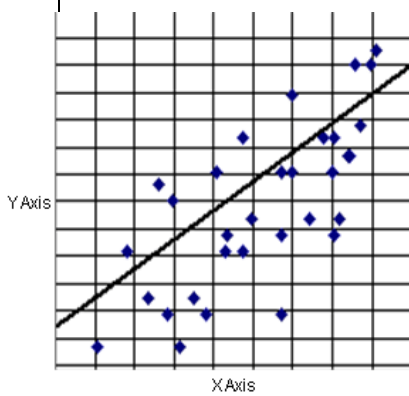


# Reading Graphs

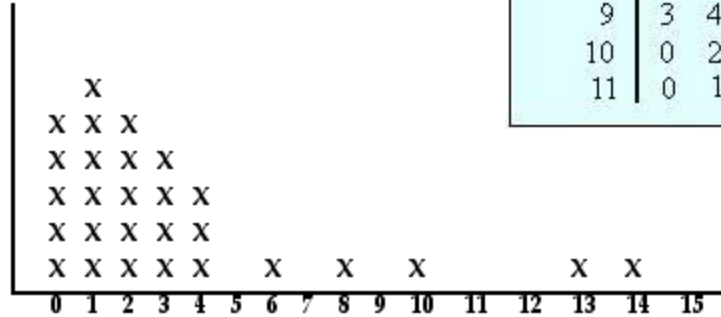
## Discuss as a class

- Do you use graphs? In which situations?
- Which type of graph do you most use?
- Do you know the names of the graphs on the screen?

# Graphs

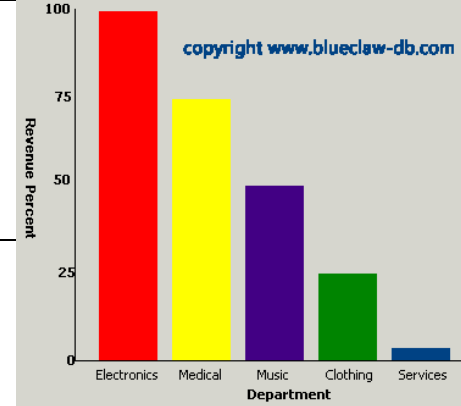


line plot - number of pets in each household

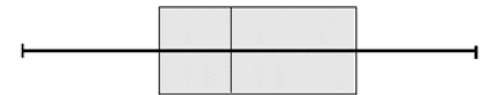


The numbers represent the number of pets, the x's represent households with that number of pets

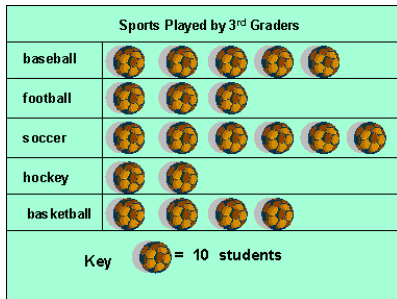
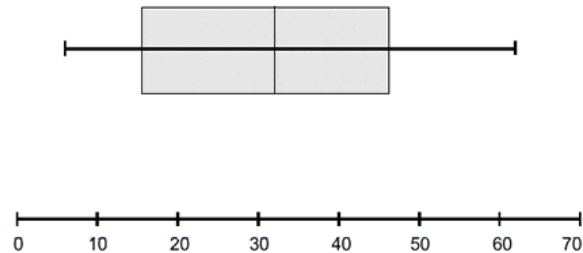
| Stem | Leaf    |
|------|---------|
| 8    | 1 4 5 6 |
| 9    | 3 4 7   |
| 10   | 0 2 3   |
| 11   | 0 1     |



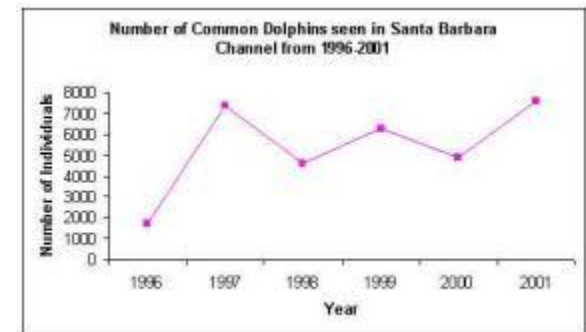
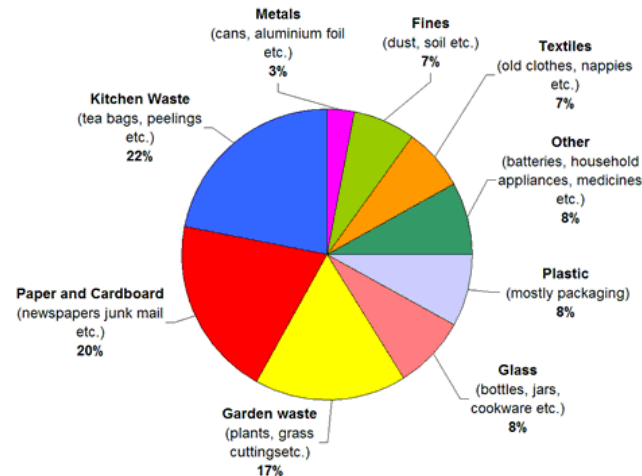
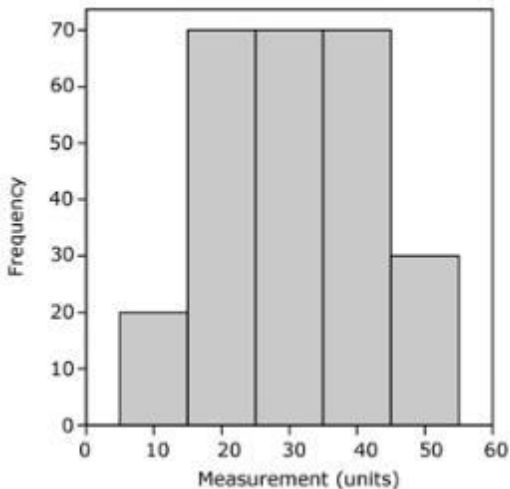
SALESPERSON Angela



SALESPERSON Carl

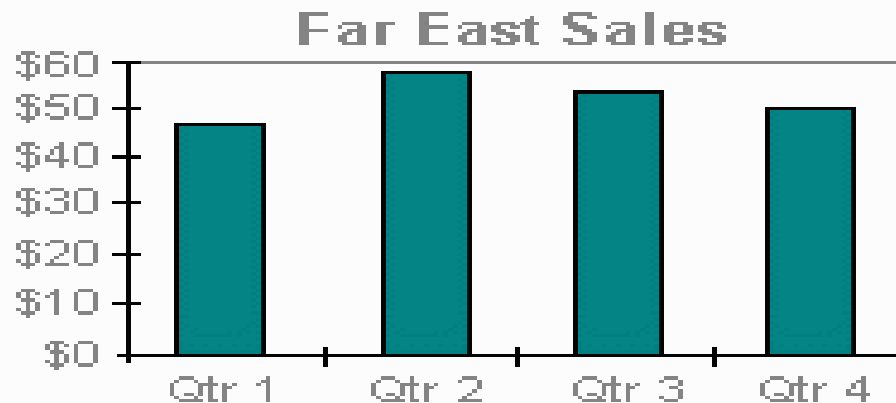


Example histogram

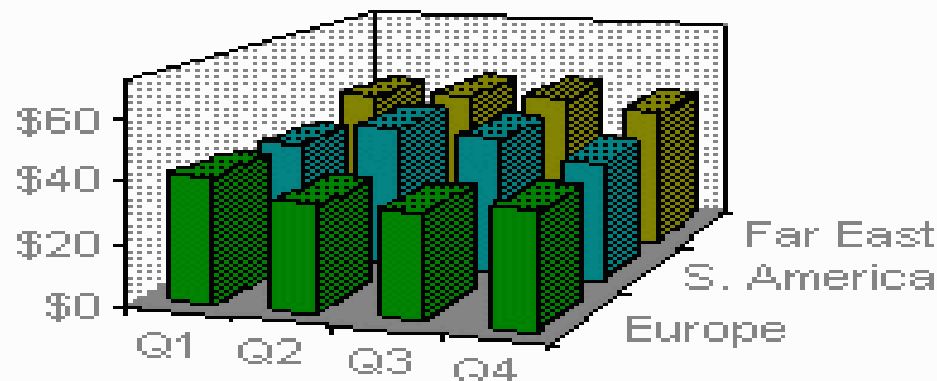


# Column chart

- ▶ A column chart shows variation over a period of time or illustrates comparisons among items.



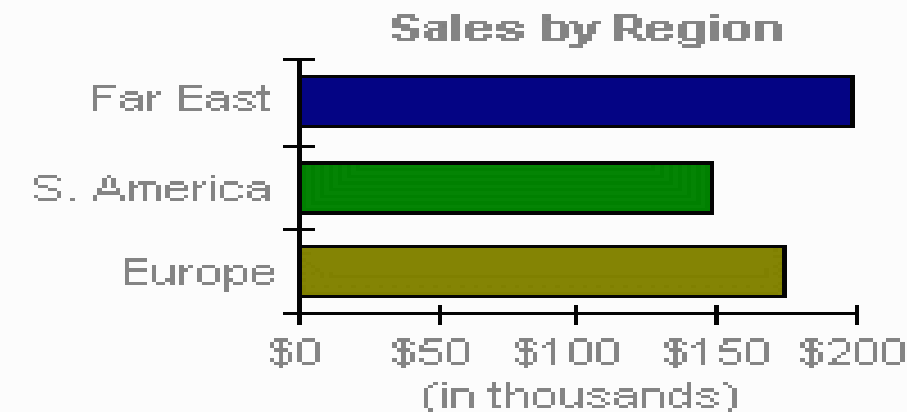
Categories are organized horizontally, values vertically, placing emphasis on variation over time.



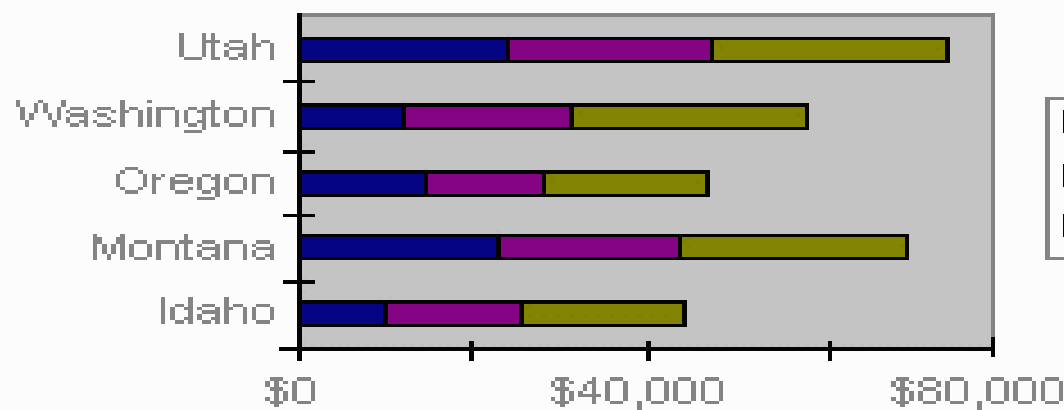
The 3D perspective column chart compares data points along two axes. In this chart, you can compare Europe's sales performance over four quarters with the performance of two other divisions.

# Bar chart

- ▶ A bar chart shows individual figures at a specific time or illustrates comparisons among items.



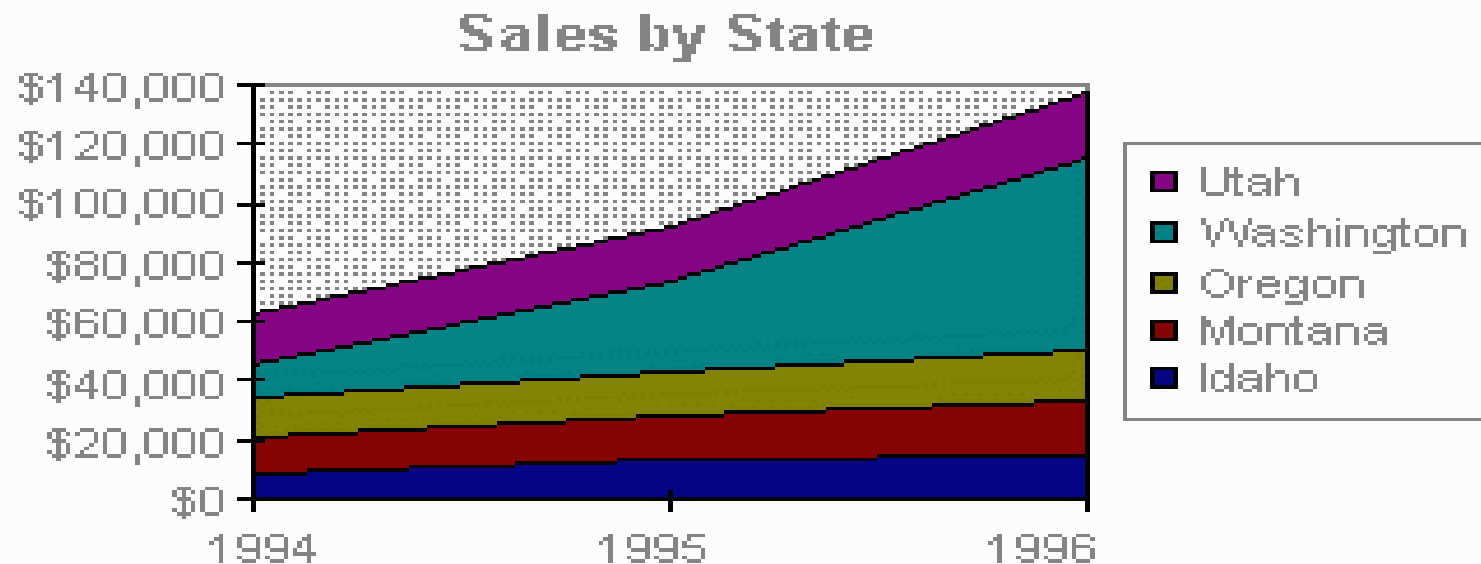
Categories are organized vertically, values horizontally, placing more emphasis on comparisons and less on time.



The stacked bar chart subtypes show the relationship of individual items to the whole.

# Area chart

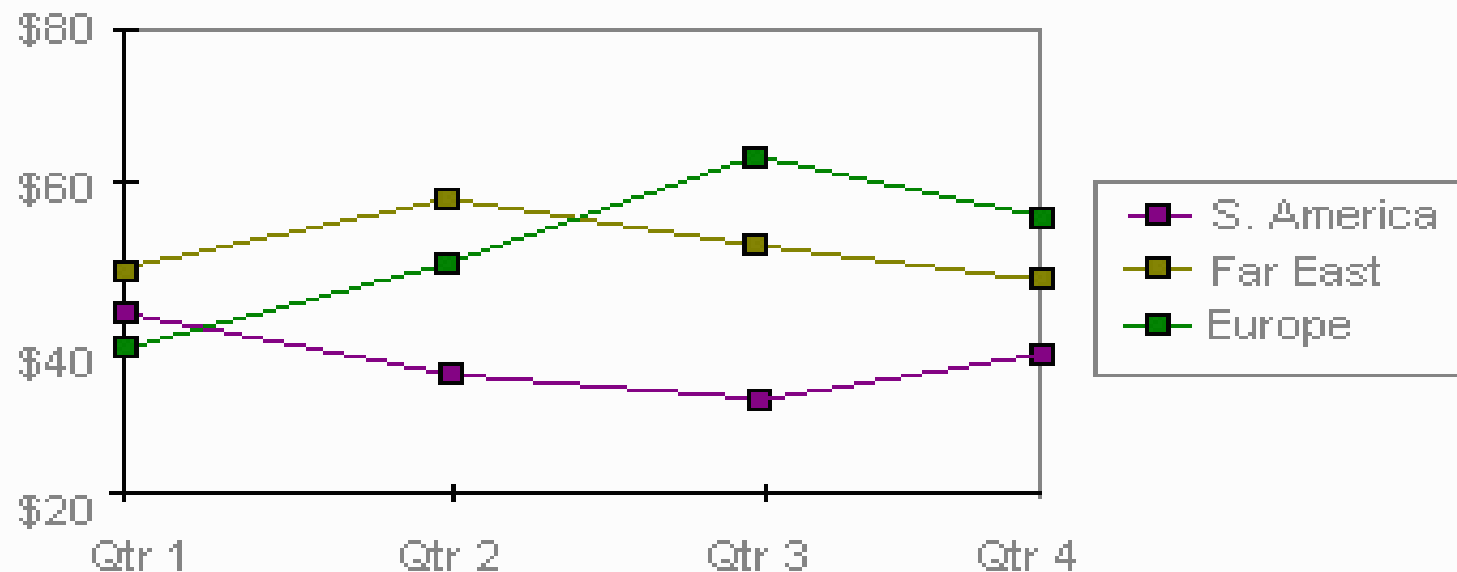
- An area chart emphasizes the magnitude of change, rather than time and the rate of change. It also shows the relationship of parts to a whole, by displaying the sum of the plotted values.



In this example, an area chart illustrates both increased sales in Washington and each state's contribution to total sales.

# Line chart

- ▶ A line chart shows trends in data over a period of time, at even intervals. Although similar to an area chart, a line chart emphasizes the rate of change over time, rather than the magnitude of change.



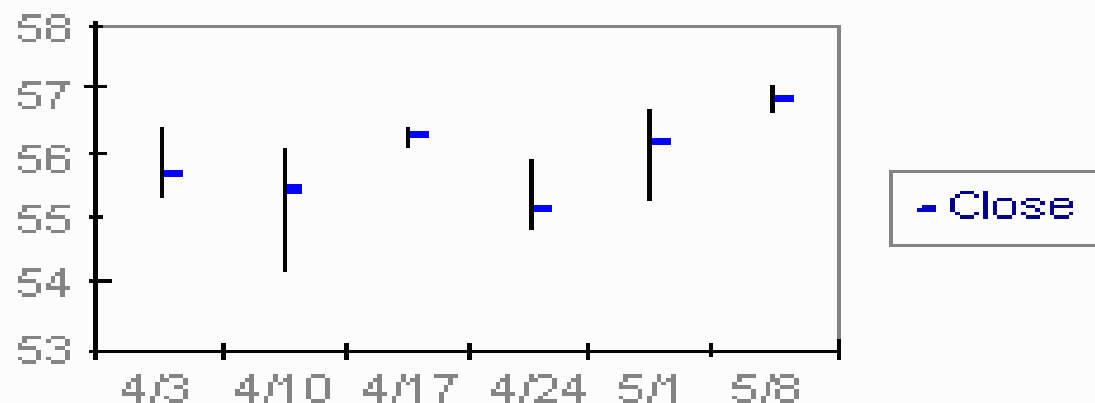
# High-low chart

- ▶ The high-low-close and open-high-low-close line chart subtypes are often used to illustrate stock prices. The open-high-low-close subtype is sometimes called a "candlestick" chart. You must organize your data in the correct order to create these charts.

Arrange your data  
in this order ...

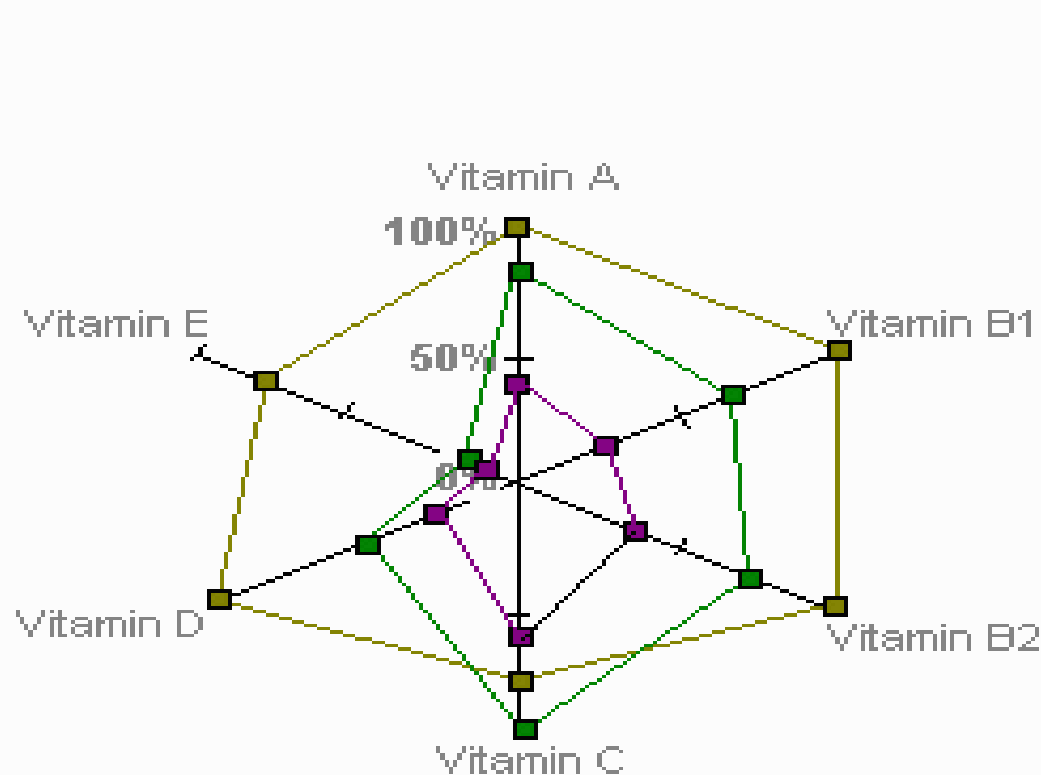
| Date | High   | Low    | Close  |
|------|--------|--------|--------|
| 4/3  | 56 3/8 | 55 1/4 | 55 5/8 |
| 4/10 | 56     | 54 1/8 | 55 1/2 |
| 4/17 | 56 3/8 | 56     | 56 1/4 |

... to create a  
high-low-close  
chart.



# Radar chart

- In a radar chart, each category has its own value axis radiating from the center point. Lines connect all the values in the same series.



A radar chart compares the aggregate values of a number of data series. In this chart, the data series that covers the most area represents the brand with the highest vitamin content.

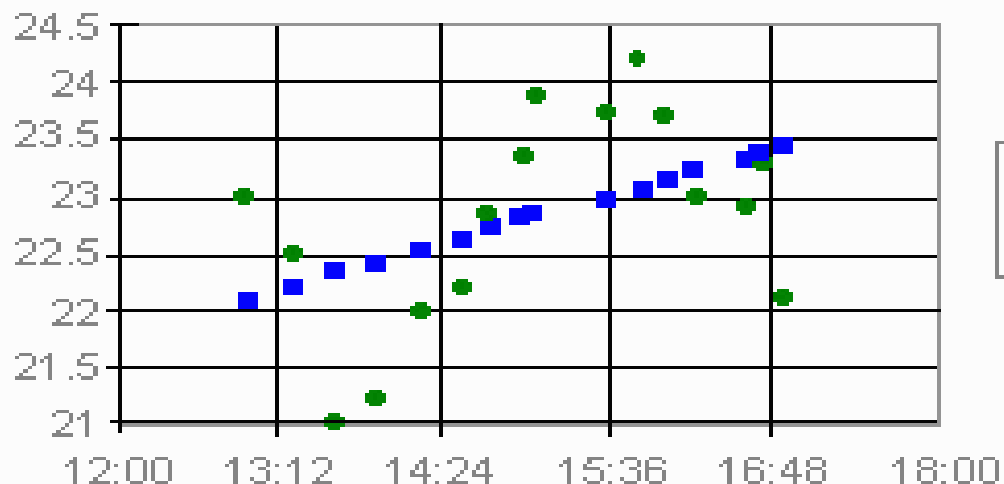
# Scatter Plots

- An xy (scatter) chart shows either the relationship among the numeric values in several data series or plots two groups of numbers as one series of xy coordinates. It shows uneven intervals—or clusters—of data and is commonly used for scientific data.

| Time  | Temp. | Predicted Temp. |
|-------|-------|-----------------|
| 13:01 | 23.0  | 22.1            |
| 13:25 | 22.5  | 22.2            |
| 13:45 | 21.0  | 22.3            |

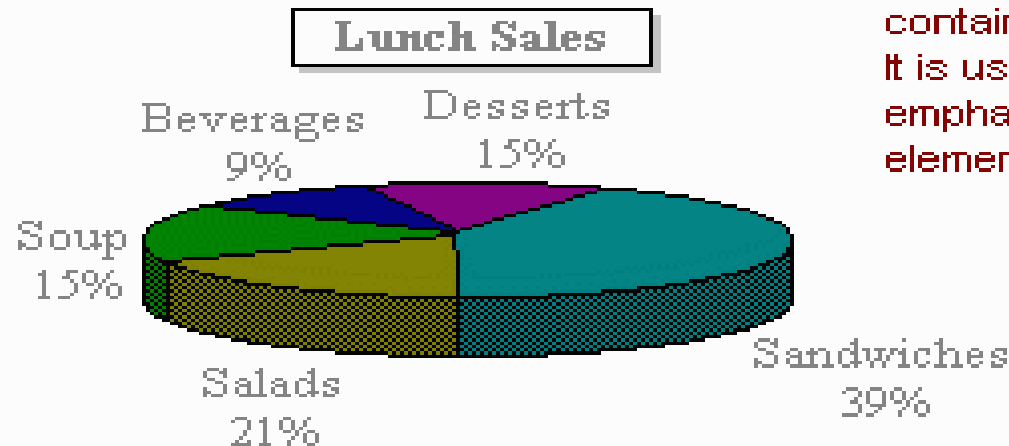
X values      Y values

Arrange your data with x values in one row or column and corresponding y values in the adjacent rows or columns.



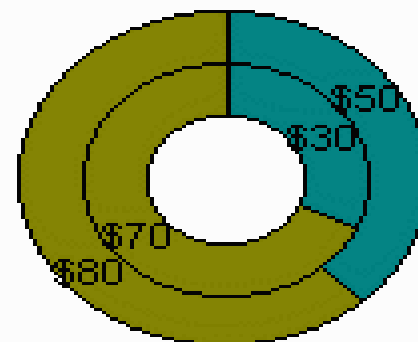
# Pie & Donut charts

- ▶ Pie and doughnut charts show the relationship or proportions of parts to the whole.



A pie chart always contains one data series. It is useful for emphasizing a significant element.

A doughnut chart is similar to a pie chart, but it can contain more than one data series. The colors in a doughnut chart do not represent the data series.

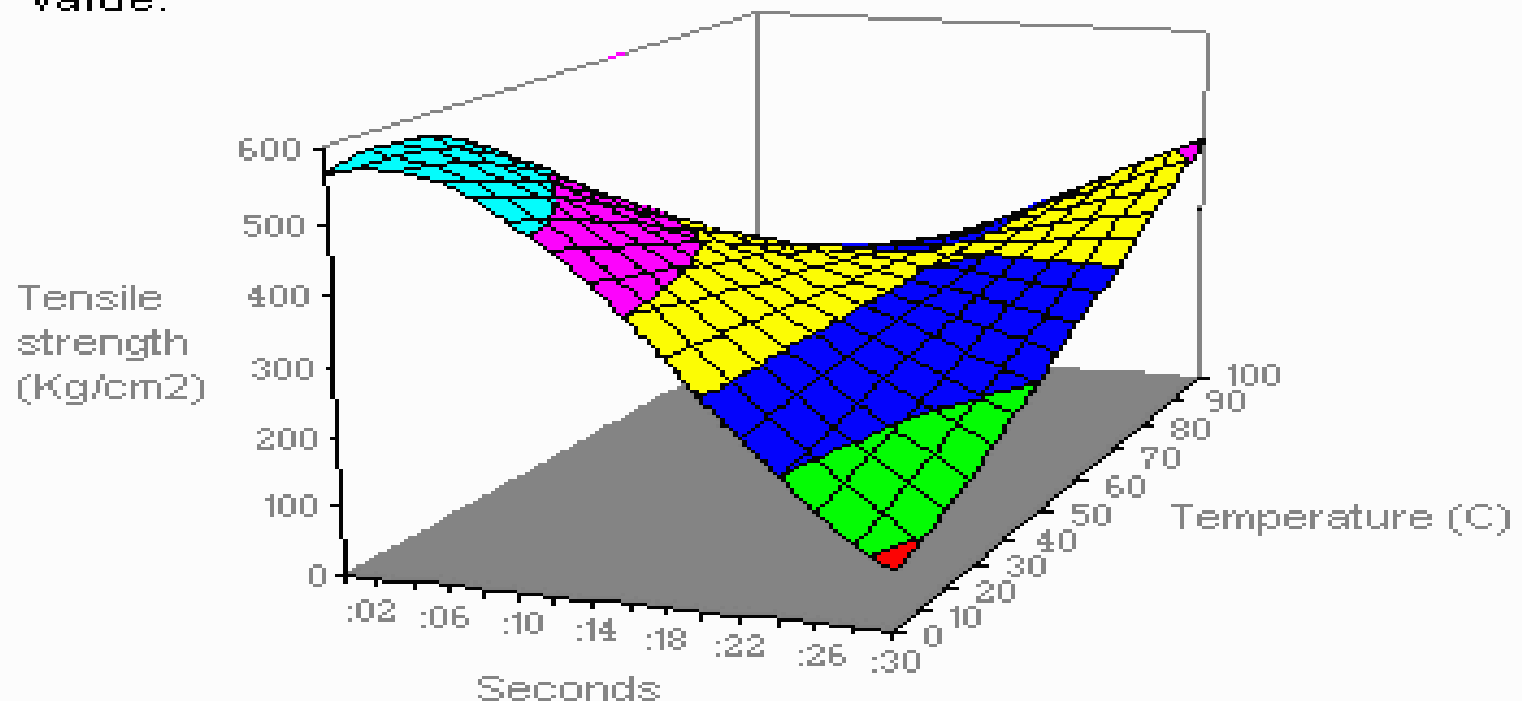


**Revenues from Gasoline and Property Taxes**



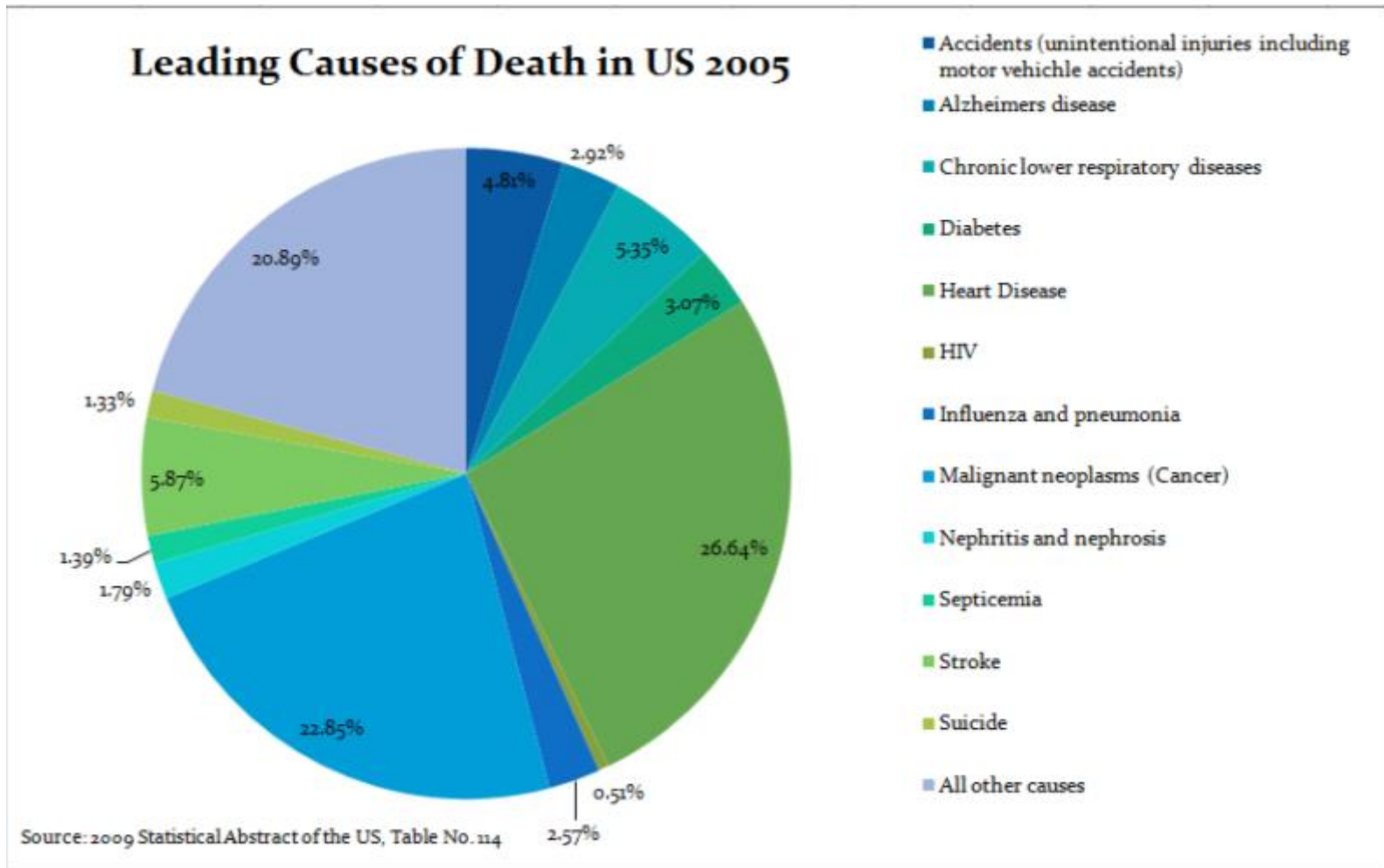
# 3D surface plots

- ▶ A 3-D surface chart is useful for finding optimum combinations between two sets of data. As in a topographic map, colors and patterns indicate areas that are at the same value.



This chart shows the various combinations of temperature and time that result in the same measure of tensile strength.

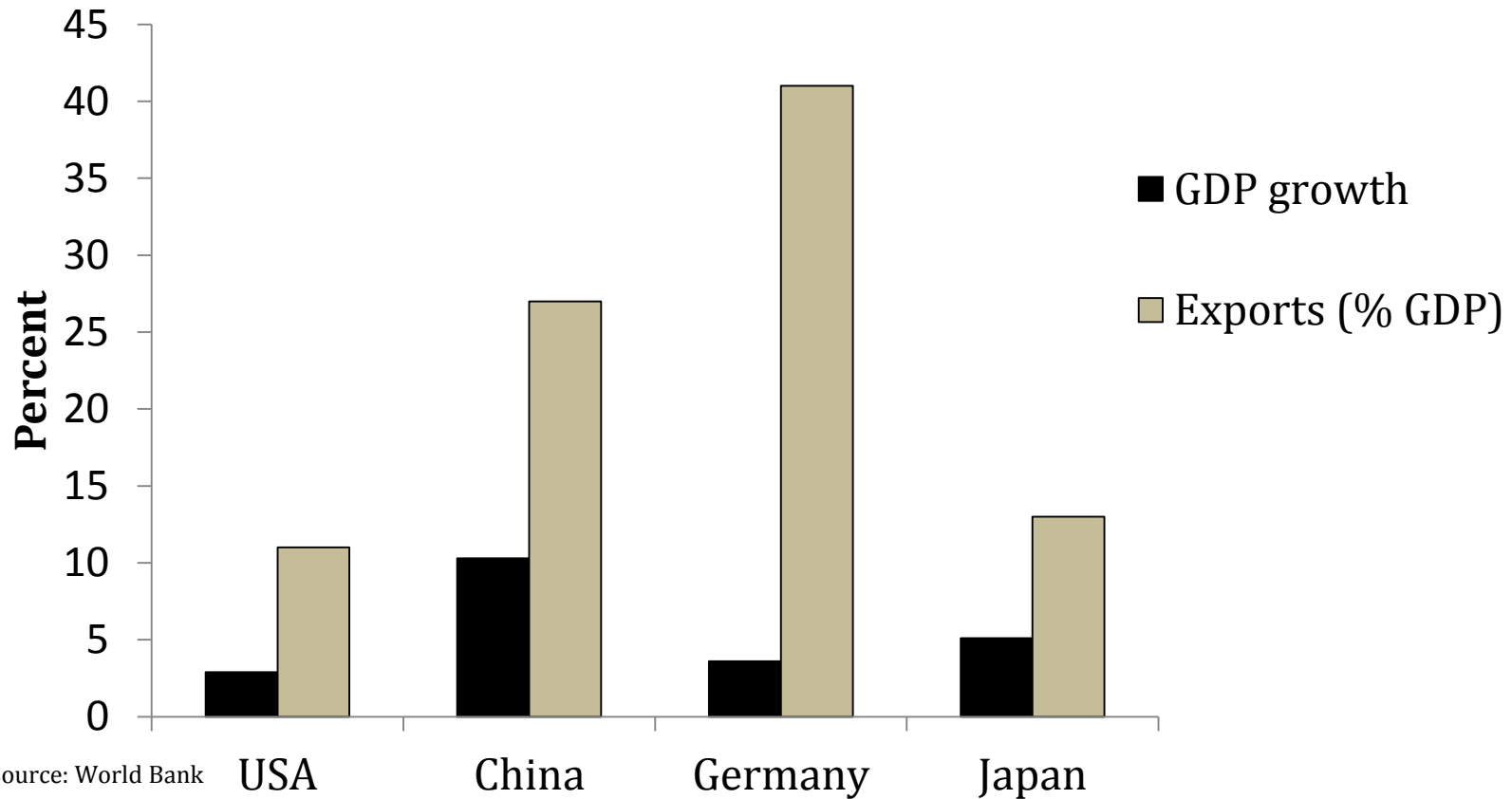
# Can you name the elements in this chart?



Flow Theme applied to the chart

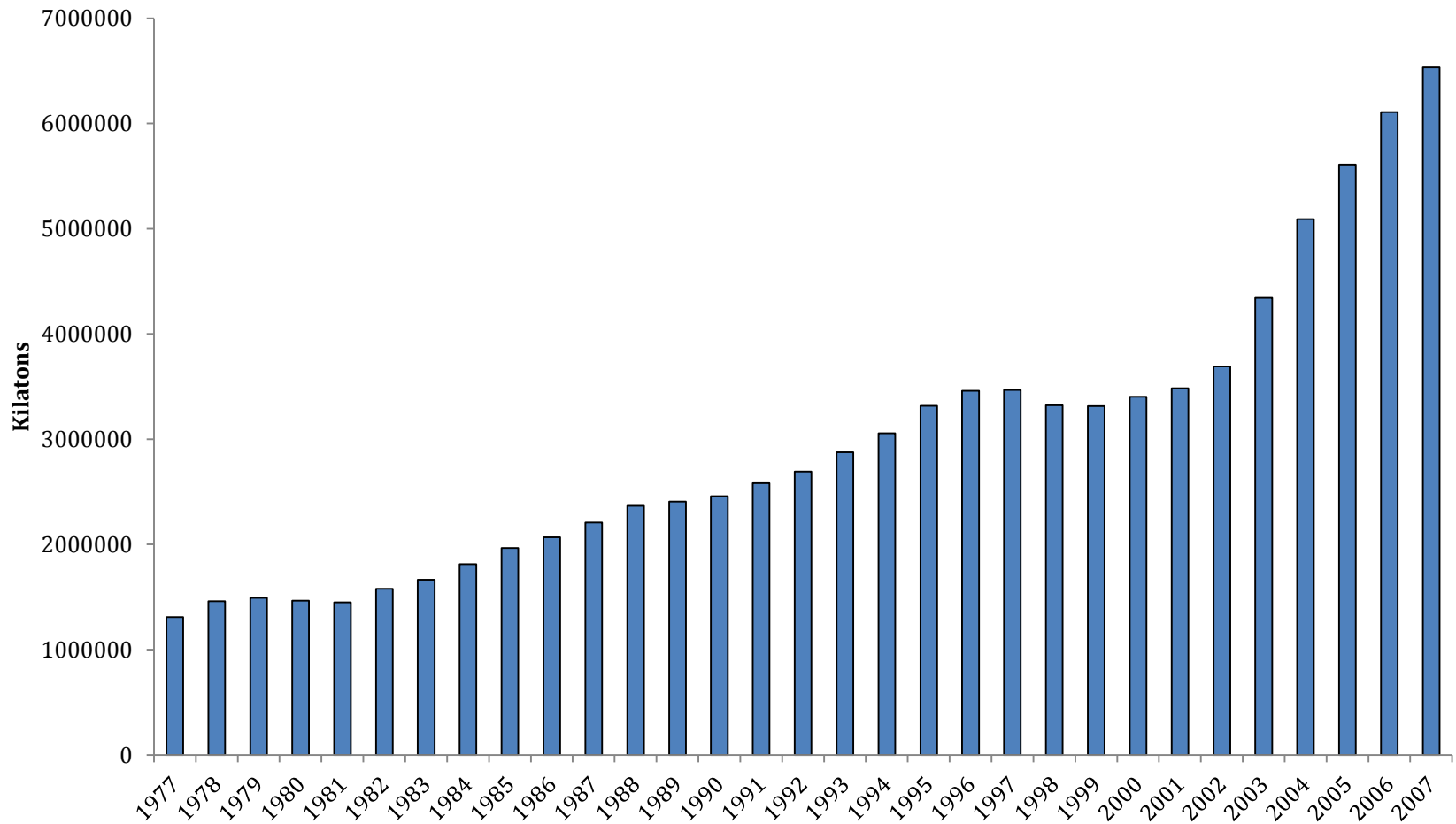
# How would you comment this chart?

Comparing GDP and Exports in Four Major Economies, 2009



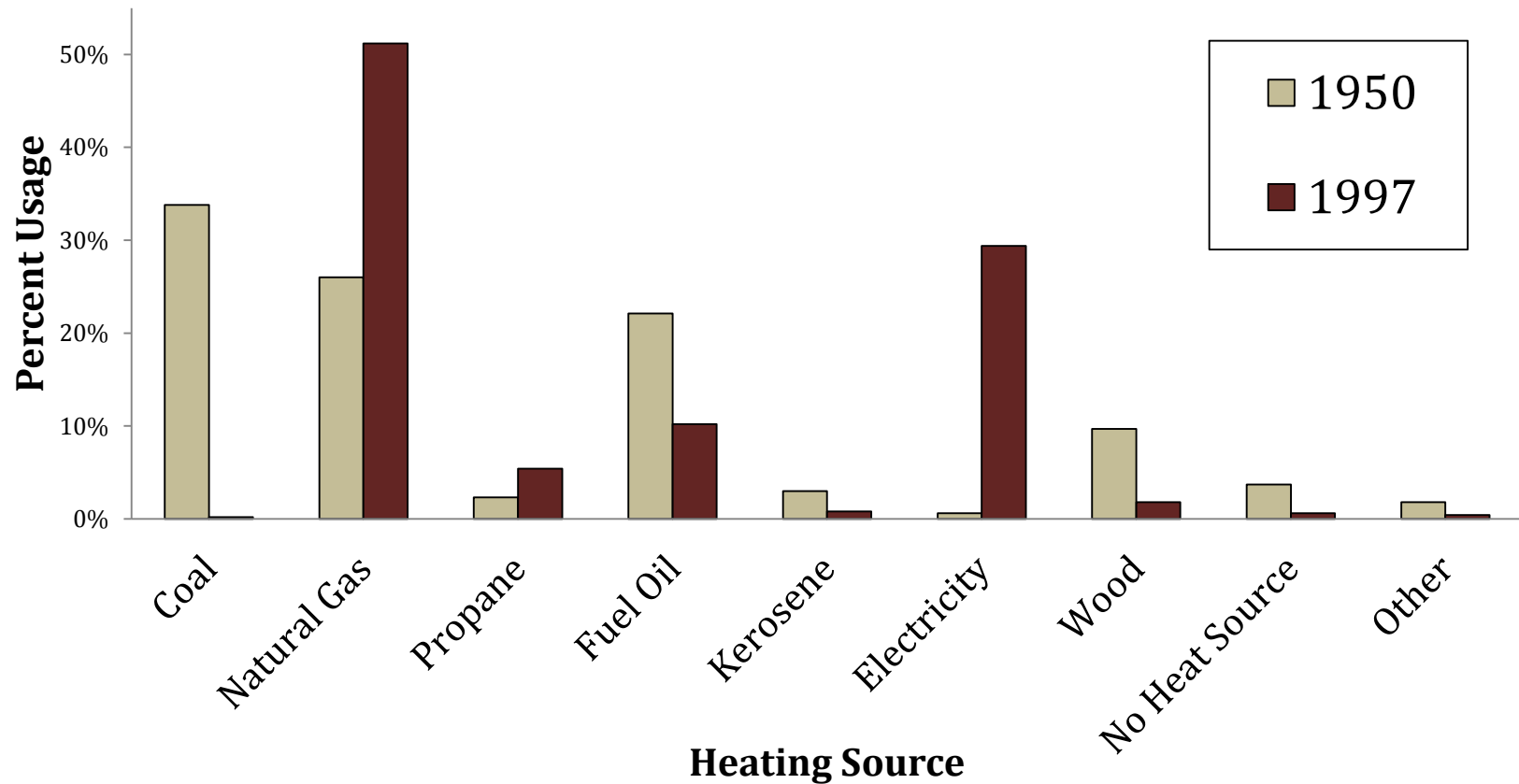
# How would you comment this chart?

**China's CO<sub>2</sub> emissions (kt), 1977-2007**



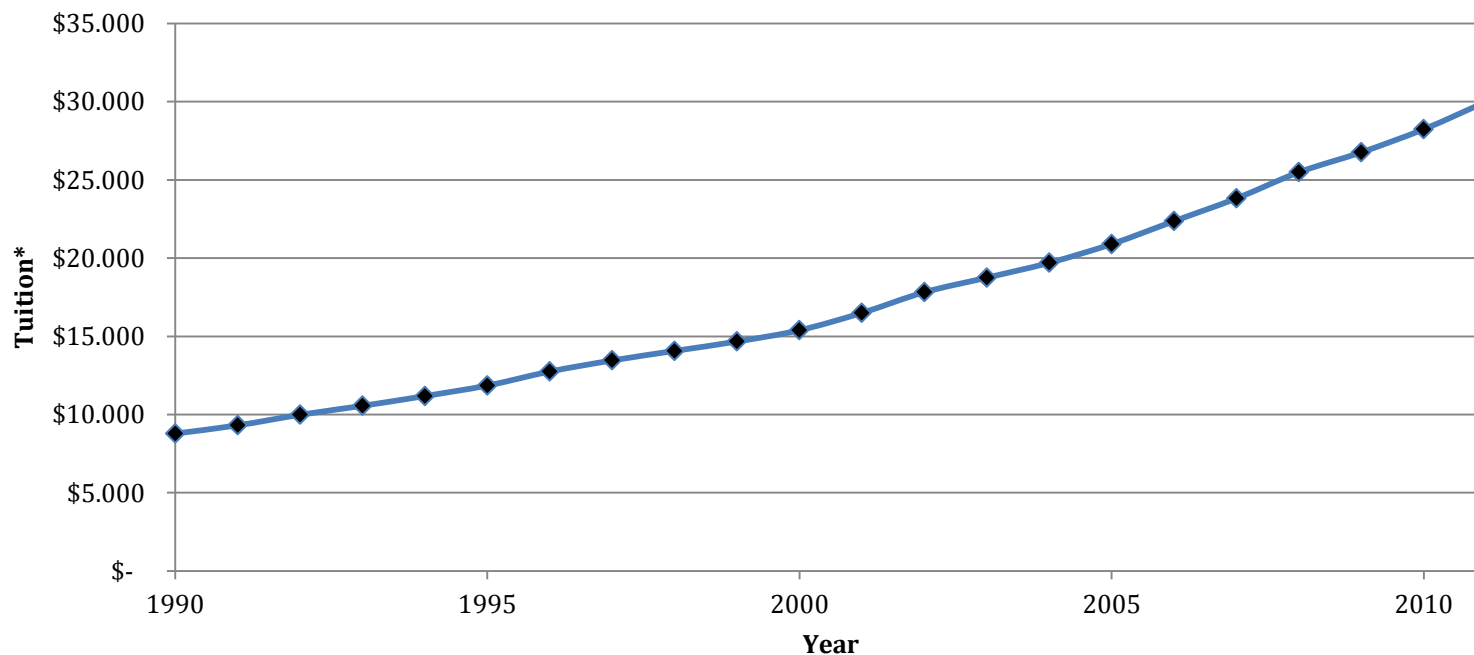
# How would you comment this chart?

**Sources of Home Heating, 1950 vs. 1997**



# How would you comment this X-Y graph?

**DePaul Tuition for Full-time Undergraduates, 1990-2011\***

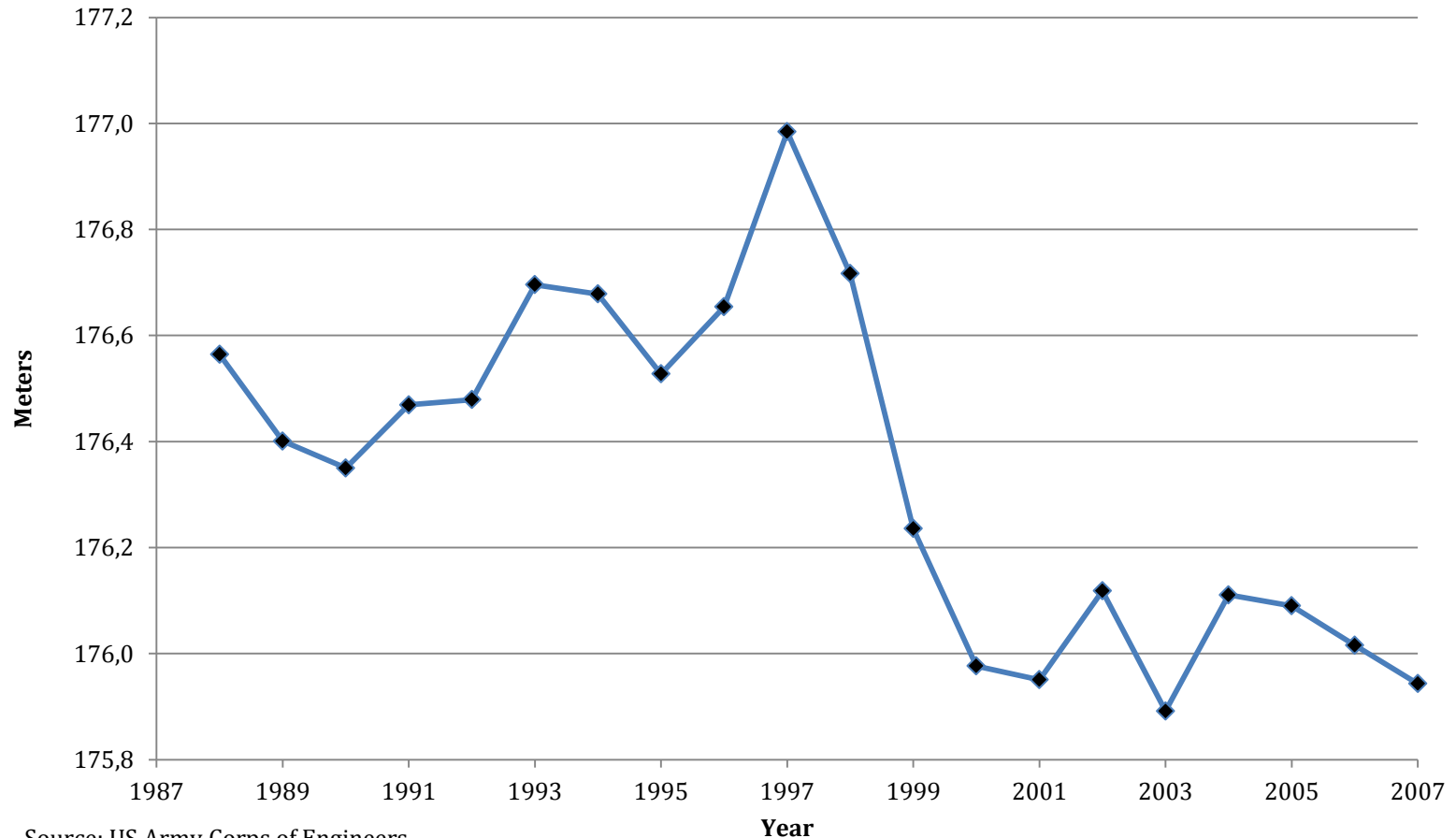


**Source:** DePaul University

\*Music and Theatre students' tuition is higher. Starting in 1996, the method for calculating tuition changed. Starting in 2001, continuing students pay up to \$1,600 less

# How would you comment this X-Y graph?

**Lake Michigan/ Huron Water Levels, 1988-2007**



Source: US Army Corps of Engineers

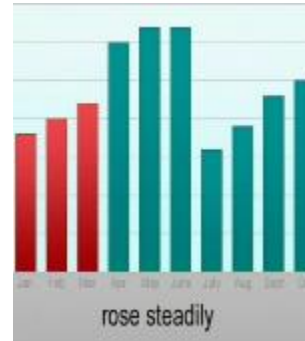
# Presenting Graph and Chart

# Introducing our presentation

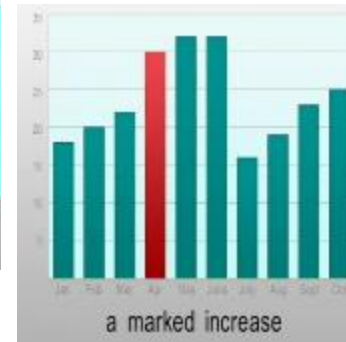
- I'd like to refer to the first graph
- If we have a look at this graph
- If I could direct your attention to the graph
- Looking at the graph on the screen
- I'd like to discuss the graph of ...
- I'd like to explain our total sale this semester.

# Describing graphs

➤ rose steadily



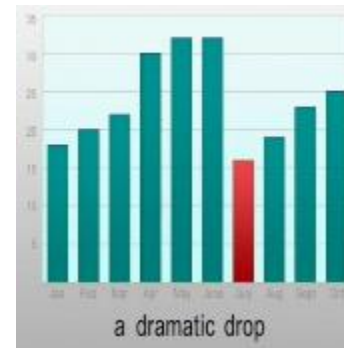
➤ a marked increase



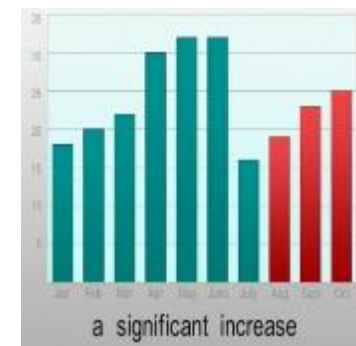
➤ levelled off



➤ a dramatic drop



➤ a significant increase



# Words (nouns and verbs) for describing trends

- an increase
- a rise
- a climb
- an improvement
- an upturn
- a decrease
- a fall
- a decline
- a worsening
- a downturn
- to increase
- to rise
- to climb
- to improve
- to decrease
- to fall
- to decline
- to worsen

## Active/passive examples

- There was an improvement in the figures for April.
- The figures for April have improved.
- There has been a decline in sale since June.
- Sales in June have decline.

## Words (adj and adv) for describing trends

➤ big

➤ significant

➤ marked

➤ massive

➤ pronounced

➤ substantial

➤ A lot

➤ significantly

➤ markedly

➤ massively

➤ pronouncedly

➤ substantially

## Words (adj and adv) for describing trends

- small
- slight
- insignificant
- a bit, a little
- slightly
- insignificantly

## Words (adj and adv) for describing trends

➤ fast

➤ sharp

➤ dramatic

➤ sudden

➤ quickly

➤ sharply

➤ dramatically

➤ suddenly

## Words (adj and adv) for describing trends

➤ Slow

➤ slowly

➤ Steady

➤ steadily

➤ Moderate

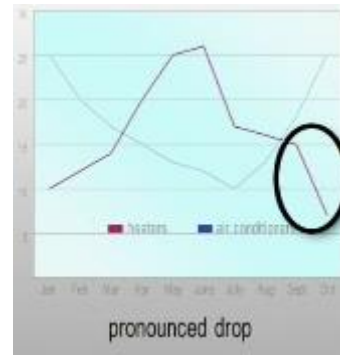
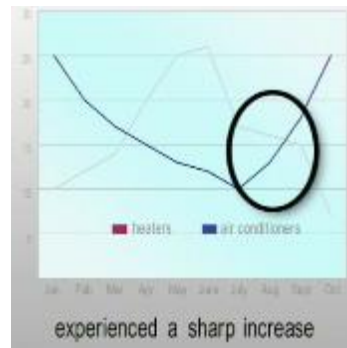
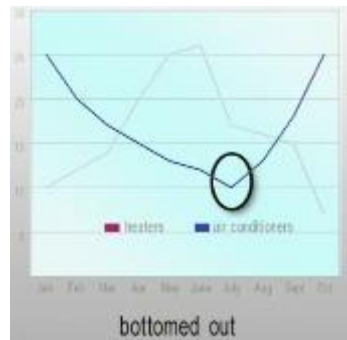
➤ moderately

# Describing cause

- due to
- A consequence of
- Because of
- A a result of
- The drop in sales is due to an interest rate rise.
- The drop in sales is a consequence of an interest rate rise.

# Other phrases for describing trends

## ➤ bottomed out/reached their lowest level



## ➤ experienced a sharp increase

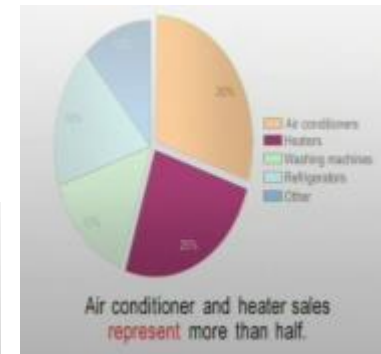
## ➤ Skyrocketed / boomed

## ➤ Pronounced drop

## ➤ ... represent(s) ...

## ➤ ... account(s) for ...

## ➤ ... make(s) up ...



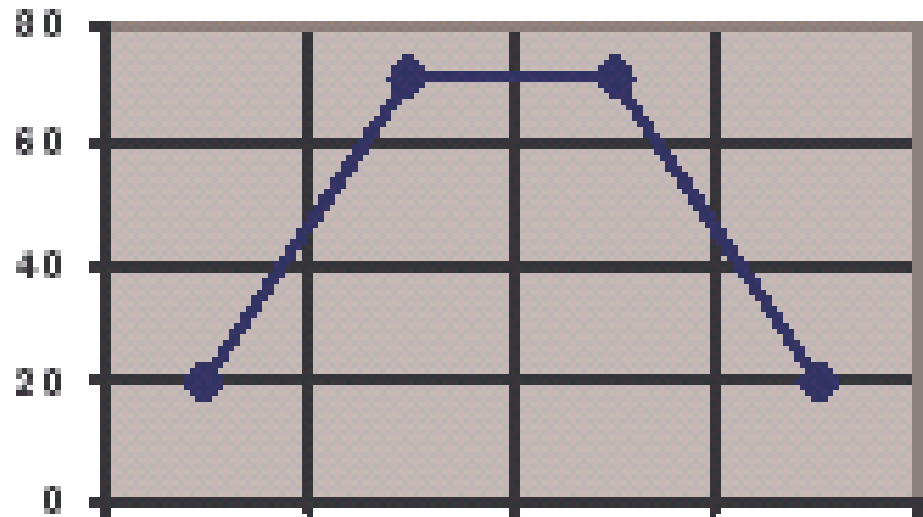
# Describing Trends in Graphs

All of the following graphs show production figures for each quarter last year.

How would you comment on those?

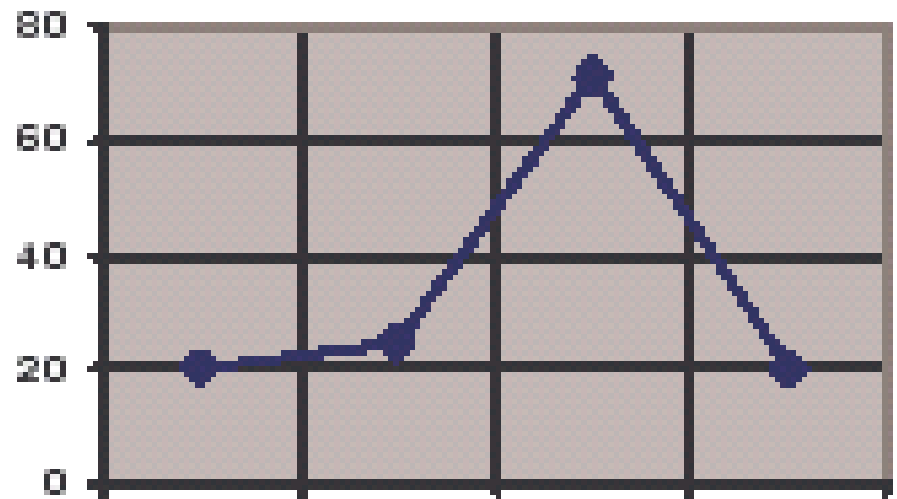
1

Production started climbing steadily but flattened off at a level of around 70. Since then, it has fallen steadily.



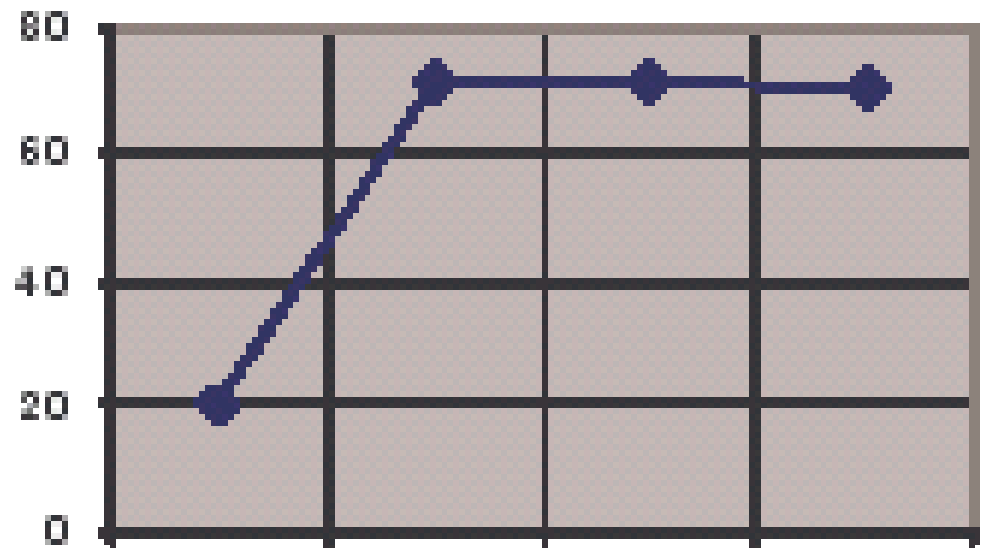
2

Production grew more and more rapidly over the first three quarters but then reached a peak. Since then, it has quickly dropped.



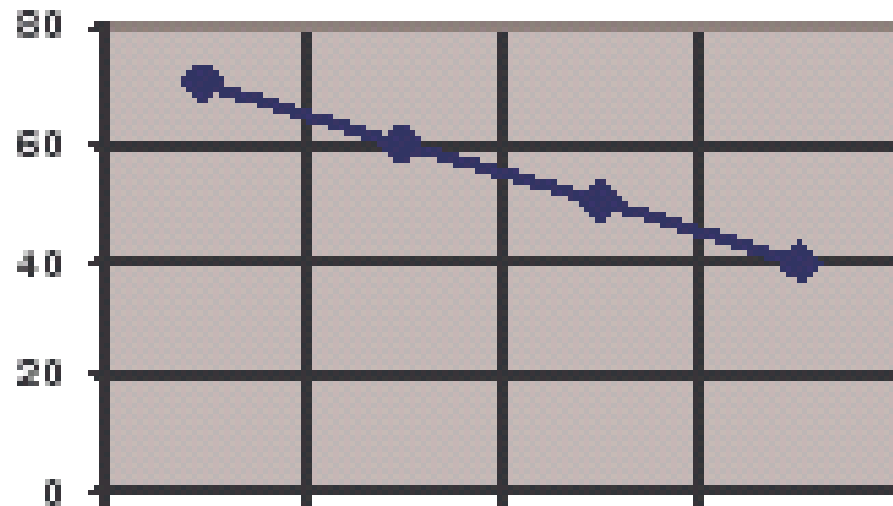
# 3

Production grew rapidly in the first quarter, but reached a plateau of about 70. Since then it has remained more or less stable.



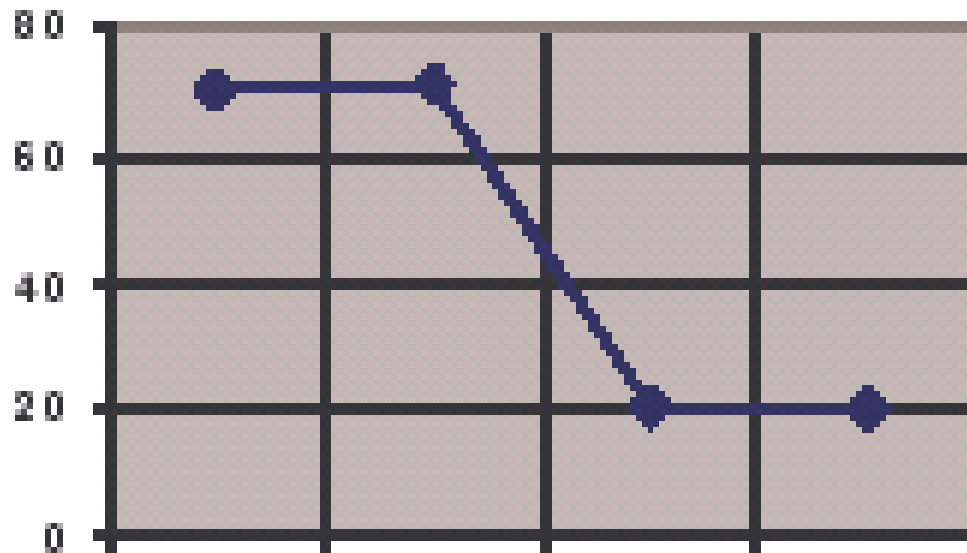
4

Production has dropped slowly but steadily over the year.



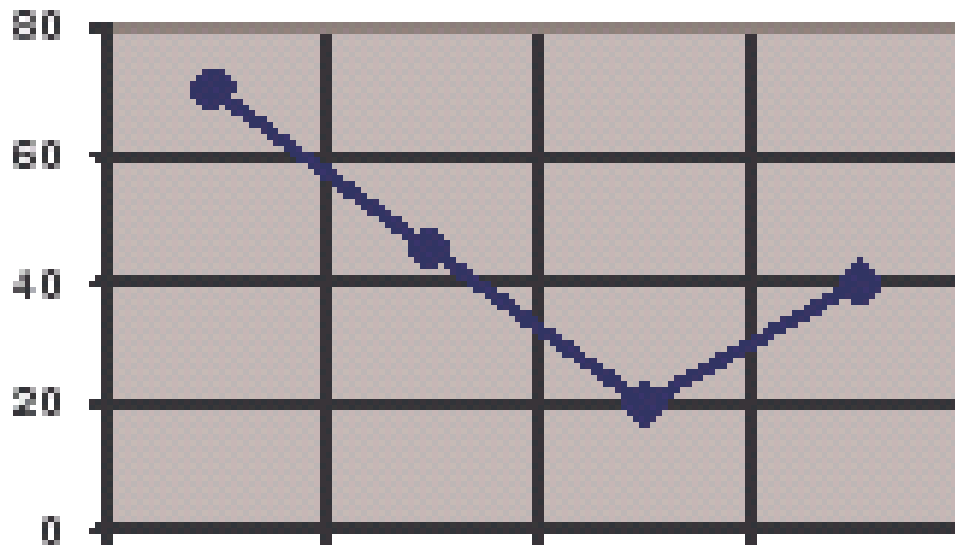
5

Production started the year in a stable position, but then plunged in the third quarter. It has now flattened out at a level of 20.



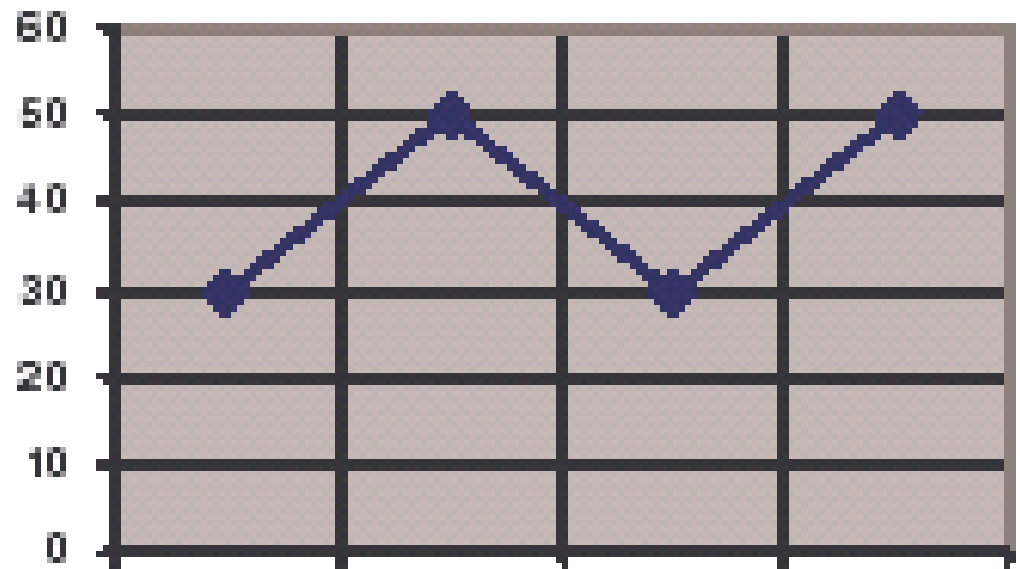
6

Production fell considerably over the first three quarters, reaching a low of 20. Since then it has staged a partial recovery.



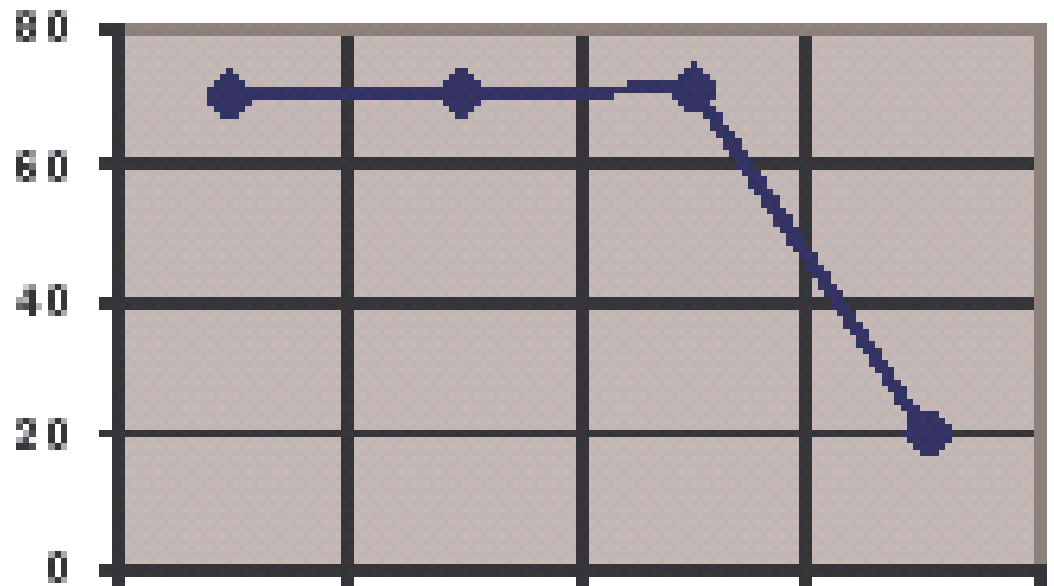
7

Production has fluctuated all year.



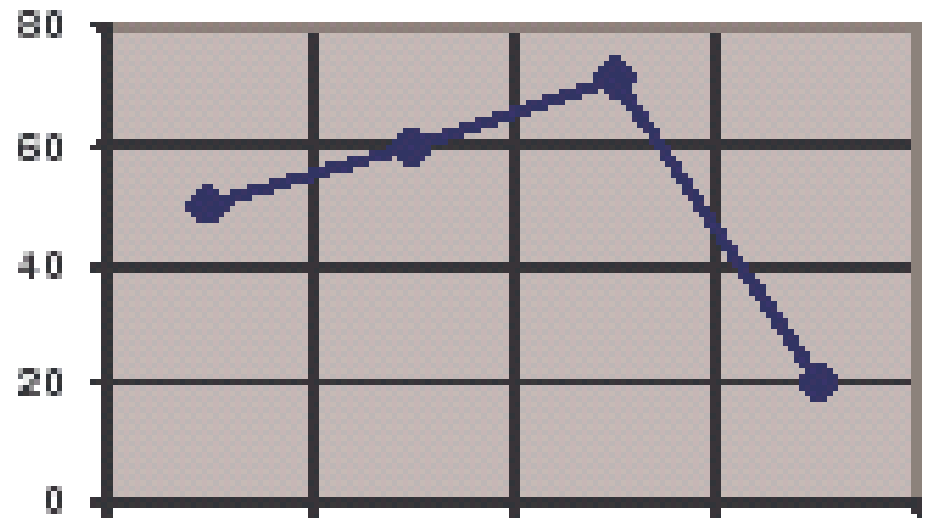
8

Production started off steady, but fell sharply in the last quarter.



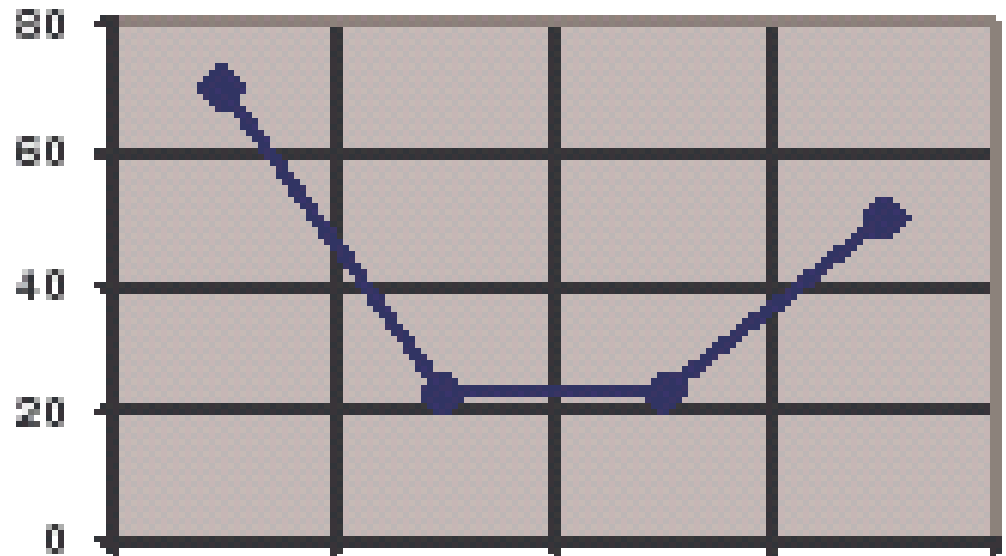
9

Production showed a marginal rise in the first three quarters, but then suffered a sharp drop.



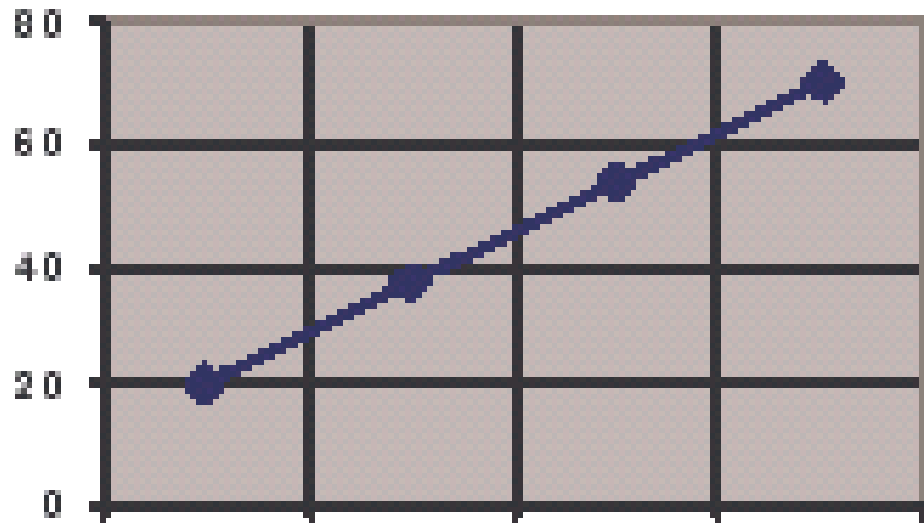
# 10

After a considerable drop in the first two quarters, production bottomed out at 20. Since then it has started to rise.



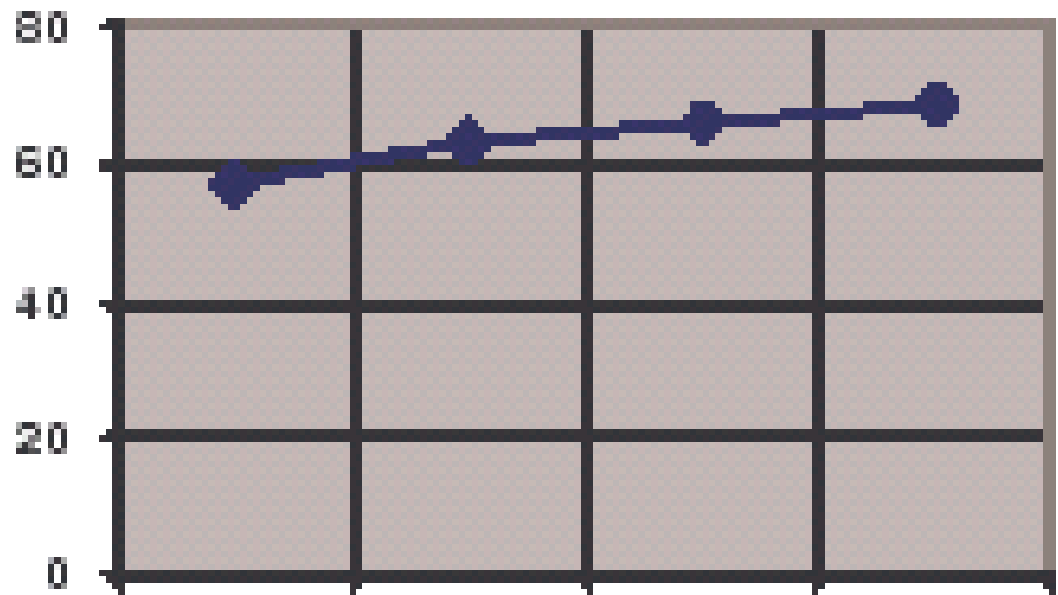
11

Production has experienced a strong, steady growth over the whole year.



12

There has been a slight increase in production over the year.



13

There was a rapid drop in production in the first quarter, but it bottomed out at about 20.

