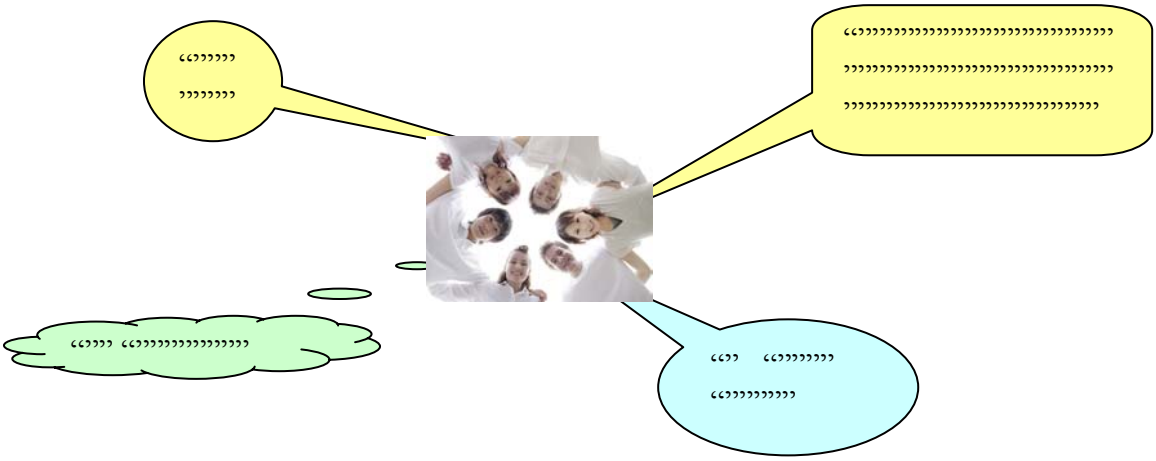
Statisticians Galore!

Do you know your statisticians? Who was it who invented the Pie Chart? Who used statistics and data to reform hospital systems in the 19th century? Who was the first to conduct a census?

Try to match up the name cards with the descriptions of their main achievements. You may well need to do a little research on the internet or in the library to get them all!

So now you know the names of lots of statisticians….but…..
What do statisticians today do?
Discuss in your group and try to come up with a one sentence definition.



Look at the following list and discuss which of these areas would use statistics extensively and employ a lot of statisticians?

The Media
Sporting Organizations
Government Agencies
Pharmaceutical Businesses
Universities
Banks and Financial Businesses
Science and Technology Businesses
Marketing Industry

Feedback your findings to the whole class.

On the reverse you will find some information which may be useful.
To find out more about a career in statistics visit the RSS website at
http://www.rss.org.uk/main.asp?page=1999

WHAT DO STATISTICIANS DO?

They solve problems using real data!

The image that most often comes to mind when we think about a statistician is someone who sits behind a desk producing large amounts of numbers. However, as statistical understanding is becoming of ever increasing importance in everyday life, the job of a statistician has become increasingly important and interesting as we are all continually and increasingly faced with data that we need to understand. This affects many areas:

- **The Media**
  Statistics are an important component of the daily news, TV, radio and the printed media which use statistics constantly in the weather, financial, health and crime reports. They need to find out which political candidate is more popular or discover what foods teenagers prefer for breakfast; the daily temperature, the crime rate, stock market movements and economic performance etc, etc, etc….

- **Science & Business**
  Both science and business use statistics extensively. Scientists use statistics mainly for the purposes of validation, i.e. testing results. Businesses require statistics for checking processes, analysing the economy and forecasting for future investment opportunities. For example:
  - Radiocarbon dating to estimate the risk of earthquakes
  - Clinical trials to investigate the effectiveness of new treatments
  - Field experiments to evaluate irrigation methods
  - Measurements of water quality
  - Psychological tests to study how we reach the everyday decisions in our lives
  - Predict the demand for products and services
  - Check the quality of items manufactured in a facility
  - Manage investment portfolios
  - Forecast how much risk activities entail, and calculate fair and competitive insurance rates

- **Government**
  Government statisticians conduct experiments to aid the development of public policy and social programs. Such experiments include:
  - Consumer prices
  - Fluctuations in the economy
  - Employment patterns
  - Population trends

  The government employs many statisticians in both national and regional departments. It is very important that they both know what trends are happening and can predict what will happen in the next few years

- **Sporting Organisations**
  Sporting organisations employ coaches, marketing managers and business managers who all need statistics to monitor performance. For example:
  - Coaches need statistics on all players and teams in order to plan or adjust their team tactics and individual performances, Formula 1 Grand Prix teams use detailed statistics about all races and cars in order to try to gain or maintain the leading edge.
  - Marketing managers need information on the population to be able to plan sales campaigns and to increase memberships.
  - Business managers need statistics to forecast the number of customers in order to plan facility upgrades, potential revenues to cover costs, to recruit new players, to purchase new equipment and pay for travel

Moses ***(dates unknown)***	***In the book of 'Numbers' a census of the people of Israel is described. He found that there were 603 550 males over the age of 20!***
Gerolamo Cardana ***(1501 – 1576)***	***Wrote the first book on probability, 'Liber de Ludo Aleae' (The book on the Game of Chance). He concluded that each face of a die has an equal chance of being thrown, 'if the die is honest.'***
Ronald Fisher ***(1890 – 1962)***	***Gave a definition of Statistics as: estimation, distribution and populations that data comes from. Introduced the term 'maximum likelihood and studied hypothesis testing.***
William Gosset ***(1876 – 1937)***	***A chemist in the Guiness brewery, he invented the t-test for small samples. Wrote under the name of 'Student'***
Florence Nightingale ***(1820 – 1910)***	***Used statistics to reform hospital systems and recommended using standard systems and classifications.***
William Playfair ***(1759 -1823)***	***Invented the bar chart, pie chart and line graphs.***

Jacques Bernoulli ***(1654 - 1705)***	***Invented the Central Limit Theorem and argued that probabilities could be calculated for chance events.***
Rene Descartes ***(1596 - 1650)***	***Believed the whole universe has a mathematical structure and can be understood by the study of mathematics***
Francis Galton ***(1822 - 1911)***	***Cousin of Charles Darwin, one of the first to use questionnaire and survey methods. Investigated human intelligence and racial differences.***
John Gaunt ***(1620 – 1674)***	***Author of the 1st Statistics book. He made an estimate of the population of London based on 3 parishes and records of causes of death. (Bills of Mortality)***
Abraham de Moivre ***(1667 – 1754)***	***Friend of Issac Newton who invented the normal curve. He also correctly predicted the day of his own death!***
Karl Pearson ***(1857 -1936)***	***Used large samples and deduced correlations. First to coin the phase 'Standard Deviation'***