House prices: Spreadsheet activity

House prices change over time, but do so at different rates in different places.

In this activity you will use a spreadsheet to draw statistical diagrams and calculate statistical measures to compare house prices and the way they have changed in different parts of the country in recent years.

Information sheet A Statistical measures

An average is a representative value for a set of data. There are three different types of average. The choice of which to use depends on the data and the reasons for carrying out the survey.

Mode: the value which occurs the most often.
Sometimes there isn't a mode. Sometimes there are two or more modes.
The spreadsheet formula for the mode is MODE
but you must check the answer – the spreadsheet only gives one mode even when there is more than one.

Median: the middle value in an ordered list of the data.
 If there are two middle values, use the value half-way between them.
The spreadsheet formula for the median is MEDIAN

Mean: the sum of the values divided by the number of values.
The spreadsheet formula for the mean is AVERAGE
You can also use SUM then divide by the number of values

Think about…
Which do you think is the best average to use for a set of house prices? Why?

Range is the difference between the highest value and the lowest value.
The spreadsheet formula to find the range is MAXIMUM – MINIMUM

Think about…
What does the range measure?

Information sheet B Statistical diagrams

Here is a list of charts and graphs that could be used to illustrate data.

pictogram   **bar chart**   **pie chart**   **line graph**

Think about…

Which of these can you use a spreadsheet to draw?

Which types could you use to illustrate the data on the first sheet of the spreadsheet? Which do you think would be best? Why?

Try these …

**For questions 1 and 2 use the first sheet in the spreadsheet:
'Monthly average prices in the UK 2010'**

1a Draw a comparative bar chart to show the data for first-time buyers and all houses.

b   Draw a line graph to show the data for first-time buyers and all houses.

c   Which of these statistical diagrams do you think is better? Why?

d i Describe any similarities between the data for first-time buyers and the data for all houses.

ii   Describe any differences.

2a I Use the spreadsheet to complete the table below:

	First-time buyers	**All houses**
Range		
Median		
Mean		

ii   Check the values by hand.

b   Explain what the range values tell you about the data.

c   Do you think the mean or the median is a better representative value? Why?

**For questions 3 and 4 use the second sheet in the spreadsheet:
'Average house prices in the UK 1983–2010'**

3a Draw a line graph to show the data for Scotland and the data for Northern Ireland.

b   Describe any patterns you notice.

4i Use the spreadsheet and copy and complete the table on the right.

	Scotland	Northern Ireland
Range		
Mean		
Median		

ii Check the values by hand.

b Comment on what these values tell you about the prices for houses in these countries from 1983 to 2010.

For questions 5, 6 and 7, use the third sheet in the spreadsheet: 'Average house prices in regions of the UK 1983–2010'

5ai What were the three cheapest regions in 1983?
ii Were these still the cheapest regions in 2010?

bi Which were the three most expensive regions in 1983?
ii Were these still the three most expensive in 2010?

c Suggest reasons for your answers to parts **a** and **b**.

6a Copy and complete the table on the right.

b Describe what these measures tell you about the data.

	1983	2010
Range		
Median		
Mean		

7a Draw a line graph showing the data for London and the North of England.

b What happened in London to house prices in 1989?

c i What happened to the prices in the North of England between 1990 and 2000?

ii Over the same time, what happened to London prices?

d i In what year was the average house price in both regions highest?

ii Write down the maximum average house value for London.

iii Write down the maximum average house value for the North of England.

At the end of the activity

Which of the following diagrams could you use to represent several large sets of data covering a period of time?

pictogram   bar chart   pie chart   line graph

What are the advantages and disadvantages of each type of diagram?

How do you find the range? What does it measure?

How do you find the mode, the mean and the median?

What are their advantages and disadvantages?