journey just by the shape of a line.

## This car leaves home

 at 8 am for a holiday.Between 8 am and 12 pm , it travels 200 km . This is 50 km per hour.

Between 1 pm and 2 pm , the car travels at 100 km per hour.
(1) This travel graph shows the journey of the Henderson family on a driving holiday.
a What time did they leave home?

b How long was their first rest stop?

c How far had they travelled by 10 am?

d At what speed were they travelling between 3 pm and 5 pm ?


The Henderson Holiday

e What could they have been doing at 2.30 pm ?
f How long was the journey, excluding rest stops?


## Types of graphs 3 - travel graphs

(2) Look carefully at this journey of a cyclist and fill in the blanks.
a I started training at $\square$.
b I met a friend for breakfast at


I continued again at

c By 8 am I had cycled $\square$ km.
d Due to a flat tyre, I had to stop again at $\square$
e I turned around to cycle all the way home at $\square$

f I got home at $\square$ and had a nice long bubble bath.

3 Connect each travel graph to the matching statement with a line.


## Collecting and analysing data - frequency tables

Raw data is often collected in a frequency table. Tally marks are a quick way to record numbers. When we're finished, we add the marks to find totals:

| Car Types in Car Park | Tally | Frequency |
| :---: | :---: | :---: |
| 4WD | HH HE HI HI | 20 |
| Sedan | HK HK HK II | 17 |
| Station wagon | HH HH HK H | 20 |
| Hatchback | HH HH IIII | 14 |

1 Charlie sold drinks at the beach for an hour each day. He wrote down the drinks he sold each day:

| Monday | Coke | Lemonade | Water | Juice |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Tuesday | Juice | Juice | Coke | Coke |  |  |  |
| Wednesday | Water | Juice | Juice | Juice | Coke | Lemonade |  |
| Thursday | Water | Water | Water | Coke | Coke | Juice | Lemonade |
| Friday | Lemonade | Water | Juice | Coke | Coke | Juice |  |
| Saturday | Coke | Coke | Coke | Juice | Juice | Water | Water |
| Sunday | Lemonade | Lemonade | Coke | Juice | Water | Coke |  |

a This is a time-consuming way to record data.
Show Charlie how to set up a frequency table to record the same data faster. The first one has been done for you.

| Type of <br> Drink | Tally | Frequency |
| :--- | :---: | :---: |
| Coke | HI HI \\|ll | 13 |
| Juice |  |  |
| Water |  |  |
| Lemonade |  |  |

b Represent your data in a column graph:


REMEMBER

## Collecting and analysing data - mean

When we say we're finding the 'average', we're finding the mean. To do so, we add all the scores then divide by the number of scores:

$$
\text { For example, the mean of } 2,3,4,5,6=\frac{2+3+4+5+6}{5}=4
$$

So if the numbers above represented eggs found by 5 children in an Easter egg hunt, it'd be fairest if each child received 4 . Of course, in egg hunts, it's usually every person for themselves!

1 Find the mean in each set of data by adding the scores and then dividing by the number of scores:
a $13,4,7,11,5$

$$
\begin{aligned}
& =\frac{13+4+7+11+5}{5} \\
& =40 \div 5 \\
& =
\end{aligned}
$$

c $3,5,9,2,6$
b 9, 13, 5

2 Look at the following diving scores:

| Marita 7.2 | Ben 9.4 | Ari 4.6 | Mia 7.6 |
| :--- | :--- | :--- | :--- |

a Calculate the mean.

b Who was closest to the mean? $\square$


3 The table below shows the number of goals scored over a 5 week period by 3 football teams:


|  | $6 / 3$ | $13 / 3$ | $20 / 3$ | $27 / 3$ | $3 / 4$ | Total | Mean |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Fantastic Footballers | 2 | 0 | 2 | 8 |  | 16 |  |
| Serious Socceroos | 3 | 2 | 4 | 1 |  |  | 3 |
| Dangerous Dribblers | 0 | 0 | 0 | 0 | 15 |  | 3 |

a Complete the table by filling in the missing information.
b Which team has scored the most goals? $\square$
c Which team has the highest mean?

d You're thinking of joining either the Serious Socerooos or the Dangerous Dribblers. They both have a mean of 3 goals per game. Which team do you think would be more competitive and why?

19

## Collecting and analysing data - mean

4 Emma has just moved into a new neighbourhood and wants to start babysitting. She asks the girls at school what they charge and records this information in a graph:

a If Emma wants to undercut all the others, what would you recommend she charge per hour?
$\square$
b If Emma wants to position herself as an exclusive (expensive) babysitter, what would you recommend she charge per hour?
$\square$
c Emma decides to charge the mean price per hour. What does she charge?

d Ruby decides to add a booking fee of 50¢ per hour. She reckons if online booking agencies can get away with it, so can she. How does this change the mean price charged by the group?

5 Here is a graph showing the temperature in London:
Temperature in London Over One Week in March

a Calculate the mean temperature for the week:
$\square$
b If you were travelling to London for the week, what clothes would you pack?

## Collecting and analysing data - mean

6 You and a partner are going to record how many cubes land in a box. You will need 10 unifix cubes and an empty lunchbox.

1 Place the lunchbox 1 metre in front of you.
2 Sit on the floor.
3 Take turns throwing all 10 cubes at the same time.

4 Each record your results in the data table on the right.

5 Repeat the process 5 times.


| Throw | Tally |
| :---: | :---: |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |
| 5 |  |

7 Create a column graph of your results. Label each axis.

a What is your mean number of cubes that landed in the box? $\square$
b What was your partner's mean number of cubes that landed in the box? $\square$
c What was the mean of both sets of data together? $\square$
d Do you think the mean paints an accurate picture of the process?

21

## Collecting and analysing data - collecting data

(1) Study all the different types of graphs showing sales of chocolate bars. Match each graph to its main feature by completing the table below:

## Picture Graph

Sales of Chocolate Bars


Pie Chart
Sales of Chocolate Bars


Divided Bar Graph
Sales of Chocolate Bars


## Line Graph

Sales of Chocolate Bars


## Column Graph

Sales of Chocolate Bars


| Main Feature | Name of Graph |
| :--- | :--- |
| Clear to see how big each category is compared to the whole. <br> Sometimes has a key and looks like a pie. |  |
| Shows an exact amount in each category and allows you to <br> compare categories. |  |
| Compares sizes of categories at a glance and takes up very little space. |  |
| Shows numerical data using pictures. Has a key. |  |
| Shows how data changes in relation to something - usually time. |  |

## Collecting and analysing data - collecting data

(2) Here are 3 different sets of data. Read over each table of data and decide which is the most appropriate graph to use.

## Graph 1

| Name | Number of Books |
| :--- | :---: |
| Blair | 8 |
| Charlie | 4 |
| Amity | 5 |
| Nicky | 12 |

Graph 2

| Week | Height of Plant |
| :---: | :---: |
| 1 | 2.5 cm |
| 2 | 3 cm |
| 3 | 5 cm |
| 4 | 7.5 cm |
| 5 | 9 cm |
| 6 | 9.5 cm |

Graph 3

| Item | Profit |
| :--- | :---: |
| Hot food | $\$ 40$ |
| Chips | $\$ 30$ |
| Drinks | $\$ 20$ |
| Fruit | $\$ 10$ |

Construct the graphs using the templates below. You must work out the scale, label the axes and remember a heading for each graph:
a Show how many books each person read over the holidays. It should be clear to see who read the most and who read the least.
b Show how much a plant has grown over 6 weeks. It should be clear to see where the biggest growth spurt was.
c Show what the $\$ 100$ profit that the canteen made yesterday was made up of.


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Getting ready

Many crimes are solved by grunt work. Detectives spend countless hours sifting through data. It can be one tiny fact that breaks a case open.


Read this next part very carefully. A bank was robbed during the month of May. Since it was the bank with all your savings, you have a vested interest in tracking down the offender.

An informant has told you that the crime was committed on the thief's birthday. They treated themselves to a shopping spree with your money! Apparently they crept in during a busy weekday and quietly cracked a safe.

The next three pages contain data about criminals in your area. Use the information to identify the thief and get your money back. You'll need to flick between graphs and clues to crack the case.

CLUE 1

| M A Y |  |  |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :---: |
| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |  |
|  |  |  |  |  | 1 | 2 |  |
| 3 | 4 | 5 | 6 | 7 | 8 | 9 |  |
| 10 | 11 | 12 | 13 | 14 | 15 | 16 |  |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 |  |
| 24 | 25 | 26 | 27 | 28 | 29 | 30 |  |

## CLUE 2

Birthdays of Local Criminals

|  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | EG |  |  |  |  |  |  |  |  |  |  |
|  | FF |  | SK | HC |  |  |  |  | MH |  |  |
|  | NK |  | EW | PJ |  | BJ | LM |  | CW |  |  |
| DC | MC | BT | FC | BB |  | EK | DK | LL | RB |  | SM |
| J | F | M | A | M | J | J | A | S | O | N | D |

More clues on page 25.

## CLUE 3

Birthdates by Gender

| Males | Females |
| :---: | :---: |
| 04.01 .75 | 11.02 .85 |
| 23.02 .86 | 14.02 .78 |
| 17.02 .66 | 03.03 .80 |
| 02.04 .73 | 13.05 .84 |
| 04.04 .75 | 07.07 .77 |
| 24.04 .67 | 17.10 .78 |
| 10.05 .81 | 31.10 .87 |
| 23.05 .82 |  |
| 18.07 .81 |  |
| 09.08 .67 |  |
| 18.08 .63 |  |
| 26.09 .66 |  |
| 13.10 .72 |  |
| 24.12 .65 |  |



DISCOVER

## CLUE 6

## CLUE 4

## Gender Breakdown of Local Criminals



CLUE 5

## Known Crims

| Sam McNab | Earl Wyatt |
| :--- | :--- |
| Master Criminal | Frannie Fingers |
| Bobette Trimbole | Emma Getaway |
| Ned Kelly | Shifty Keys |
| Dan Kelly | Betty Balaclava |
| Ellen Kelly | Ron Biggs |
| Pretty-boy Jones | Buster Jones |
| Harry Cracker | Luke Moran |
| Mata Hari | Dan Cuffme |
| Light-fingered Larry | Carla Williams |
| Fred Capone |  |
| L---------------------------------------------- |  |

## Distinguishing Features



Facial Hair
More clues on page 26.

## CLUE 7

## Hair Colour



CLUE 8
Height of Known Criminals

|  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |
|  |  |  |  |  |
|  | CW | PJ |  |  |
|  | BJ | EG | NK | LM |
| FF | FC | RB | MC | HC |
| EK | MH | DC | EW | DK |
| SM | BB | BT | SK | LL |
| 150-159 cm | 160-169 cm | $170-179 \mathrm{~cm}$ <br> Height | 180-189 cm | 190-199 cm |

Whodunnit? Give a name and a detailed description to the police superintendent:

You work for the chocolate company Cocoa Delights. In less than an hour, you're presenting the annual report to the Board.

They're keen to know yearly sales figures, best selling lines, the breakdown of monthly expenses and how each product sells compared to the others.


Your team has slaved to prepare the following data. However, someone didn't bother to add titles and labels to the graphs.

You don't have time to hunt the culprit. You have to fix this yourself. Fast!

What to do

Look at the graphs below and come up with some believable information that would give each graph meaning and keep the Board happy. Think about which graph would best suit each set of data. They'll need titles, labels and numbers.





Follow the clues to correctly label each column with the appropriate symbol:

5N's Preferred Holiday Activities


$\square$
Four times as many kids would rather go to the beach than go to an art gallery.


A holiday at Wet ' $n$ ' Wild is the most preferred option.


There are 3 times as many shoppers than there are art gallery attenders.


Five fewer people like camping than Wet ' $n$ ' Wild.



Poor Mr N will be bushwalking alone it seems. He'll probably get over it.


