

## Statistical Graphs

Statistics is concerned with the collection, presentation and analysis of quantities of information and data.

This information can then be used to make conclusions and predictions.

Once data has been collected, it can be shown in tables and graphs.

The following types of graph can be used. Care must be taken to ensure that each graph has a title, labelled axes and appropriate scales, with units where necessary.

Pictographs

Column  
Graphs





Pie Graph

Time Series

To show the various types of graphs, the following set of data will be used to show how a group of school pupils travel to school.

Means of transport	Bus	Car	Foot	Bicycle
Number of pupils using this type of transport	24	6	18	12

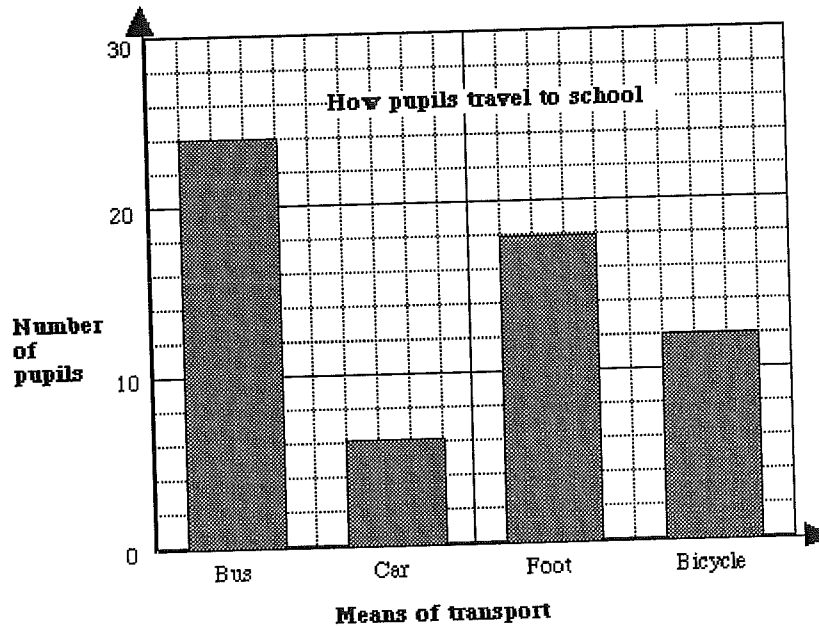
### Pictographs

<p>Pictographs represent the information with pictures.</p> <p><b>How pupils travel to school</b></p> <p>Scale: Each picture represents 6 pupils</p>		Bus
		Car
		Foot
		Bicycle

### Column graph

(This is sometimes called a **bar** or **block** graph.)

- The height of the column is proportional to the number of times each event occurs.
- The thickness of each column is the same.
- The bars could also be drawn horizontally.



## Pie graph

This is sometimes called a pie chart or sector graph.

- A circle is divided into sectors. The angle of each sector represents the fraction each event is out of the total number of events.
- Pie graphs require calculations and the use of protractors.

In our example, as there are 60 people, each person is shown by  $360^\circ \div 60 = 6^\circ$

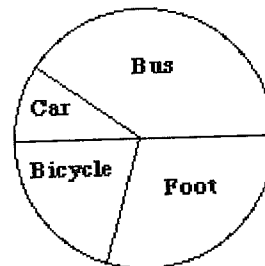
This means that:

Bus needs an angle of  $24 \times 6^\circ = 144^\circ$

Car needs an angle of  $6 \times 6^\circ = 36^\circ$

Foot needs an angle of  $18 \times 6^\circ = 108^\circ$

Bicycle needs an angle of  $12 \times 6^\circ = 72^\circ$



## Time Series

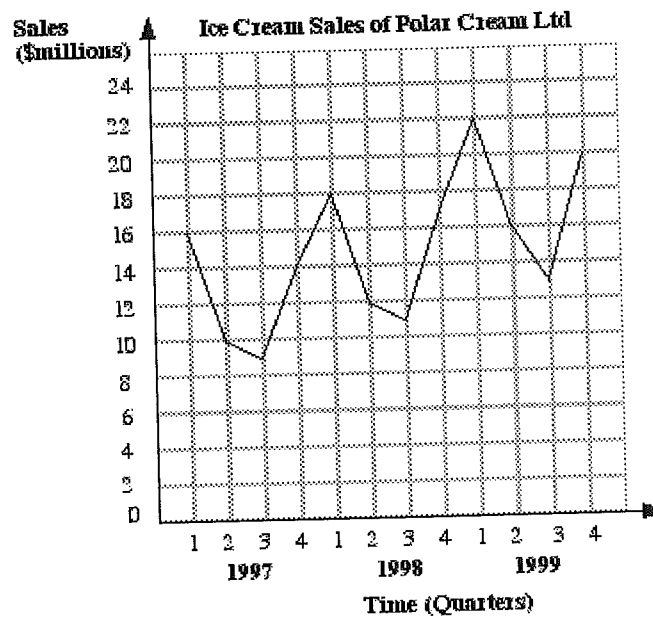
A **time series** graph is a line graph of repeated measurements taken over regular time intervals.

**Time** is always shown on the horizontal axis.

On **time series** graphs data points are drawn at regular intervals and the points joined, usually with straight lines.

**Time series** graphs help to show **trends** or patterns.

e.g. Polar Cream Ltd, an ice cream company, shows its sales over the past three years, taken every three months, on the time series graph below. (Quarter 1 is for January, February and March)



From the graph it can be seen that ice cream sales are seasonal (high in summer-low in winter).

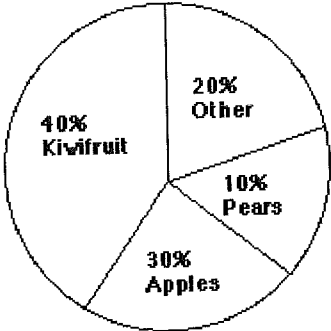
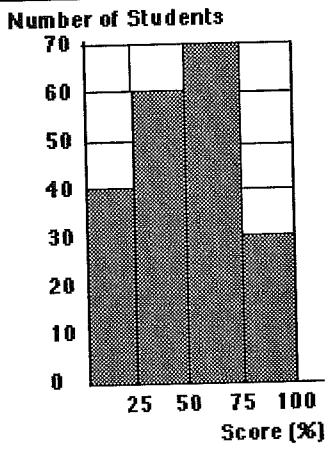
There would also seem to be a trend towards higher sales each year.



## Statistical Graphs

### Unit Test #48

Select your answers to the following 10 questions from the pop-up menus in the right hand column. When you are satisfied with your answers, fill in your name in the space provided below the test, and click the "Submit Test" button. Clicking the "Begin Test Again" button will clear all the answers.

<p><b>Q1:</b></p>	 <p>What type of graph is this?</p>	<p>A. Bar graph B. Pictograph C. Pie graph D. Histogram</p>	<p>Answer 1:</p>	<input type="text"/>
<p><b>Q2:</b></p>	<p>In the graph in question 1, the angle at the centre of the "Pears" sector should be</p>	<p>A. 10° B. 18° C. 36° D. 45°</p>	<p>Answer 2:</p>	<input type="text"/>
<p><b>Q3:</b></p>	<p>If 200 people were asked their favourite fruit and the results shown in the pie graph in question 1, how many prefer Apples?</p>	<p>A. 80 B. 60 C. 30 D. 90</p>	<p>Answer 3:</p>	<input type="text"/>
<p><b>Q4:</b></p>	 <p>The graph shows the test scores of 200 students.</p>	<p>A. Pictograph B. Pie chart C. Bar graph D. Line graph</p>	<p>Answer 4:</p>	<input type="text"/>

	What type of graph is it?			
Q5:	In the graph in question 4, the fraction of students who scored between 25% and 50% is	A. $\frac{1}{4}$ B. $\frac{1}{2}$ C. $\frac{3}{10}$ D. $\frac{2}{5}$	Answer 5:	<input type="checkbox"/>
Q6:	In the graph in question 4, how many students scored over 50 marks?	A. 100 B. 70 C. 130 D. 60	Answer 6:	<input type="checkbox"/>
Q7:	In a pie graph showing a survey of 180 people, 100 say "Yes" to tax increases. What would the angle be at the centre of the circle for the "Yes" sector?	A. $100^\circ$ B. $180^\circ$ C. $200^\circ$ D. $260^\circ$	Answer 7:	<input type="checkbox"/>
Q8:	In a pictograph each picture represents 21 items. How many items would 7 pictures represent?	A. 3 items B. 14 items C. 147 items D. 28 items	Answer 8:	<input type="checkbox"/>
Q9:	What sort of graph would be best to show the results of a "Yes"/"No" type question?	A. Line graph B. Bar graph C. Histogram D. Pie Chart	Answer 9:	<input type="checkbox"/>
Q10:	Which type of graph is also called a sector graph?	A. Histogram B. Bar graph C. Line Graph D. Pie Chart	Answer 10:	<input type="checkbox"/>

Enter your initial and surname here:

Submit Test    Begin Test Again

## Statistical Graphs

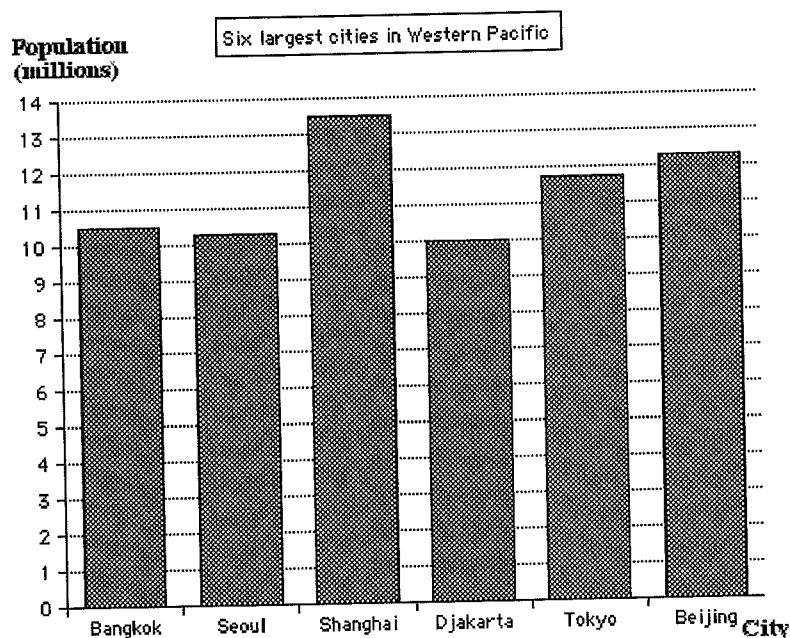
1. The weather in Sydney for 36 days was recorded as follows:

Type of weather	Cloudy	Rainy	Sunny	Thunder
Number of days	16	8	10	2

Show this information on the following graphs (label each one clearly):

- A pictograph
- A column graph
- A pie chart

2. Study the graph and answer the following questions:



- Which is the largest city and what is its population?
- What is the smallest city?
- What is the difference between the highest and lowest populations?
- How many cities have populations greater than 11 million?
- How many cities have populations between 11 and 13 million?

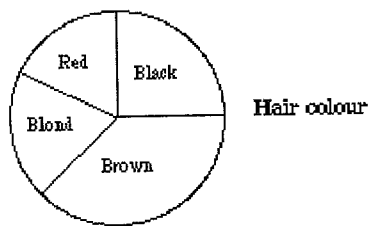
3. The favourite winter sports of a class of students are shown in the table.

<b>Netball</b>	5
<b>Rugby</b>	8
<b>Hockey</b>	10
<b>Soccer</b>	7

Show this data on:

- (a) A pictograph
- (b) A bar graph
- (c) A sector graph

4. Measure the angles in the pie graph and calculate the number of people with each colour of hair.



There are 144 people in the group.



## Statistical Graphs

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2. (a) Shanghai with 13.5 million

(b) Djakarta

(c) 3.5 million

(d) 3 cities

(e) 2 cities

4. Black  $90^\circ$ , Red  $65^\circ$ , Blond  $65^\circ$ , Brown  $140^\circ$

Black 36, Red 26, Blond 26, Brown 56