

Graphs and Tables I

Student Name	Class	Score
Parent Signature	Date	

8:01 | Types of Graphs and Their Features

8:02 | Reading Graphs (Part I)

Outcome DS 4.1

A **divided bar graph** is a rectangular band where each section is proportional to the number of times the item occurs.

A supermarket can use a computer linked to the scanners at checkouts to find out how customers buy various items. Here are the figures for 100 customers who bought peas.

Frozen	59
Dried	26
Tinned	11
Fresh	4
Total	100



Scale: 10 customers = 7 mm

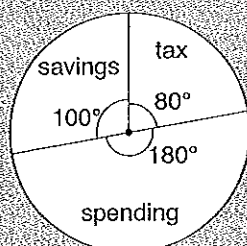
A **sector graph** (or **pie graph**) shows the relative importance of each item by using sectors inside a circle.

You calculate angles at the centre by working out what fraction of 360° they are.

Example: Gerry earns \$90 a week from an after-school job. Here is where the money goes:

Tax	\$20
Spending	\$45
Saving	\$25
Total	\$90

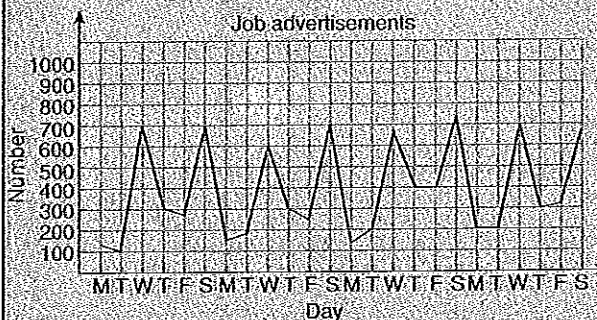
One dollar of the earnings is represented by 4° in a sector chart (because $\frac{1}{90} \times 360^\circ = 4^\circ$).
The angle for tax is $20 \times 4^\circ = 80^\circ$.



A **line graph** shows what happens to data as time changes.

- Measurements are taken at regular time intervals.
- Time intervals are shown on the horizontal axis.
- Data values are read from the vertical scale.
- The points on the graph are joined up, either with line segments or a smooth curve. This allows you to read off values in between.

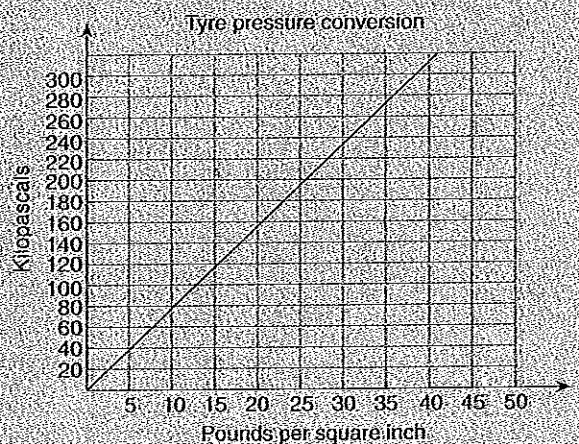
This line graph shows the number of job advertisements in a daily newspaper over a five-week period.



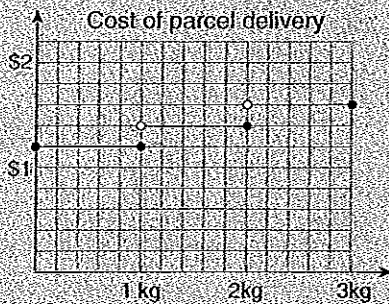
Two features of interest are:

- The long-term trend overall is that there are about the same number of advertisements each week.
- There are two peaks (Wednesday and Saturday each week) with considerably more advertisements.

A **conversion graph** uses a line to show how to convert from one quantity to another. This graph shows how to convert from pounds per square inch (psi) to kilopascals when checking tyre pressure.

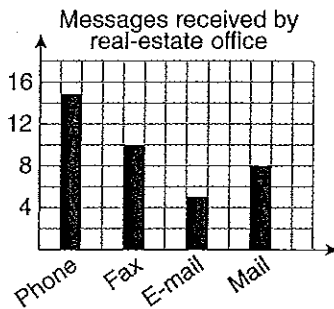


A step graph is made up of several horizontal lines that go up in steps. A closed circle ● shows a point is included. An open circle ○ shows a point is excluded.



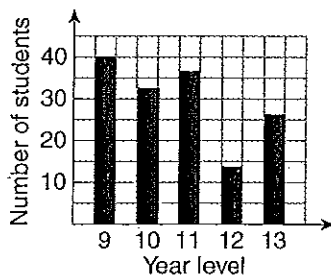
This step graph shows how much it costs to send parcels within Sydney by courier. For example, there is a \$1.40 charge for a parcel that weighs 1.6 kg.

- 1 This column graph shows the number of different types of message received by a real-estate office one day.



How many messages did the office receive altogether? _____

- 2 This column graph shows the number of students at Tasman High School in Years 9 to 13 who had parents attending a report evening.



- a Which year level had the fewest students with parents attending? _____
- b How many students had parents attending the report evening? _____
- c Give two reasons why you cannot work out the number of parents at the report evening from this information. _____

- 3 Fifty people travelling overseas were asked how they preferred to communicate with friends back home.

Here are the results.

Postcards/letters	23
Phone/fax	15
E-mail	12
Total	50

- a Divide up and colour in the rectangle below to show this information.

- b Complete this sentence to describe the scale:
'1 mm represents _____ person/people.'

- 4 These figures are from a survey of people who live on the North Shore and travel to Sydney to work. They were asked how they travel.

Mode of transport	Percentage
Private vehicle	36
Train	31
Bus	19
Ferry	14

Show this information on a divided bar graph.

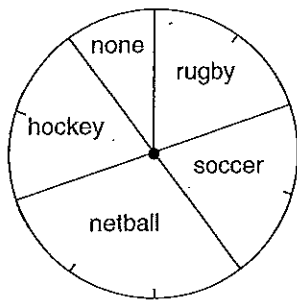


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8:02 Reading Graphs (Part 2)

Outcome DS 4.1

1 This sector graph shows the first choice of winter sport for Year 8 students at a high school.



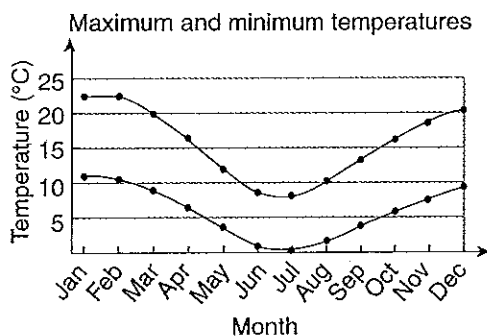
- Which sport is the most popular?

- What fraction of the students play no sport?

- Calculate the angle at the centre of the rugby sector.

- If there are 180 students in Year 8, work out the number who play hockey.

2 This graph shows the mean maximum and minimum air temperatures for each month of the year in Thredbo, NSW.

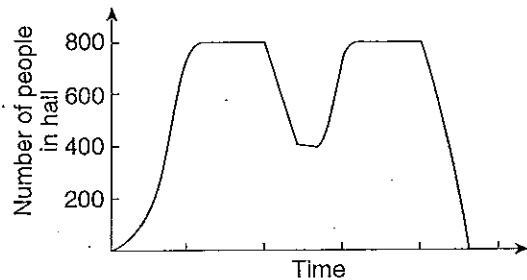


- Estimate the warmest maximum temperature. Write down the month(s) in which this occurs.

- Estimate the coldest minimum temperature. Write down the month(s) in which this occurs.

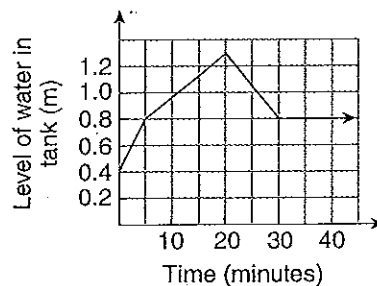
c Which month has the smallest *range* in temperatures (difference between maximum and minimum)?

3 This graph shows the number of people in the school hall one evening. They are watching the annual drama production.



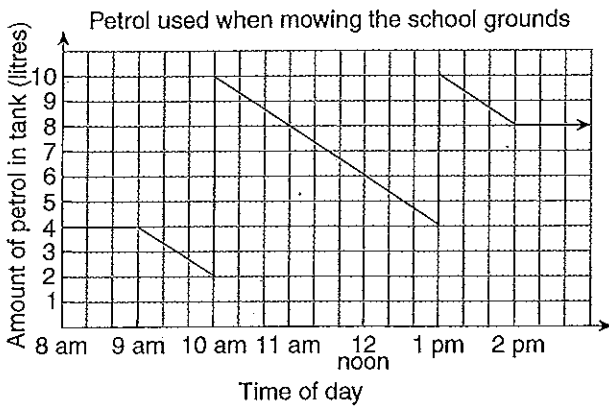
- Add a suitable scale to the horizontal axis (time).
- Write a short story explaining what happened.

4 Sue decides to add some water to a storage tank with a hose. When the tank looks full, she walks away. She doesn't realise that there is a hole in the side of the tank that causes the tank to leak.



- What is the level of water in the tank when she starts filling it? _____
- How long does it take to fill the tank? _____
- At what level is the hole in the tank? Explain, referring to the graph. _____

5 This graph shows the level of petrol in the tank of the school's tractor one day. The tractor was used to mow the school grounds.



- When did the mowing begin? _____
- Suggest what happened at 1 p.m. _____

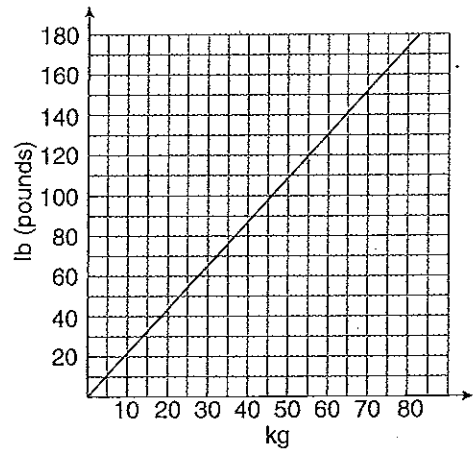
- If the tank had not been refilled at 10 a.m., when would the tractor have run out of petrol? _____
- How long did it take to mow the school grounds? _____

- How much petrol was used altogether? _____

6 Chris is a professional boxing fan. He wants to find out what 'division' some boxers would fight in. The information for the divisions is given in pounds.

Division	Weight of boxer in pounds
Middleweight	147–168
Welterweight	135–147
Lightweight	126–135
Featherweight	118–126

Chris uses the following conversion graph to change pounds to and from kilograms.

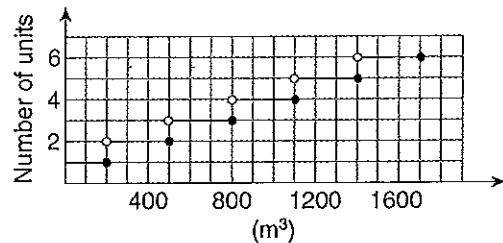


- Mike 'the Fist' weighs 60 kg exactly. What division does he fight in? Explain.

- Todd 'the Knockout Man' weighs 68 kg exactly. What division does he fight in? Explain.

- If Sally was a boxer, she would fight in the 'female featherweight' division. Estimate her weight to the nearest five kilograms.

7 This step graph shows the recommended number of small wall-mounted air-conditioning units needed per space inside an office building.



- How many units are needed to cool buildings with the following amounts of space?
 - 400 m³ _____
 - 1400 m³ _____
 - 1117 m³ _____
- An office building has three of these air-conditioning units. What is the largest possible amount of space inside the building if the number of units follows these guidelines?

Graphs and Tables 3

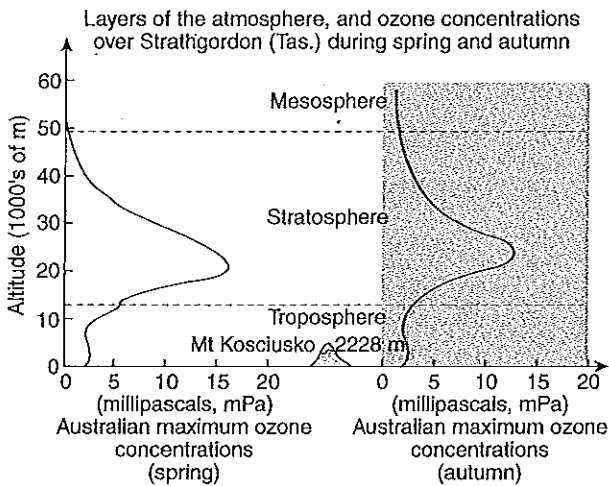
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8:03 Unusual Graphs

Outcome DS 4.1

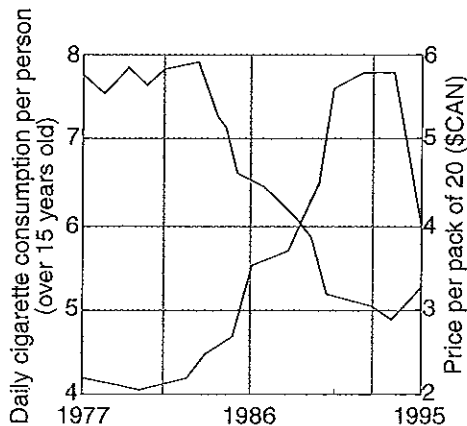
1 Ozone forms a protective layer in the atmosphere.

The graph shows measurements that have been taken at various altitudes to record ozone concentrations above Strathgordon in south-west Tasmania.



- Is the ozone layer in the troposphere, stratosphere or mesosphere?
- What altitudes have the greatest concentrations of ozone?
- Explain whether there is more ozone in spring or autumn.

2 This graph shows what happened to the price of cigarettes in Canada and how many were smoked per day between 1977 and 1995.



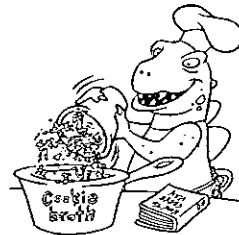
a Describe what happened in 1994.

b Describe the long-term trend in cigarette consumption.

c Does this graph have a rough kind of symmetry? If so, describe it.

d Explain the relationship between the price of cigarettes and how many are smoked.

Fun Spot

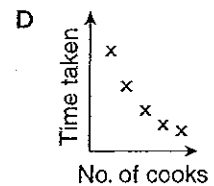
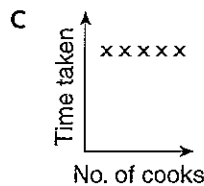
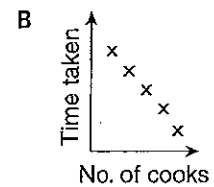
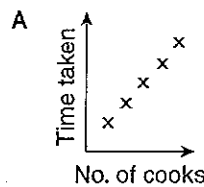


"Too many cooks spoil the broth."



A lunch bar produces the same number of sandwiches and bread rolls every day.

1 Which of these graphs (A–D) best shows the relationship between the time taken to produce the food and the number of cooks at the lunch bar?



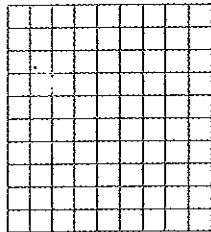
- 2 Explain your choice of answer.

8:04 | Drawing Graphs (Part I)

Outcome DS 4.1

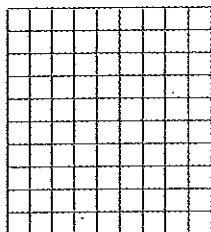
- 1 Draw a column graph to show a dairy's sales of different types of milk one evening.

Type of milk	Number of cartons sold
Homogenised	8
Reduced fat	3
Trim	4
Calci-xtra	1
Flavoured	7



- 2 This table shows the different types of functions for which Gourmet & Gobble Ltd (a catering firm) provided food in June last year. Represent the information in a column graph.

Type of function	Number
Wedding	6
21st birthday	3
Corporate lunch	8
Mid-winter Xmas	4
Others	5



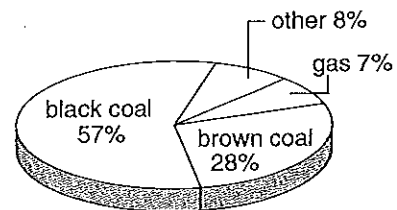
- 3 The earth's atmosphere is made up of these gases:

Nitrogen	78%
Oxygen	21%
Others	1%

Construct a divided bar graph to show this information.

- 4 This sector graph shows how electricity was produced in Australia in 1997. Fossil fuels include gas, coal and oil. Other forms of energy include wind generation and solar generation. Nuclear electricity generation is not currently being used.

Fuels for electricity



- a What source produced the most electricity?

- b List the sources of energy in order of size, from largest to smallest. _____
- c Estimate the percentage of energy that came from fossil fuel. _____
- d 'In future, Australia will use more electricity.'
'Most of the rivers that are suitable for hydroelectric schemes have already been dammed.'
'There is only a limited amount of fossil fuel, and it will run out eventually.'

Use these statements to draw a divided bar graph predicting how electricity might be generated in 100 years' time.