

Student Name	Class	Score
Parent Signature	Date	

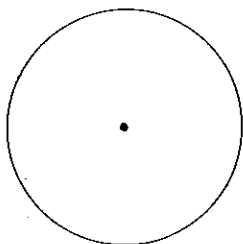
## 8:04 Drawing Graphs (Part 2)

Outcome DS 4.1

- 1** This table shows the opening and closing times for a chemist each week.

Day of week	Opens/closes	Hours open
Monday	9 a.m.–6 p.m.	9
Tuesday	9 a.m.–6 p.m.	
Wednesday	9 a.m.–6 p.m.	
Thursday	9 a.m.–6 p.m.	
Friday	9 a.m.–9 p.m.	
Saturday	10 a.m.–5 p.m.	
Sunday	10 a.m.–3 p.m.	
Total		

- a Complete the table.
- b The information can be shown in a sector graph.
- The centre angle for Monday would be  $54^\circ$ . Explain why by writing down a calculation.  
\_\_\_\_\_
  - Use a protractor to draw the sector graph for this information.

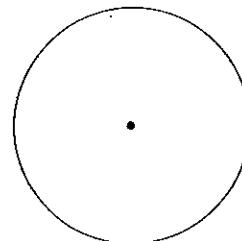


- 2** Nine hundred people travelling overseas were asked how they preferred to communicate with friends back home.

Here are the results:

Postcards/letters	414
Phone/fax	270
E-mail	216
Total	900

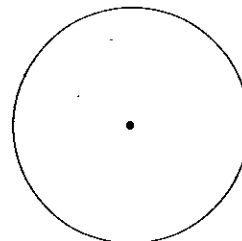
- a Complete this sentence to describe the scale on a sector chart:  
' $1^\circ$  represents \_\_\_\_\_ person/people.'
- b Divide up and colour in the circle below to show this information.



- 3** A survey of 400 adults about smoking gives this information:

	Number	Angle in sector graph
Never smoked	191	$172^\circ$
Used to smoke	136	
Smoke now	73	
Total	400	$360^\circ$

- a The angle in a sector graph for the group who have never smoked is exactly  $171.9^\circ$ . Complete the boxes in this calculation to show how this is worked out:
- $$\frac{\boxed{\phantom{00}}}{\boxed{\phantom{00}}} \times 360^\circ = 171.9^\circ$$
- b Complete the missing cells in the table.
- c Draw the sector graph to display these results.



- 4** This table shows the number of motorcyclists who were killed on NSW roads over a 12-year period.

Year	Number of riders	Year	Number of riders
1987	119	1994	50
1988	111	1995	57
1989	98	1996	52
1990	84	1997	43
1991	54	1998	49
1992	55	1999	51
1993	41	2000	60

Source: www.rta.nsw.gov.au

- a Display this information on a line graph.

- b Explain what the graph shows about the *long-term trend* for the motor cyclist road toll in NSW.

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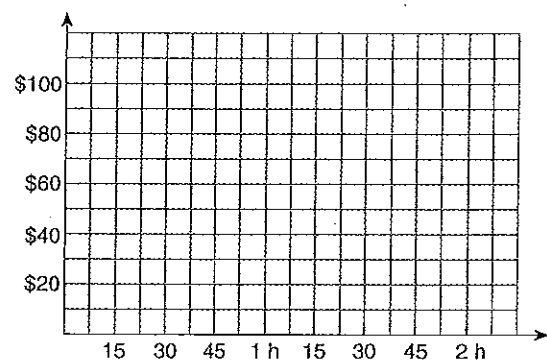
- 5** The following table shows measurements of the depths of water below the wharf at Coffs Harbour one Tuesday. As the tide comes in and out, the depth changes. The depths have been measured to the nearest metre.

Time	Depth (m)	Time	Depth (m)
Tue 6 a.m.	4	4 p.m.	5
7 a.m.	3	5 p.m.	4
8 a.m.	3	6 p.m.	3
9 a.m.	4	7 p.m.	3
10 a.m.	5	8 p.m.	4
11 a.m.	7	9 p.m.	5
midday	8	10 p.m.	7
1 p.m.	8	11 p.m.	8
2 p.m.	7	midnight	8
3 p.m.	6	Wed 1 a.m.	7

- a Display this information on a line graph.

- b What would you expect the depth to be at 2 a.m. on Wednesday? \_\_\_\_\_
- c Suggest what the depth might have been at 4 a.m. on Tuesday. \_\_\_\_\_
- d Which of these is the best estimate of the time between high tide and low tide? \_\_\_\_\_
- A 3 hours                      B  $5\frac{1}{2}$  hours
- C 7 hours                      D 11 hours

- 6** A plumber charges as follows—a call-out fee of \$20 and then a charge of \$15 per quarter-hour or part thereof. Draw a step graph to show this information.



Student Name \_\_\_\_\_

Class \_\_\_\_\_

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Date \_\_\_\_\_

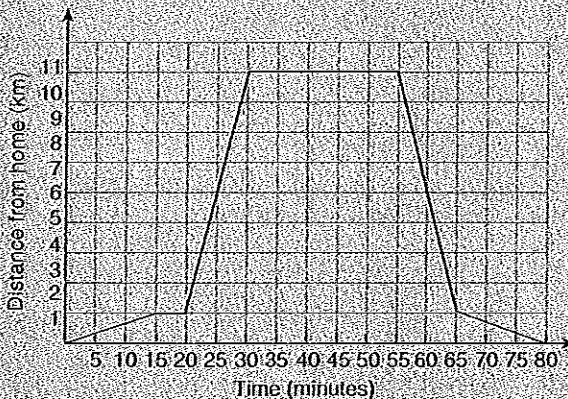
## 8:05 | Travel Graphs

Outcome DS 4.1

A special kind of two-dimensional graph is one that shows travel, or a journey of some kind.

The time-scale is on the horizontal axis, and the distance travelled is shown on the vertical axis.

**Example:** This graph shows a student's journey from home into town and back one day via a bus stop.

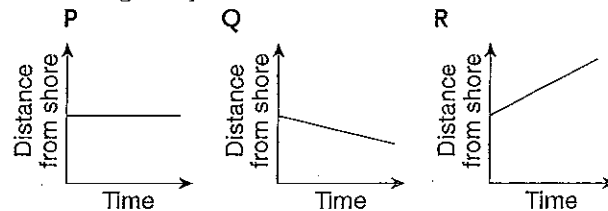


- How far is it from home to the bus stop?
- How far did the student travel by bus into town?
- How long did the student have to wait at the bus stop?
- How many minutes did the student spend in town?
- The bus travels 10 km in 10 minutes. How far would it travel in 60 minutes?
- What is the speed of the bus in km/h?

**Answer:**

- 1 km
- 10 km (worked out from the difference between 11 km and 1 km on the vertical axis)
- 5 minutes (worked out from the difference between 20 minutes and 15 minutes on the horizontal axis)
- 25 minutes (worked out from the difference between 55 minutes and 30 minutes on the horizontal axis)
- 60 km
- 60 km in 60 minutes (one hour) is 60 km/h.

**1** Michael is swimming at a lake. These graphs (P, Q and R) show his distance from the shore as time goes by.

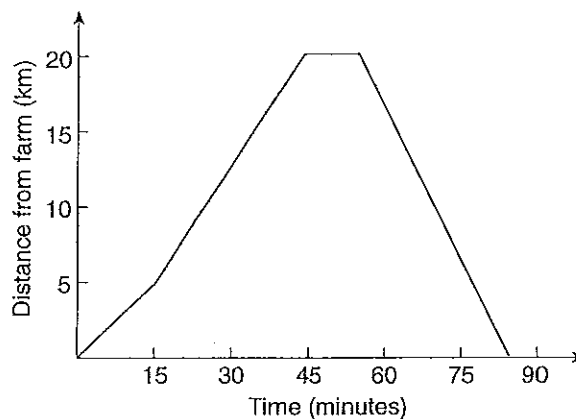


- Which graph shows he is moving closer to the shore as time goes by? \_\_\_\_\_
- Which graph shows he is moving away from the shore as time goes by? \_\_\_\_\_
- Which graph shows he is staying the same distance from the shore as time goes by? \_\_\_\_\_

**2** Draw a distance-time graph for the following. Graph the time on the horizontal axis and the distance from home on the vertical axis.

Iona walks from home to the dairy. Here she buys some milk and heads back towards home. Halfway back she realises she forgot to buy biscuits, so she returns to the dairy, buys the biscuits and then walks home.

**3** This distance-time graph shows the journey of a cyclist from a farm to the shops at Tamworth and back.



- a How far is the farm from Tamworth?  
\_\_\_\_\_
- b For how long was the cyclist away from home?  
\_\_\_\_\_
- c For how long was the cyclist at the shops?  
\_\_\_\_\_
- d These are the calculations for the speed on the way back:

$$\text{Speed} = \frac{\text{distance}}{\text{time}} = \frac{20 \text{ km}}{30 \text{ min}} = \frac{20 \text{ km}}{\frac{1}{2} \text{ hour}}$$

$$= 40 \text{ km/h}$$

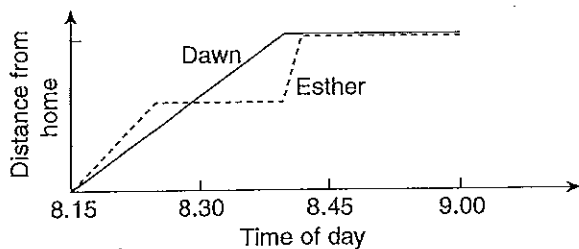
Write down some working to explain where the number 30 comes from in this calculation.

\_\_\_\_\_

\_\_\_\_\_

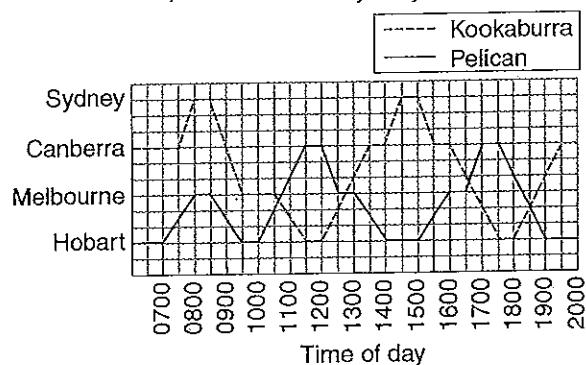
- e The first part of the journey was 5 km and took 15 minutes. Calculate the speed for this part in km/h.  
\_\_\_\_\_
- f Explain how the graph shows that the cyclist was travelling faster on the way back.  
\_\_\_\_\_
- \_\_\_\_\_

- 4 The Thompson twins (Dawn and Esther) both leave home at 8.15 a.m. to walk to school. School starts at 8.40 a.m. One of the twins stops at a friend's place on the way.



- a Which twin arrives at school first?  
\_\_\_\_\_
- b Which twin stops at a friend's place, and for how long?  
\_\_\_\_\_
- c Which twin walks faster? Explain how the graph shows this.  
\_\_\_\_\_
- \_\_\_\_\_

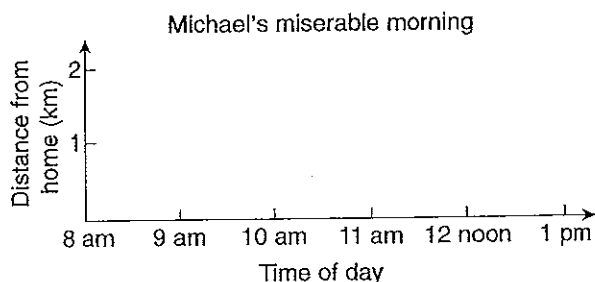
- 5 A small airline operates two planes, named *Kookaburra* and *Pelican*, between Hobart, Melbourne, Canberra and Sydney.



- a There is one flight a day from Sydney to Canberra. When does it leave Sydney?  
\_\_\_\_\_
- b How long does it take to fly from Sydney to Melbourne?  
\_\_\_\_\_
- c How many direct flights are there from Hobart to Canberra each day?  
\_\_\_\_\_
- d Which route is faster when flying from Sydney to Hobart—via Melbourne or via Canberra?  
\_\_\_\_\_
- e Where are the planes kept overnight?  
\_\_\_\_\_
- f Are the planes ever timetabled to be at the same airport at the same time? Explain.  
\_\_\_\_\_
- \_\_\_\_\_

- 6 Michael walked to school (a distance of 2 km), leaving home at 8.30 a.m. and arriving at school at 9 a.m. At 10 a.m. he left school to go to a dentist's appointment. The dentist is halfway between school and home. The appointment was for an hour. He arrived back at school at 11.30 a.m. At 12.15 p.m. he felt sick, and was collected by one of his parents at 12.30 p.m. The drive home took 5 minutes.

On this diagram, draw a distance-time graph to show Michael's distance from home between 8 a.m. and 1 p.m.



# Graphs and Tables 6

Student Name	Class	Score
Parent Signature	Date	

## 8:06 Reading Tables

Outcome DS 4.1

### Swimming pool fees

PRICES (inclusive of GST)			
<b>ADULT</b> (includes Sauna, Steam, Spa)			
<b>CASUAL</b>	\$4.00	OR	<b>Monthly payment option</b>
1 month	\$36.00		Joining fee \$50.00
3 months	\$100.00		Monthly automatic payments from your bank account (minimum 12 months) \$27.00
6 months	\$190.00		
12 months	\$300.00		
<b>CHILD</b> (under 15 years) & <b>SENIOR</b> (over 60 years)		<b>STUDENT</b> (ID required)	
<b>CASUAL</b>	\$2.00	<b>CASUAL</b>	\$3.00
1 month	\$18.00	1 month	\$27.00
3 months	\$50.00	3 months	\$65.00
6 months	\$95.00	6 months	\$120.00
12 months	\$180.00	12 months	\$220.00

- How much does it cost an adult and a child to go for a single swim? \_\_\_\_\_
- How many times would a person need to go to the swimming pool *each month* to save money by paying monthly rather than per swim?  
\_\_\_\_\_
- Wei-Lin turns 15 in six months' time. She is a student at high school. Explain whether she should pay for six months' child membership and then six months' student membership, or pay for twelve months' student membership.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- Troy is an adult. He can only afford to pay for membership on a monthly basis. He plans to use the pool for 14 months until he goes overseas. How much money would he save altogether by paying by automatic bank payments compared with paying cash each month?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

places along the east coast of Australia. Use the chart and map to work out these costs:

- a carton weighing 4.5 kg across town \_\_\_\_\_
- a carton weighing 6.8 kg to Cairns \_\_\_\_\_
- a carton weighing 12.1 kg to Townsville \_\_\_\_\_
- a carton containing six 700-g books to Ballarat \_\_\_\_\_
- two cartons—one weighing 4.6 kg and the other weighing 9.3 kg—to Wagga Wagga \_\_\_\_\_

Regular post (kg)	Across town	NSW	Vic/Qld (Zone 1)	Qld (Zone 2)
0–500 g	\$2.30	\$4.00	\$4.00	\$4.00
500 g–1 kg	\$2.30	\$5.80	\$7.50	\$8.65
1–2 kg	\$3.50	\$6.10	\$8.00	\$10.30
2–3 kg	\$3.50	\$6.40	\$8.50	\$11.95
3–4 kg	\$3.50	\$6.70	\$9.00	\$13.60
4–5 kg	\$3.50	\$7.00	\$9.50	\$15.25
5–6 kg	\$3.50	\$7.30	\$10.00	\$16.90
6–7 kg	\$3.50	\$7.60	\$10.50	\$18.55
7–8 kg	\$3.50	\$7.90	\$11.00	\$20.20
8–9 kg	\$3.50	\$8.20	\$11.50	\$21.85
9–10 kg	\$3.50	\$8.50	\$12.00	\$23.50

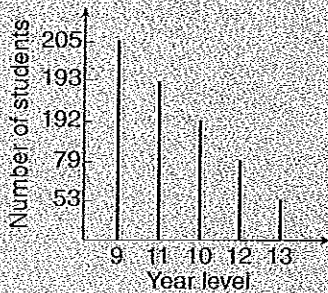


- The following chart gives prices for sending packets by regular post from Sydney to various

# 8:07 Misuse of Graphs

Outcome DS 4.1

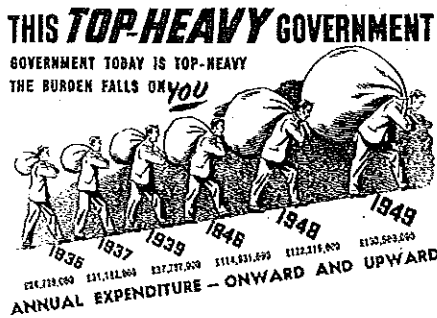
This graph gives information about the number of students at each level at a high school.



It is misleading because:

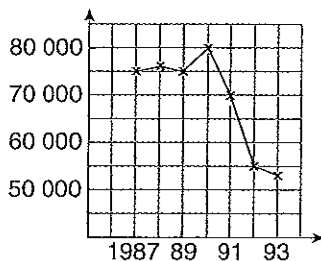
- the heights of the columns are not proportional to the number of students
- the scale on the vertical axis is uneven
- the year levels are in the wrong order.

**1** Political advertising has often been misleading—even 50 years ago!



Explain how this National Party campaign advertisement in 1949 about the costs of government is misleading.

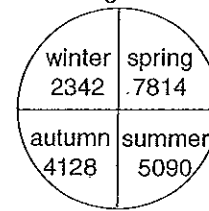
**2** Dramatic drop in new car registrations



In 1991 there was a steep decrease in new car registrations. What feature of the graph exaggerates this fall?

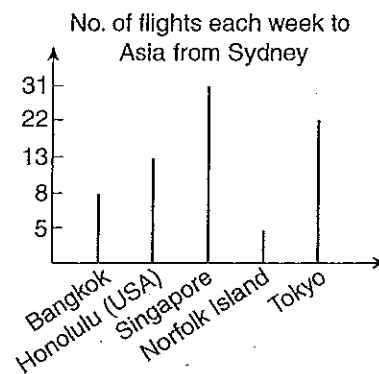
**3** Visitors to garden centre

Visitors to garden centre



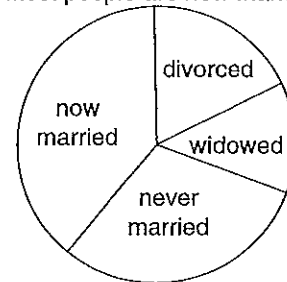
Explain how this sector graph is misleading.

**4** Describe what is misleading about this graph. It may have more than one misleading feature.



**5** This sector graph shows the marital status of 100 people chosen at random.

Most people are now married



Explain why the title is misleading.

**6** Explain what is misleading or wrong about this advertisement.




**Brightspark**  
battery charger

Lifetime guarantee





Student Name Lina Salem Class 

Score

Parent Signature [Signature] Date 15/6

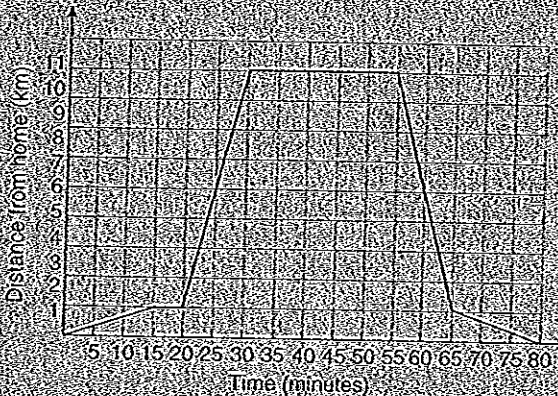
## 8:05 Travel Graphs

Outcome DS 4.1

A special kind of two-dimensional graph is one that shows travel or a journey of some kind.

The time scale is on the horizontal axis, and the distance travelled is shown on the vertical axis.

**Example:** This graph shows a student's journey from home into town and back one day via a bus stop.

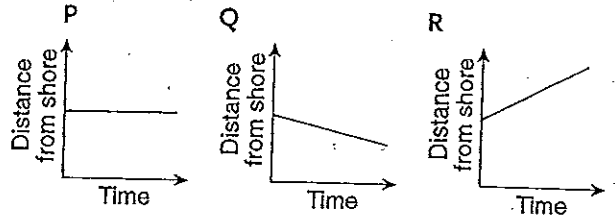


- How far is it from home to the bus stop?
- How far did the student travel by bus into town?
- How long did the student have to wait at the bus stop?
- How many minutes did the student spend in town?
- The bus travels 10 km in 10 minutes. How far would it travel in 60 minutes?
- What is the speed of the bus in km/h?

**Answer:**

- 1 km
- 10 km (worked out from the difference between 11 km and 1 km on the vertical axis)
- 5 minutes (worked out from the difference between 20 minutes and 15 minutes on the horizontal axis)
- 25 minutes (worked out from the difference between 55 minutes and 30 minutes on the horizontal axis)
- 60 km
- 60 km in 60 minutes (one hour) is 60 km/h

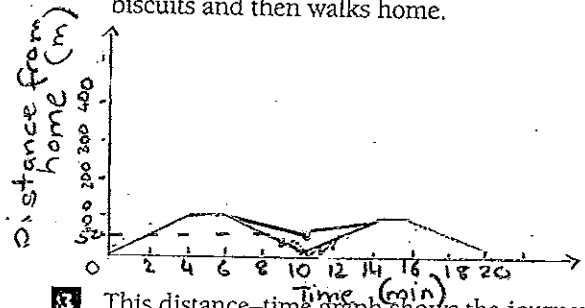
**1** Michael is swimming at a lake. These graphs (P, Q and R) show his distance from the shore as time goes by.



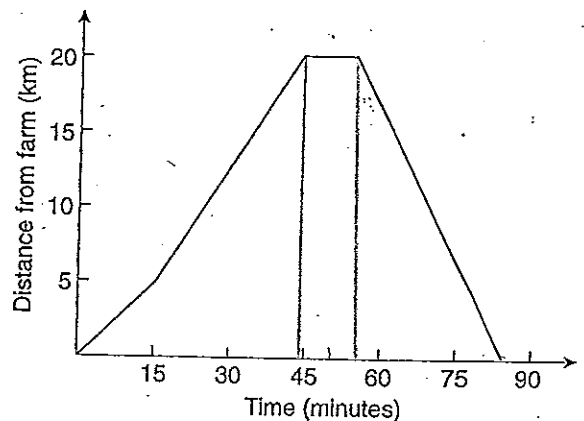
- Which graph shows he is moving closer to the shore as time goes by? Q
- Which graph shows he is moving away from the shore as time goes by? R
- Which graph shows he is staying the same distance from the shore as time goes by? P

**2** Draw a distance time graph for the following. Graph the time on the horizontal axis and the distance from home on the vertical axis.

Iona walks from home to the dairy. Here she buys some milk and heads back towards home. Halfway back she realises she forgot to buy biscuits, so she returns to the dairy, buys the biscuits and then walks home.



**3** This distance-time graph shows the journey of a cyclist from a farm to the shops at Tamworth and back.



a How far is the farm from Tamworth?

20 km ✓

b For how long was the cyclist away from home?

approx. 85 mins ✓

c For how long was the cyclist at the shops?

10 mins ✓

d These are the calculations for the speed on the way back:

$$\text{Speed} = \frac{\text{distance}}{\text{time}} = \frac{20 \text{ km}}{30 \text{ min}} = \frac{20 \text{ km}}{\frac{1}{2} \text{ hour}}$$

$$= 40 \text{ km/h}$$

Write down some working to explain where the number 30 comes from in this calculation.

85 - 55 = 30 min ✓

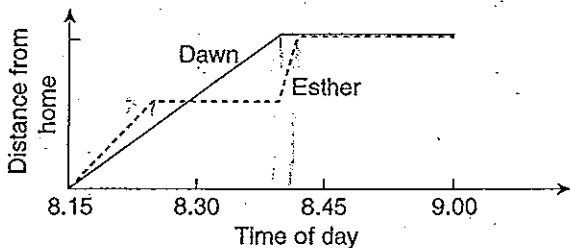
e The first part of the journey was 5 km and took 15 minutes. Calculate the speed for this part in km/h.

$$\text{Speed} = \frac{5}{15 \text{ mins}} = \frac{1 \text{ km}}{3 \text{ mins}} = 0.3 \text{ km/hr}$$

f Explain how the graph shows that the cyclist was travelling faster on the way back.

The graph shows that the cyclist was travelling faster on the way back because the line is steeper.

4 The Thompson twins (Dawn and Esther) both leave home at 8.15 a.m. to walk to school. School starts at 8.40 a.m. One of the twins stops at a friend's place on the way.



a Which twin arrives at school first?

Dawn ✓

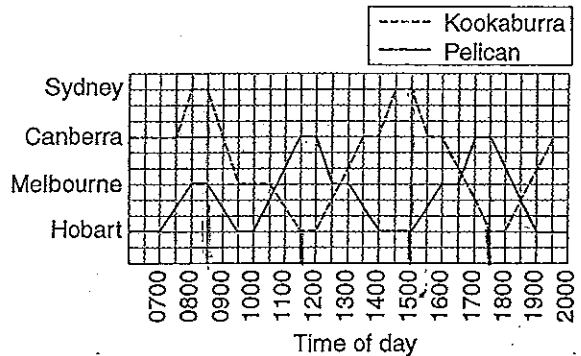
b Which twin stops at a friend's place, and for how long?

Esther, for approx. 20 mins ✓

c Which twin walks faster? Explain how the graph shows this.

Esther walks faster because she arrived at school only 5 mins after Dawn even though she stopped at her friend's house. Gradient is steeper.

5 A small airline operates two planes, named Kookaburra and Pelican, between Hobart, Melbourne, Canberra and Sydney.



a There is one flight a day from Sydney to Canberra. When does it leave Sydney?

It leaves at 3:00. ✓

b How long does it take to fly from Sydney to Melbourne?

1 hr ✓

c How many direct flights are there from Hobart to Canberra each day?

3 ✓

d Which route is faster when flying from Sydney to Hobart—via Melbourne or via Canberra?

Via Canberra ✓

e Where are the planes kept overnight?

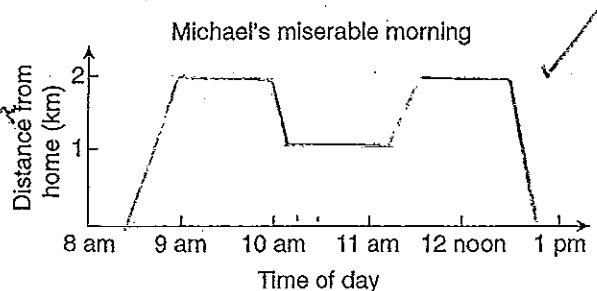
Hobart ✓

f Are the planes ever timetabled to be at the same airport at the same time? Explain.

Yes, the Kookaburra & the pelican at some time are at the same airport.

6 Michael walked to school (a distance of 2 km), leaving home at 8.30 a.m. and arriving at school at 9 a.m. At 10 a.m. he left school to go to a dentist's appointment. The dentist is halfway between school and home. The appointment was for an hour. He arrived back at school at 11.30 a.m. At 12.15 p.m. he felt sick, and was collected by one of his parents at 12.30 p.m. The drive home took 5 minutes.

On this diagram, draw a distance-time graph to show Michael's distance from home between 8 a.m. and 1 p.m.





# Graphs and Tables 6

Student Name <u>Lina Salem</u>	Class	Score
Parent Signature	Date	

## 8:06 Reading Tables

Outcome DS 4.1

### Swimming pool fees

PRICES (inclusive of GST)	
<b>SWIM</b> (includes Sauna, Steam, Spa)	
<b>ADULT CASUAL</b>	<b>OR Monthly payment option</b>
1 month \$4.00	Joining fee \$50.00
3 months \$36.00	Monthly automatic payments from your bank account (minimum 12 months) <u>\$27.00</u>
6 months \$100.00	
12 months \$190.00	
<b>CHILD (under 15 years) &amp; SENIOR (over 60 years)</b>	<b>STUDENT (ID required)</b>
CASUAL \$2.00	CASUAL \$3.00
1 month \$18.00	1 month \$27.00
3 months \$50.00	3 months \$65.00
6 months \$95.00	6 months \$120.00
12 months \$180.00	12 months \$220.00

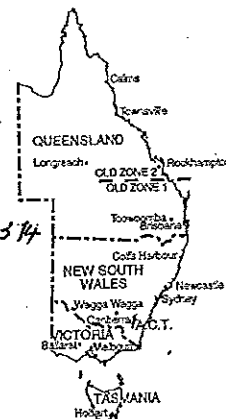
- a How much does it cost an adult and a child to go for a single swim? \$6 ✓
- b How many times would a person need to go to the swimming pool *each month* to save money by paying monthly rather than per swim?  
10 times ✓
- c Wei-Lin turns 15 in six months' time. She is a student at high school. Explain whether she should pay for six months' child membership and then six months' student membership, or pay for twelve months' student membership.  
95 + 120 = \$215 (6 months child + 6 months student)  
\$220 = (12 months student)  
She should pay for 6 months child then 6 months student as it is cheaper.

- d Troy is an adult. He can only afford to pay for membership on a monthly basis. He plans to use the pool for 14 months until he goes overseas. How much money would he save altogether by paying by automatic bank payments compared with paying cash each month?  
36 - 27 = \$9 *add joining fee* → \$50 + 27 × 12 = \$374  
9 × 14 = \$126 36 × 14 = 504  
∴ \$126 is how much he would save. Savings \$504 - \$374 = \$130

places along the east coast of Australia. Use the chart and map to work out these costs:

- a a carton weighing 4.5 kg across town (within Sydney) \$3.50 ✓
- b a carton weighing 6.8 kg to Cairns \$18.55 ✓
- c a carton weighing 12.1 kg to Townsville \$26.80 ✓
- d a carton containing six 700-g books to Ballarat \$9.50 ✓
- e two cartons—one weighing 4.6 kg and the other weighing 9.3 kg—to Wagga Wagga \$15.50 ✓

Regular post (kg)	ACROSS TOWN	NSW	Vic/Qld (Zone 1)	Qld (Zone 2)
0-500 g	\$2.30	\$4.00	\$4.00	\$4.00
500 g-1 kg	\$2.30	\$5.80	\$7.50	\$8.65
1-2 kg	\$3.50	\$6.10	\$8.00	\$10.30
2-3 kg	\$3.50	\$6.40	\$8.50	\$11.95
3-4 kg	\$3.50	\$6.70	\$9.00	\$13.60
4-5 kg	\$3.50	\$7.00	\$9.50	\$15.25
5-6 kg	\$3.50	\$7.30	\$10.00	\$16.90
6-7 kg	\$3.50	\$7.60	\$10.50	\$18.55
7-8 kg	\$3.50	\$7.90	\$11.00	\$20.20
8-9 kg	\$3.50	\$8.20	\$11.50	\$21.85
9-10 kg	\$3.50	\$8.50	\$12.00	\$23.50

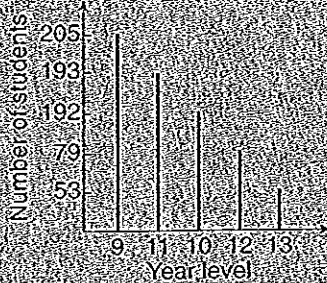


### 2 The following chart gives prices for sending packets by regular post from Sydney to various

# 8:07 Misuse of Graphs

Outcome DS 4.1

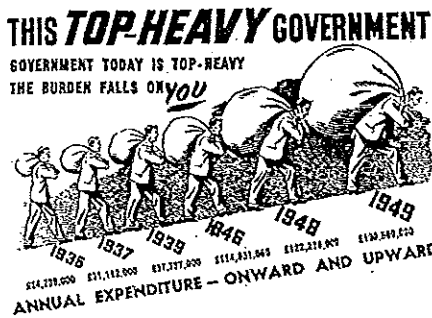
This graph gives information about the number of students at each level at a high school.



It is misleading because:

- the heights of the columns are not proportional to the number of students
- the scale on the vertical axis is uneven
- the year levels are in the wrong order

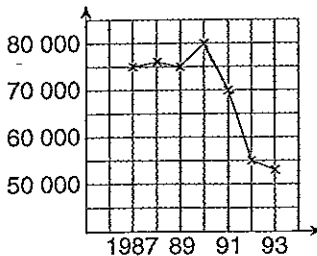
1. Political advertising has often been misleading—even 50 years ago!



Explain how this National Party campaign advertisement in 1949 about the costs of government is misleading.

The years aren't in increasing order.

2. Dramatic drop in new car registrations

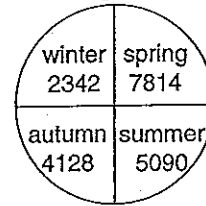


In 1991 there was a steep decrease in new car registrations. What feature of the graph exaggerates this fall?

Sharp drop + \$10,000 decrease.

3. Visitors to garden centre

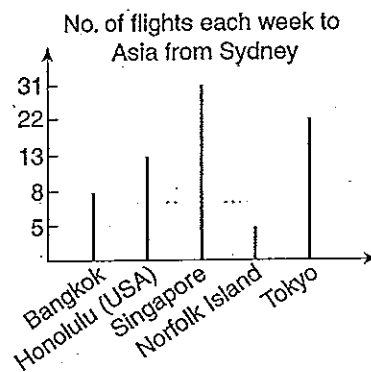
Visitors to garden centre



Explain how this sector graph is misleading.

The graph is not divided into the correct proportions.

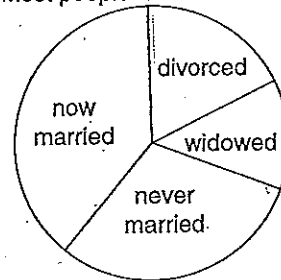
4. Describe what is misleading about this graph. It may have more than one misleading feature.



The scale of the vertical axis is uneven.

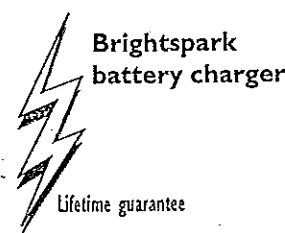
5. This sector graph shows the marital status of 100 people chosen at random.

Most people are now married



Explain why the title is misleading. It is misleading because it doesn't give enough details on how recent the survey is.

6. Explain what is misleading or wrong about this advertisement.



"Lifetime Guarantee" is a misleading statement.