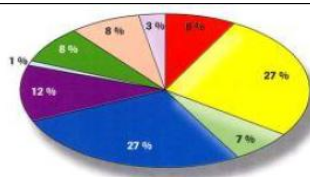## Describing charts and graphs

Today a lot of presentations, reports and newspaper articles contain graphs, tables or charts. There are many different types of data charts and graphs, the most popular ones being pie charts, line graphs, flow charts, bar charts, diagramsetc. They are used to visually represent data in the same proportion as the numerical data in a table. During a presentation or even in a report, a graph or a chart is normally accompanied by an explanation of how to interpret the data. Graphs or charts help people understand data quickly. You can use them to make a comparison or show a trend.

Types of chart : There are different types of charts, as you can see here.
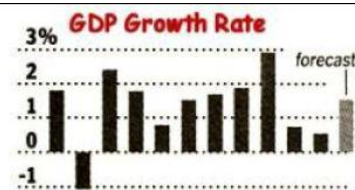
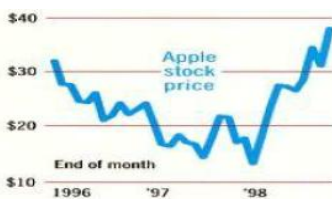| A **flow chart** is a diagram showing the progress of material through the **steps** (or s*tages*) of a manufacturing **process** or the succession of operations in a complex activity	A **pie chart** displays the *size* of each part as a percentage of a **whole**.	A (vertical or horizontal) **bar chart** is used to compare *unlike* (*different*) items
A **line chart** depicts changes over a period of time, showing data and trends	A **table** is a convenient way to show large amount of *data* (*sing. datum*) in a small space	A **diagram** is a drawing showing arrangements and situations, such as **networks**, distribution, fluctuation ...
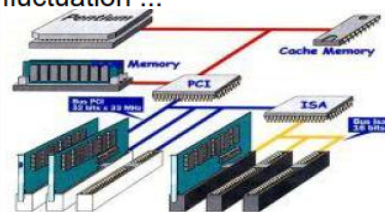
For example These charts show information about tourism in Europe.

A line graph shows how something develops over time. This one shows how many tourists visited Spain, Italy, Portugal and Greece from 1970 to 2006.

A bar chart compares two different aspects and shows which is bigger (or smaller). This one compares the numbers of tourists and inhabitants in Majorca with each other.

A pie chart shows how an aspect is divided into different parts or sectors.This one shows the percentage of different nationalities of tourists visiting Majorca in 2001.
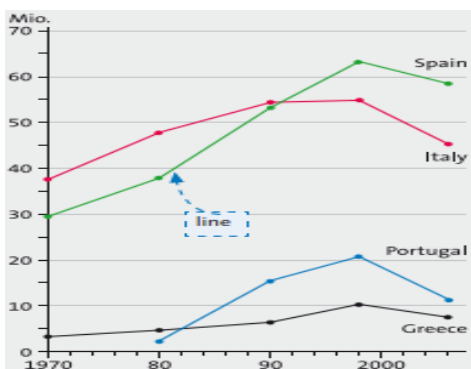
1 Line graph: Foreign tourists in southern Europe
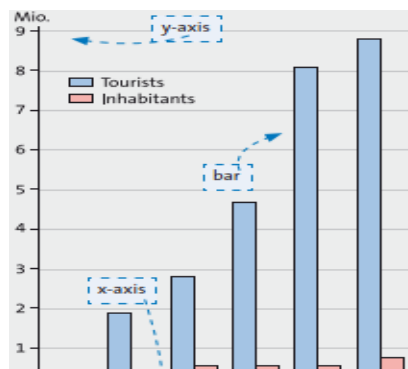
3 Bar chart: Tourists visiting Majorca

2 A pie chart: Domestic and foreign tourists in Majorca in 2001

Language used to describe charts and graphs.(Vocabulary for describing graphs)
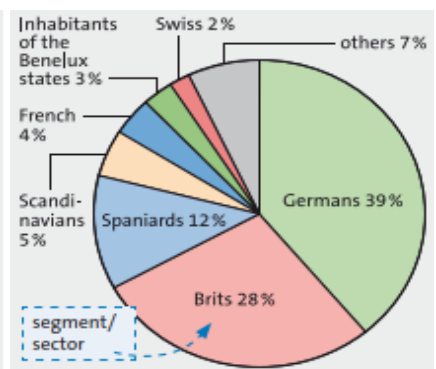
GOING UP

- **Verbs** rise, increase, grow, go up, improve, jump, surge, shoot up , soar, rocket

- **Nouns** a rise, an increase, growth, an upward/rising/increasing trend, an improvement, a jump, a surge

GOING DOWN

– **Verbs** fall, decrease, drop, decline, go down, slump, plummet

– **Nouns** a fall, a decrease, a decline, a downward/falling/decreasing trend, a slump

NO CHANGE

– **Verbs** remain stable/constant, stay at the same level, stabilize

FREQUENT CHANGE Up and Down

- **Verb** fluctuate, zig-zagged, flutter   – **Noun** – fluctuation, zig-zag

AT THE TOP – Verbs reach a peak, peak., reach its/their highest point

AT THE BOTTOM – Verbs reach/hit a low (point), hit/reach its/their lowest point

LOW POINTS - bottomed out, reached a low

CHANGE

Adjectives:

Big changes: dramatic, considerable, sharp, significant, rapid, sudden

Small changes: moderate, slight, steady, gradual, slow, gentle

Adverbs:

Big changes: dramatically, considerably, sharply, significantly, rapidly, suddenly

Small changes: moderately, slightly, steadily, gradually, slowly, gently

Prepositions:

a rise **from** £725 **to** £825

to increase **by** 2.1 %

an increase **of** 2.1 % in the crime rate

Useful phrases when describing

☐ The slices of the pie chart compare the ... ☐ The chart is divided into ... parts. ☐It highlights ...

☐ ... hasthe largest (number of) ... ☐ .. has the second largest (number of) ... ☐ ... is as big as ...

☐ ... is twice as big as ... ☐ ... is bigger than ... ☐ more than ... per cent ... ☐ only one third...

☐ less than half ... ☐ The number ... increases/goes up/grows by ... ☐ The number ...decreases/goes down/sinks by ... ☐ The number ... does not change/remains stable

☐ I was really surprised/shocked by the ... ☐So we can say

Useful introductory expressions:

The graph shows / indicates / depicts / illustrates From the graph it is clear It can be seen from the graph As can be seen from the graph, As is shown / illustrated by the graph, Example: The graph shows the percentage of children using supplements in a place over a year.

Useful time expressions:

over the next... / for the following... (for the following two months... over the next six months...) from ... to / between ... and (from June to August... between June and August...) during (during the first three months...)

Follow these steps

Step 1: Description What kind of graph (line graph, bar chart, pie chart) is it?What do the title, key, axes, labels, sectors tell you? What are major changes/differences you can see?

– The chart shows that …– … remains constant

– More / Less that half of … – Over / Nearly twice as many/three times as many …

– … reached a peak of …

Step 2: **Interpretation** What are the reasons for changes/differences you described? What are main points/aspects you get from the chart?– If you compare the figures for … and …, you can see …

– … shows a(n) increase / decrease /steady growth / slight rise/ …– an all-time-high/low

Step 3: Conclusion

What do the results tell you about the topic?Are there any missing information (research the topic in your geography book, on the Internet, etc.)?– The chart doesn't say anything about …

Exercise: Language for graphs

This exercise focuses on some basic language, which you need to describe graphs. you will find some verbs frequently used in the description of graphs and charts. Find out what their meaning is and hopefully you will be able to use them next time you have a presentation or you need to write a report.
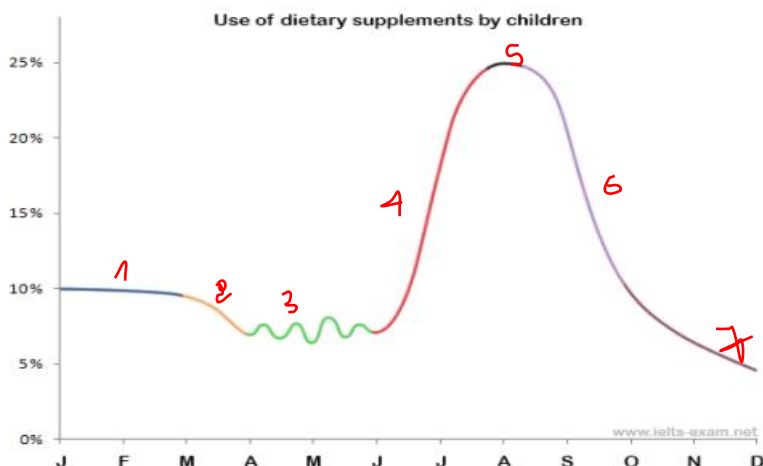
01 remain (-ed, -ed), unchanged, steady, stable, constant, plateau, fixed/static

From January to March the percentage of children using supplements remained fairly static at approximately 10%.

The percentage of children taking dietary supplements was relatively stable during the first two months of the year.

During the first two months, supplement use remained fairly unchanged.

02 fall (fell, fallen), decrease (-ed, -ed), drop (dropped, dropped), plunge (-ed, -ed), decline (-ed, -ed) slight (slightly), steady (steadily), gradual (gradually), gentle (gently), slow (slowly) downward trend

It then fell gradually in March**. There** was a slight decrease in the use of dietary supplements in March**. The graph** shows a slight decrease in March. Supplement use experienced a steady decrease in March. **Supplement** use decreased slightly in March.

03 fluctuate (-ed, -ed) wildly

It went up and down widely over the next two months. **It** fluctuated for the following two months**.**

04 rise (rose, risen), grow (grew, grown), climb (-ed, -ed), shoot up (shot up, shot up) dramatic (dramatically), sharp (sharply), significant (significantly), rapid (rapidly) upward trend

There was a significant increase in the percentage of children taking dietary supplements between June and August. **The period** between June and August saw a dramatic growth in the use of dietary supplements. **Between June and August,** the percentage of children taking dietary supplements shot up dramatically. **The greatest** rise was from June to August when it rose by 22% for two consecutive months from June to August

05 peak (-ed, -ed), reach (-ed, -ed)

The percentage of children taking dietary supplements was at its highest level in April.

Supplement use peaked at close to 25% in April. **It** reached a peak of 25% in April.

06 fall (fell, fallen), decrease (-ed, -ed), drop (-ed, -ed) dramatic (dramatically), sharp (sharply), significant (significantly), rapid (rapidly)

Between August and October, this figure dropped dramatically to 11%.

From August to October, there was a drop of 14% in the percentage of children taking dietary supplements. **Between** August and October, There was a considerable fall in the percentage of children using supplements. **This** was followed by a sharp drop of 14% over the next two months**.**
Supplement use experienced a dramatic fall between August and October.

07 fall (fell, fallen), decrease (-ed, -ed), drop (dropped, dropped), plunge (-ed, -ed), decline (-ed, -ed), reach (-ed, -ed) its lowest point slight (slightly), steady (steadily), gradual (gradually), gentle (gently), slow (slowly) downward trend

Between October and December, the decrease in the use of dietary supplements was at a much slower pace than in the previous two months**. Supplement** use continued to fall steadily over the next two months until it reached its lowest point in December. **It** fell to a low of only 5% in December.

Describing the Graph of a Function

Example 1:

Describe the two functions f(x) and g(x) , using the terms increasing, decreasing, maxima and minima.
The graph of f(x) is periodic. It decreases for $-3<x<-1$, then increases for $-1<x<1$, then decreases again for $1<x<3$, etc. **It has** a maximum value of 1 and a minimum value of -1 , and it attains these maxima and minima many times. The upper bound of the function is 1 and the lower bound is -1 .
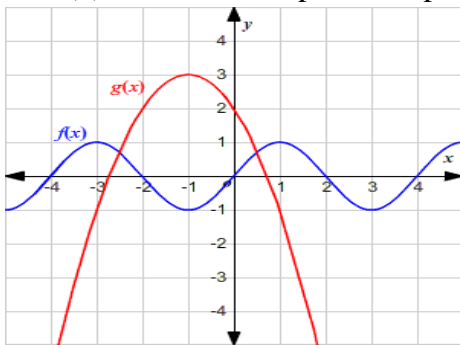**The graph** of g(x) is increasing for $-\infty<x<-1$ and decreasing for $-1<x<\infty$. The graph takes a maximum value of 3 at $x=-1$. It has no minimum.
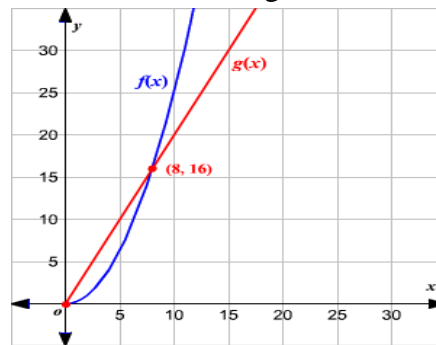
Example 2:

Which graph has a greater rate of change?
Both graphs start together at (0,0) . At first, the linear function, g(x) , has the faster rate of change.
But f(x) soon catches up, and surpasses g(x) at (8,16) , and continues increasing at a faster rate

Example 1: **Example 2:**

An example text for line graph 1 (see page 01)

This line graph shows how many tourists came to four countries in southern Europe from 1970 to 2006.
Italy, Spain and Greece are shown from 1970, Portugal starts in 1980. **The number of tourists** increased in all countries. Most tourists went to Italy in 1970, but in in the beginning of the 90s most people travelled to Spain for their holiday. **More than twice** as many tourists as in 1970 went to Spain and Greece in 2006. **Portugal** increased its number of tourists five times. **All lines** show the highest numbers in 1998. Afterwards the numbers went down.If you compare the figures you see more and more tourists wanted to go to the four countries. This chart shows a steady growth of tourism in the four Mediterranean countries.**The chart** shows a trend in tourism. Many tourists choose the Mediterranean countries for their holidays. **The main reason** is their subtropical climate with a lot of sun and nearly no rain during the summer months. **The chart** does not say anything about the situation in Portugal before 1980. Portugal was quite poor and had to build hotels and streets before it was ready for tourism.