

Learning about line graphs

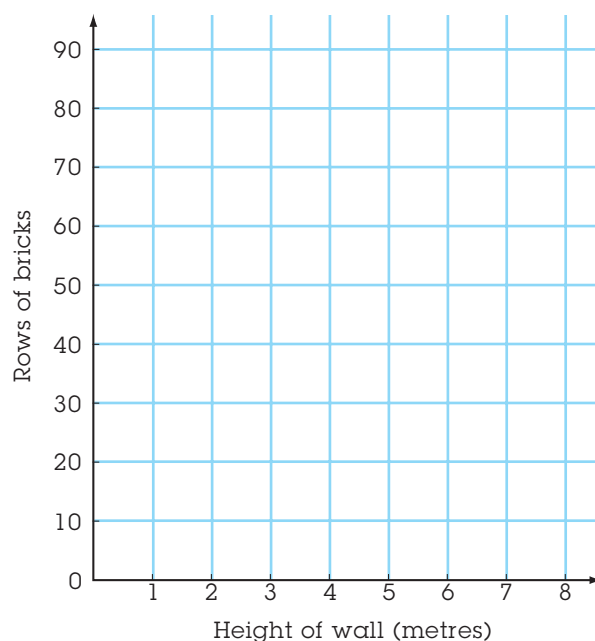
Find a brick wall at your school. Use a metre ruler and a piece of chalk to mark 1 metre in height on the wall. Count how many rows of bricks there are in 1 metre. Use this information to complete the table.

Height of wall (m)	Rows of bricks
0	
1	
2	
3	
4	



Answers will vary.

- 1 Give your graph a title.
- 2 Plot the points from your table with a small dot on the graph. Join the dots to each other using a ruler.
- 3 Extend the line on the graph and use this to work out how many rows of bricks would be in the wall if it was 7 metres in height.



- 4 If the wall had 64 rows of bricks, how high would it reach?

- 5 From the graph, calculate the width of each brick in the wall.

- 6 Do you expect that all brick walls would produce the same graph? Give a reason.

Different sized bricks will give different graphs.



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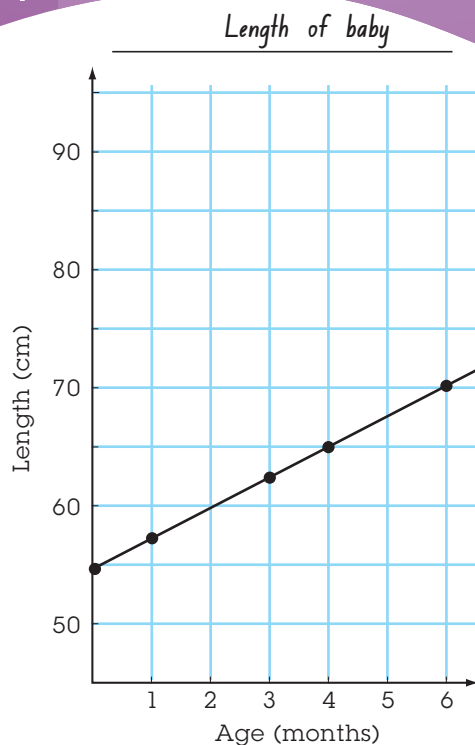
Find another brick wall made with different bricks. Complete the above activity, graphing the values for this second brick wall in a different colour. Compare the two graphs. How are they the same? How are they different?

MiB 3
Card 71

Constructing line graphs

- 1** The length of a baby was recorded over the first 6 months of its life. The results are shown in the table. Graph this data on the set of axes provided. Give the graph a title.

Age of baby	Length of baby
1 month	57 cm
3 months	63 cm
4 months	65 cm
6 months	70 cm



- a** Explain why this graph should not have a dot where the two axes meet.

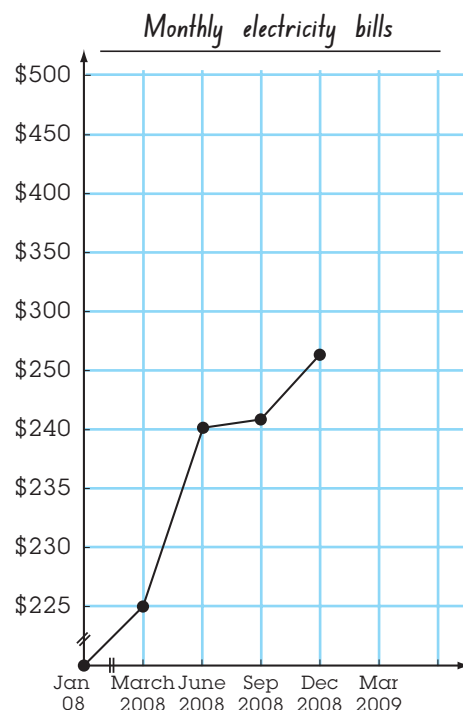
The axes meet at (0,0) implying that at age 0, the baby would be at length 0cm.

- b** Extend the line of your graph and use it to find the approximate length of the baby at birth.

At birth, the baby would have been approximately 55cm long.

- 2** The amount the Wilson family paid for electricity in 2008 is shown in the table.

Date	Electricity bill
March 2008	\$225.00
June 2008	\$240.50
September 2008	\$241.00
December 2008	\$265.50



- a** Give the graph a title.
- b** Label the axes and complete the scales.
- c** Graph the data from the table and connect each point by a line.
- d** Does it make sense for the point where the axes meet to be included in the data? If so, add it to the graph.

Line graphs

1 Use the graph to answer the questions.

a What data is this graph displaying?

Motor vehicle thefts

b Suggest a reason for the large result for March 2010.

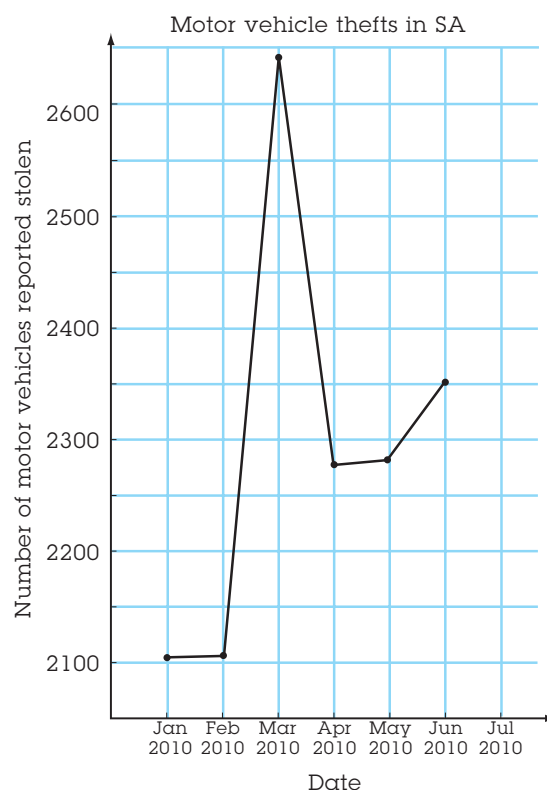
Cars left unattended during the state election

c The value for July 2010 was 2250. Add this to the graph.

d Given this data, would you say the level of this crime is rising, falling or staying constant? Give a reason for your answer.

Rising. It has gone up between January and July.

and may continue increasing.



Use the internet to find some other crime statistics for your local area and graph them using a spreadsheet. Is crime in your area on the rise?

2 Indicate with a tick (✓) which of the following should be represented on a line graph.

- The number of people that attend football matches each season
- The cost of milk over the last 100 years
- Height against weight
- The temperature of water as it is heated
- The favourite cartoon characters of Year 6 students
- Travel destinations of Australians
- Profit against the number of items sold
- Number of lollies eaten against number of packets opened

3 How is data that is graphed in a line graph different to data that is graphed in a column or sector graph?

The data is always numerical.

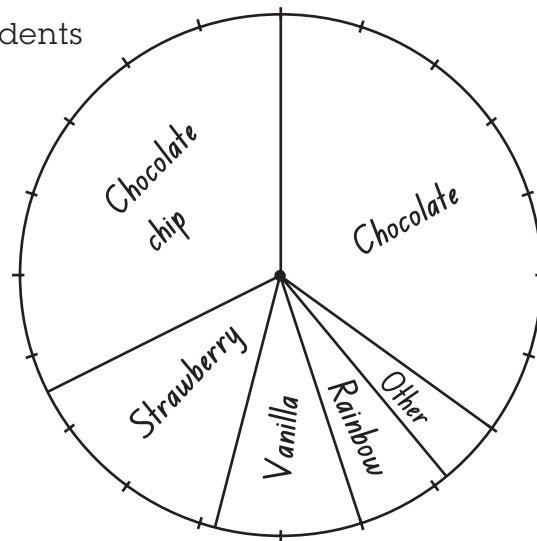
Constructing pie (sector) graphs

Construct pie (sector) graphs from the following data.

1 The favourite ice-cream flavours of 6 students



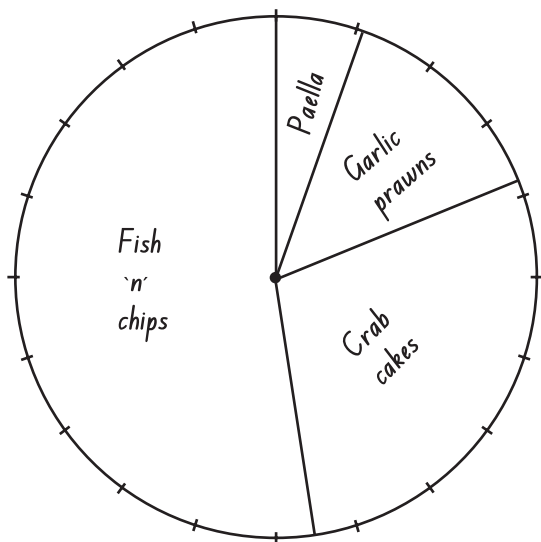
Chocolate	35%
Chocolate chip	33%
Strawberry	13%
Vanilla	9%
Rainbow	6%
Other	4%



Key:

Students' answers will vary

2 Seafood dishes ordered at a local restaurant



Key:

Students' answers will vary

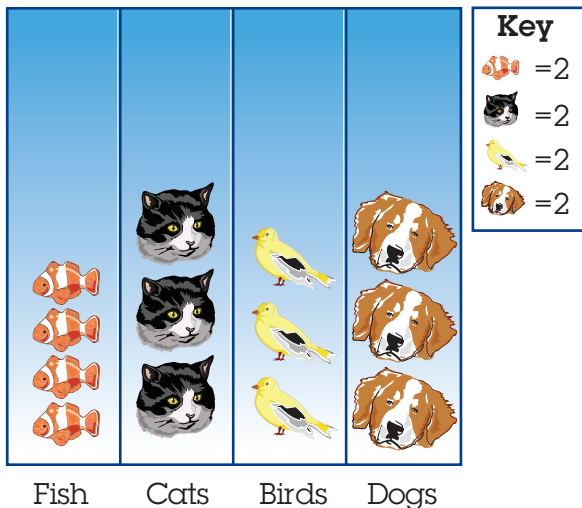
Dish	Number ordered	Percentage
Seafood paella	2	$\frac{2}{36} \times 100 = \underline{5.6} \%$
Fish 'n' chips	19	$\frac{19}{36} \times 100 = \underline{52.7} \%$
Crab cakes	10	$\frac{10}{36} \times 100 = \underline{27.7} \%$
Garlic prawns	5	$\frac{5}{36} \times 100 = \underline{13.9} \%$
Total	36	$\underline{100} \%$

Answer may vary due to rounding

Misleading graphs

Look at each of the graphs below. In each graph, identify one feature that makes the graph misleading, and explain why it is misleading.

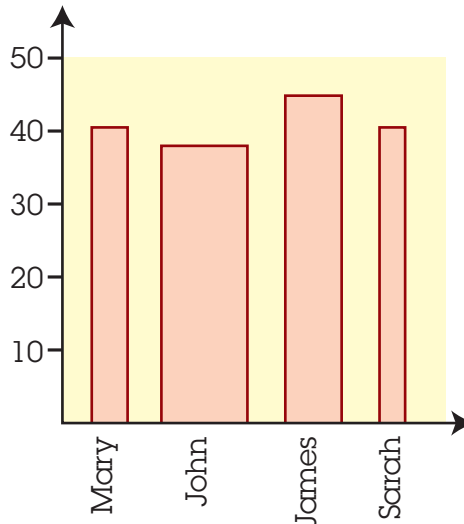
1 Pets owned



Understanding the key

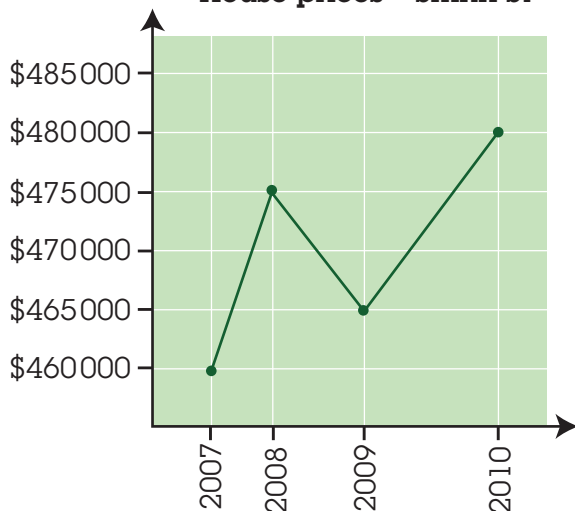
could be difficult

2 Total days absent from school



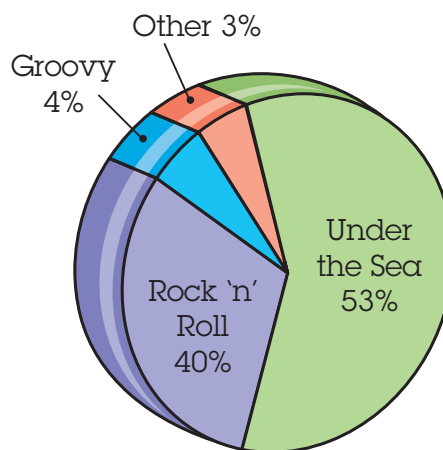
Bars are of various widths

3 House prices – Smith St



Inaccurate key (x-axis)

4 Fancy-dress theme preferences



'Under the Sea', with 53%, is taking up a too great proportion of the circle.

Constructing stem and leaf plots

Use the data provided to complete the stem and leaf plots.

- 1** The numbers in bold have been placed on the stem and leaf plot for you. Place the other numbers into the correct positions.

Data:		
106	84	60
75	62	105
112	117	63
78	88	117
117	88	113
81	117	117

6	0	2	3				
7	5	8					
8	1	4	8	8			
9							
10	5	6					
11	2	3	7	7	7	7	7

- 2** Place the data below into the stem and leaf plot

Data:		
231	226	207
190	209	220
232	219	203
218	220	208
205	220	228
192	203	234

19	0	2				
20	3	3	5	7	8	
21	8					
22	0	0	0	6	8	
23	1	8	4			
24						

- 3** Use the data below to construct a stem and leaf plot.

Data:		
300	293	281
289	294	302
283	288	314
257	307	299
301	312	297
281	292	286

25	7					
28	1	1	3	6	8	9
29	2	3	4	7	9	
30	0	1	2	4	7	
31	2					

Samples and populations

1 Identify the population and an example of a sample that could be collected to answer each of these questions

a How many mature fish are in a large lake?

Population: Fish in the lake

Sample: Fish caught by a fishing boat in one day

b What insects live in your backyard?

Population: Insects found in your backyard

Sample: Insects caught in a box left out overnight

c Should a new skate park be built in your suburb?

Population: People who live in your suburb

Sample: Survey sent to every house in the suburb

d Which dog breed is the most popular in Australia?

Population: Dog breeds found in Australia

Sample: Survey of people attending a dog show

2 For each situation listed below decide if a census or a sample is the most appropriate way to collect the data required.

a The average number of apples on a tree: Sample

b The number of grains of rice in a 100 g packet: Sample

c A change to Australia's constitution: Census

d The number 1 song this week in Australia: Census

e The most watched show on TV at 7:30 p.m. Friday: Census

3 Are the samples that have been taken in each situation below appropriate? Why? Why not?

a How should Year 6 celebrate their graduation?

Sample: Parents present at a 'Parents and Friends' meeting.

No-should ask the students, not their parents.

b What is the best children's book of the year?

Sample: Librarians from public libraries.

No-should ask people who actually read children's books.