

# Averages

Moving averages can be used whenever data has been recorded over a period of time. They are useful because they smooth out up and downs in a set of data to show the underlying **trend**.

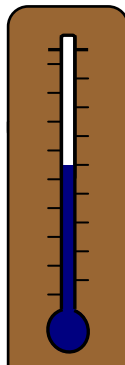
To find a **3 point moving average** in a set of data you take the mean of the first, second and third values, then the mean of the second, third and fourth values, then the mean of the third, fourth and fifth values... and so on. You continue to take the mean of groups of three, moving along one value each time, until you reach the end of the data.

1. How do you think you would calculate a 5 point moving average?

The table on the left below contains information from the UK Met Office and shows the mean temperature in the UK each July from 1998.

2. Complete the second table with the three year moving averages over this period of time.

Year	Mean July Temperature [°C]
1998	14
1999	15.9
2000	14.1
2001	15.3
2002	14.4
2003	16.2
2004	14.5
2005	15.3
2006	17.8
2007	14.3
2008	15.3



Years	Mean July Temperature [°C]
1998-2000	$(14 + 15.9 + 14.1) \div 3 = 14.7$
1999-2001	
2000-2002	
2001-	

Use graph paper. Draw a pair of axes and mark "Years" on the x-axis, "Temperature" on the y-axis.

3. On these axes, plot a graph of the first table and a graph of the second table.

(Think carefully about where you plot the points corresponding to the second table!)

4. Do you think that the data supports the statement that UK summers are getting warmer?

# Averages

One morning the temperature of different areas of London was measured (in °C). This map shows the results.

Unfortunately, two of the temperatures became smudged. Can you work out what they are, using this information?

The **modal** temperature is 15°C.

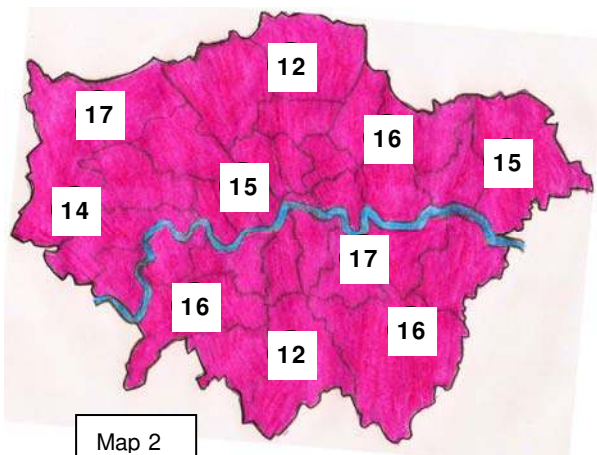
The **mean** temperature is 13°C.

1. What are the two missing temperatures?



Below, are two more temperature maps from the same week. The three maps show the temperatures in London on Thursday, Friday and Saturday. Use the information below to work out which day each map represents.

- The median temperature on Friday was lower than the modal temperature on Thursday.
- On Saturday, the median temperature was two higher than the modal temperature.



2. Which day does each map represent?

3. The temperature in London was recorded over a different week. The mean temperature for the whole week was 22°C. The mean temperature at the weekend was 17°C. What was the mean temperature over the other five days of the week?