

# Spreadsheet Software

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## 8 Functions

We have seen see how to filter data. Now we look at functions such as Average and Date.

### 8.1 The Average Function

Doug Hole plays cricket. In five games he scored: 1, 3, 11, 7 and 8 runs. His average (arithmetic mean) batting score is

$$\frac{1 + 3 + 11 + 7 + 8}{5} = \frac{30}{5}$$

$$= 6$$

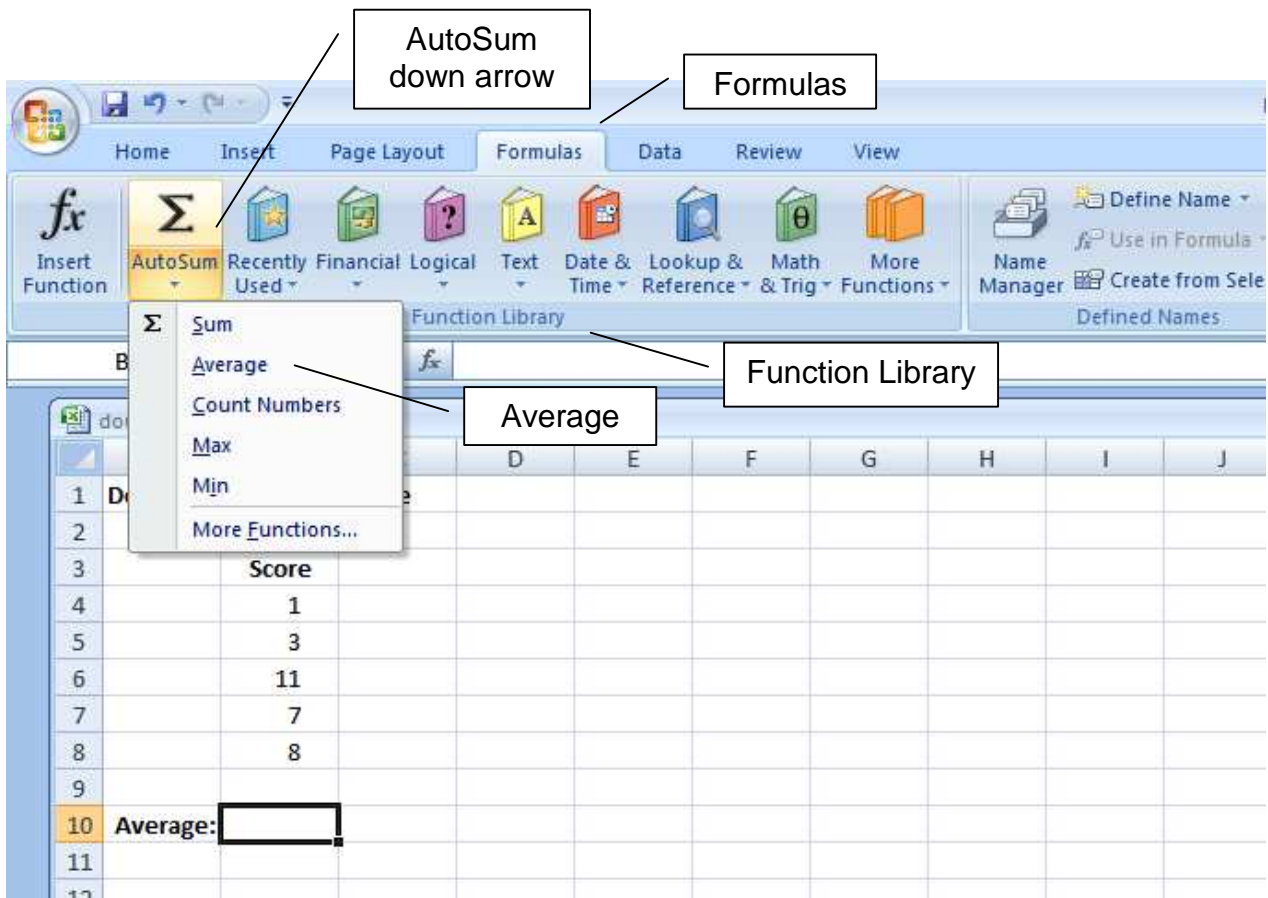
the sum of all his scores divided by the number of scores.

1. create the spreadsheet shown below

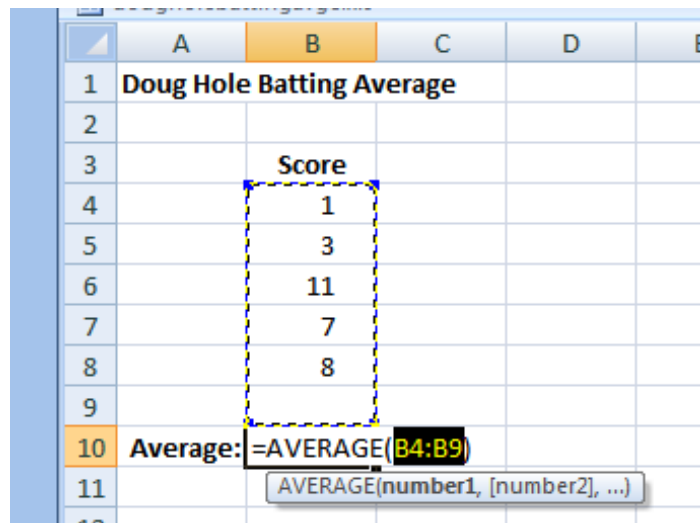
|    | A                                | B                    | C |
|----|----------------------------------|----------------------|---|
| 1  | <b>Doug Hole Batting Average</b> |                      |   |
| 2  |                                  |                      |   |
| 3  |                                  | <b>Score</b>         |   |
| 4  |                                  | 1                    |   |
| 5  |                                  | 3                    |   |
| 6  |                                  | 11                   |   |
| 7  |                                  | 7                    |   |
| 8  |                                  | 8                    |   |
| 9  |                                  |                      |   |
| 10 | <b>Average:</b>                  | <input type="text"/> |   |
| 11 |                                  |                      |   |
| 12 |                                  |                      |   |

*Insert the Average Function*

1. make B10 the active cell
2. click Formulas on the Ribbon
3. on the Function Library tab click the down arrow on AutoSum



4. choose Average



5. click B4

|    | A                                | B            | C | D | E |
|----|----------------------------------|--------------|---|---|---|
| 1  | <b>Doug Hole Batting Average</b> |              |   |   |   |
| 2  |                                  |              |   |   |   |
| 3  |                                  | <b>Score</b> |   |   |   |
| 4  |                                  | 1            |   |   |   |
| 5  |                                  | 3            |   |   |   |
| 6  |                                  | 11           |   |   |   |
| 7  |                                  | 7            |   |   |   |
| 8  |                                  | 8            |   |   |   |
| 9  |                                  |              |   |   |   |
| 10 | <b>Average:</b>                  | =AVERAGE(B4) |   |   |   |
| 11 |                                  |              |   |   |   |

6. drag the bottom right hand corner of B4 down to B8

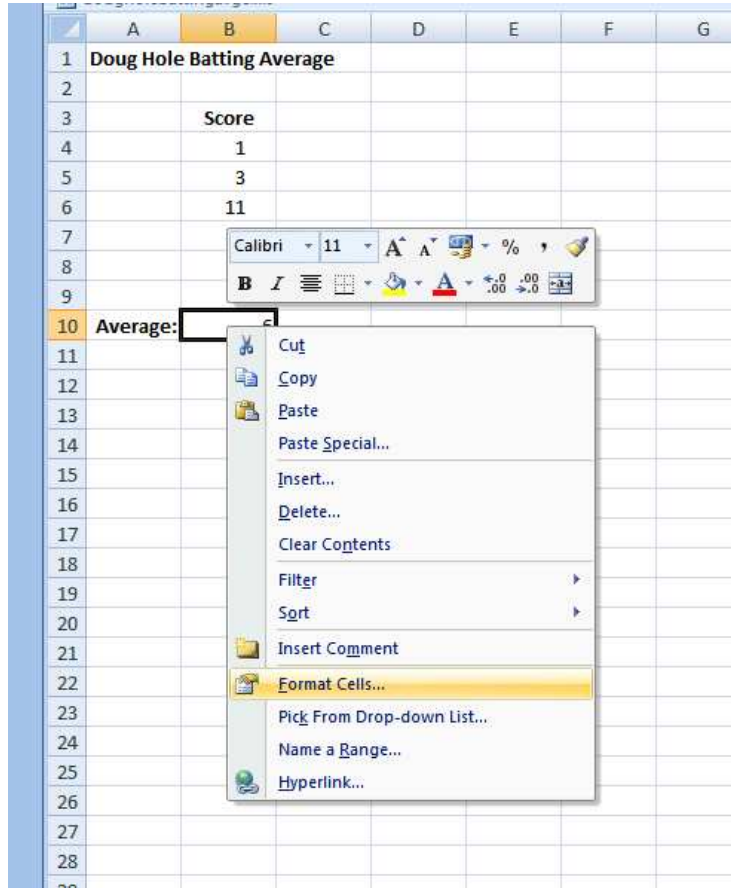
|    | A                                | B               | C | D | E |
|----|----------------------------------|-----------------|---|---|---|
| 1  | <b>Doug Hole Batting Average</b> |                 |   |   |   |
| 2  |                                  |                 |   |   |   |
| 3  |                                  | <b>Score</b>    |   |   |   |
| 4  |                                  | 1               |   |   |   |
| 5  |                                  | 3               |   |   |   |
| 6  |                                  | 11              |   |   |   |
| 7  |                                  | 7               |   |   |   |
| 8  |                                  | 8               |   |   |   |
| 9  |                                  |                 |   |   |   |
| 10 | <b>Average:</b>                  | =AVERAGE(B4:B8) |   |   |   |
| 11 |                                  |                 |   |   |   |

7. press Enter key to complete

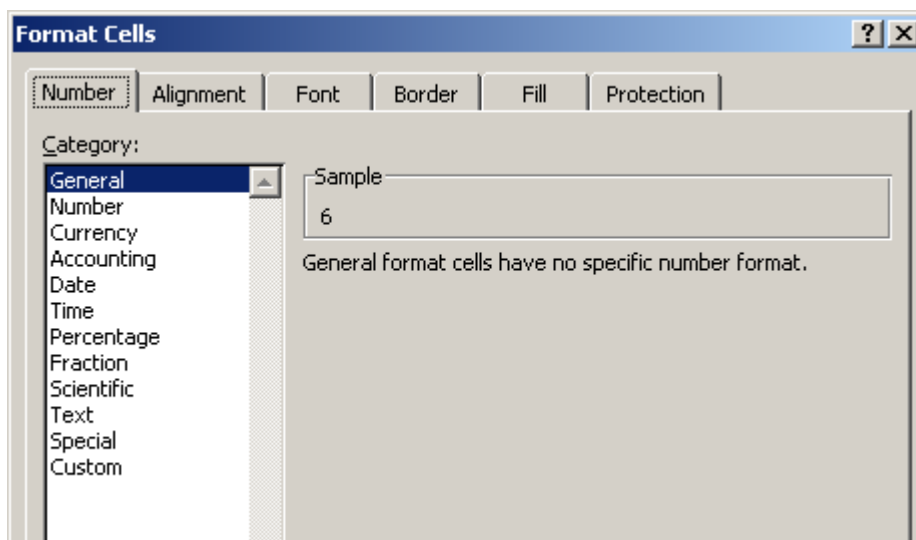
|    | A                                | B            | C |
|----|----------------------------------|--------------|---|
| 1  | <b>Doug Hole Batting Average</b> |              |   |
| 2  |                                  |              |   |
| 3  |                                  | <b>Score</b> |   |
| 4  |                                  | 1            |   |
| 5  |                                  | 3            |   |
| 6  |                                  | 11           |   |
| 7  |                                  | 7            |   |
| 8  |                                  | 8            |   |
| 9  |                                  |              |   |
| 10 | <b>Average:</b>                  | 6            |   |
| 11 |                                  |              |   |

### Format the Average

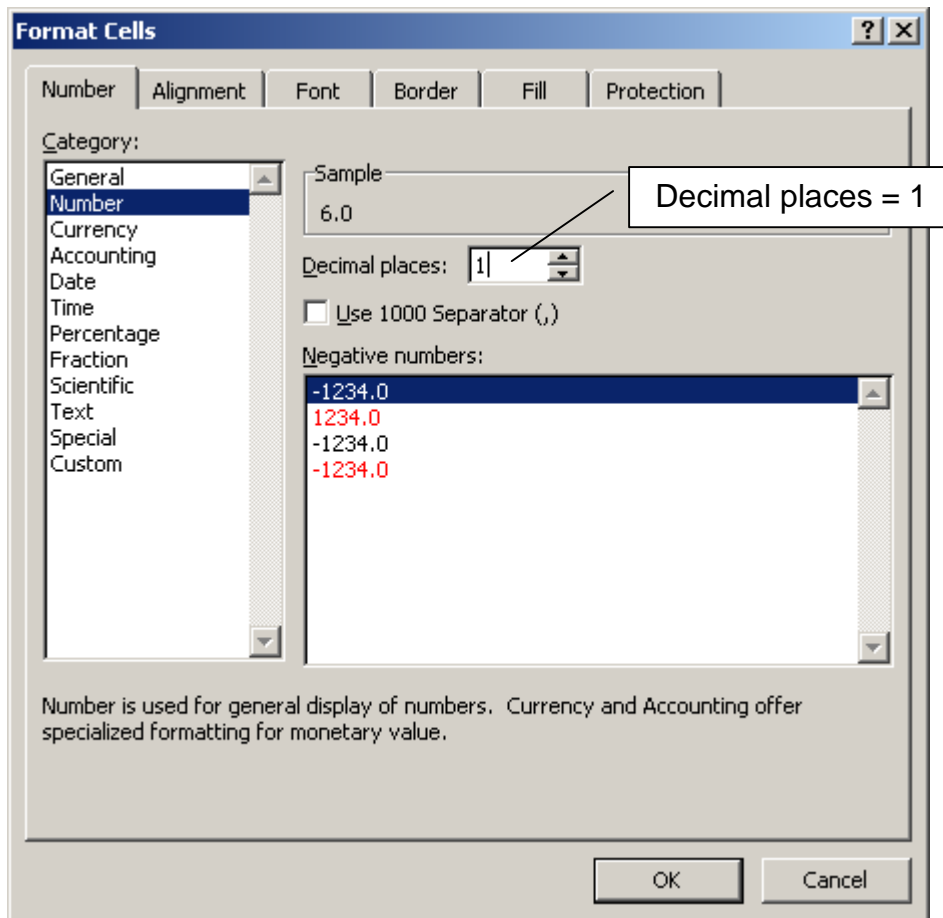
1. now format the 6 to 1 decimal place (usually 1 decimal place more than the values being averaged). Right click on B10
2. choose Format Cells ...



3. click Number tab



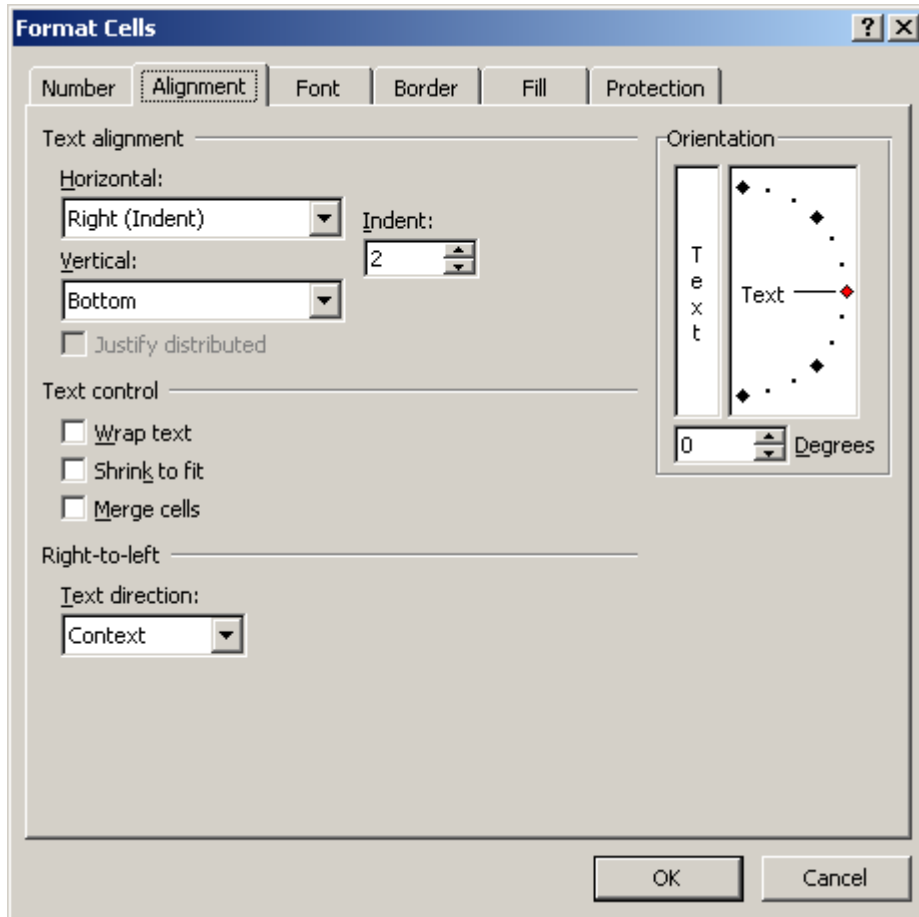
4. choose Number
5. set Decimal Places to 1



6. OK

|    | A                                | B            | C |
|----|----------------------------------|--------------|---|
| 1  | <b>Doug Hole Batting Average</b> |              |   |
| 2  |                                  |              |   |
| 3  |                                  | <b>Score</b> |   |
| 4  |                                  | 1            |   |
| 5  |                                  | 3            |   |
| 6  |                                  | 11           |   |
| 7  |                                  | 7            |   |
| 8  |                                  | 8            |   |
| 9  |                                  |              |   |
| 10 | <b>Average:</b>                  | 6.0          |   |
| 11 |                                  |              |   |
| 12 |                                  |              |   |

7. right click on B10
8. choose Format Cells ...
9. choose Alignment, Horizontal Right (Indent), Indent = 2



10. OK

|    | A                                | B            | C |
|----|----------------------------------|--------------|---|
| 1  | <b>Doug Hole Batting Average</b> |              |   |
| 2  |                                  |              |   |
| 3  |                                  | <b>Score</b> |   |
| 4  |                                  | 1            |   |
| 5  |                                  | 3            |   |
| 6  |                                  | 11           |   |
| 7  |                                  | 7            |   |
| 8  |                                  | 8            |   |
| 9  |                                  |              |   |
| 10 | <b>Average:</b>                  | 6.0          |   |
| 11 |                                  |              |   |
| 12 |                                  |              |   |

Job done. Try it out.

## Exercise 8.1

1. Try out the batting averages spreadsheet shown above. Insert appropriate comments. Print out both spreadsheet values and formula.
2. Carrie Okey has a small online business. Her sales for last week were:

|           |         |
|-----------|---------|
| Monday    | £240.90 |
| Tuesday   | £374.86 |
| Wednesday | £213.64 |
| Thursday  | £287.38 |
| Friday    | £235.04 |
| Saturday  | £171.86 |
| Sunday    | £184.24 |

Create an appropriate spreadsheet and use a function to determine her average daily income (correct to two decimal places). Using pen, paper and ordinary arithmetic, perform a second calculation, independent of your spreadsheet, of her average daily income. Compare your two results for the average.

## 8.2 The Date Function

We see how many days there are between two dates.

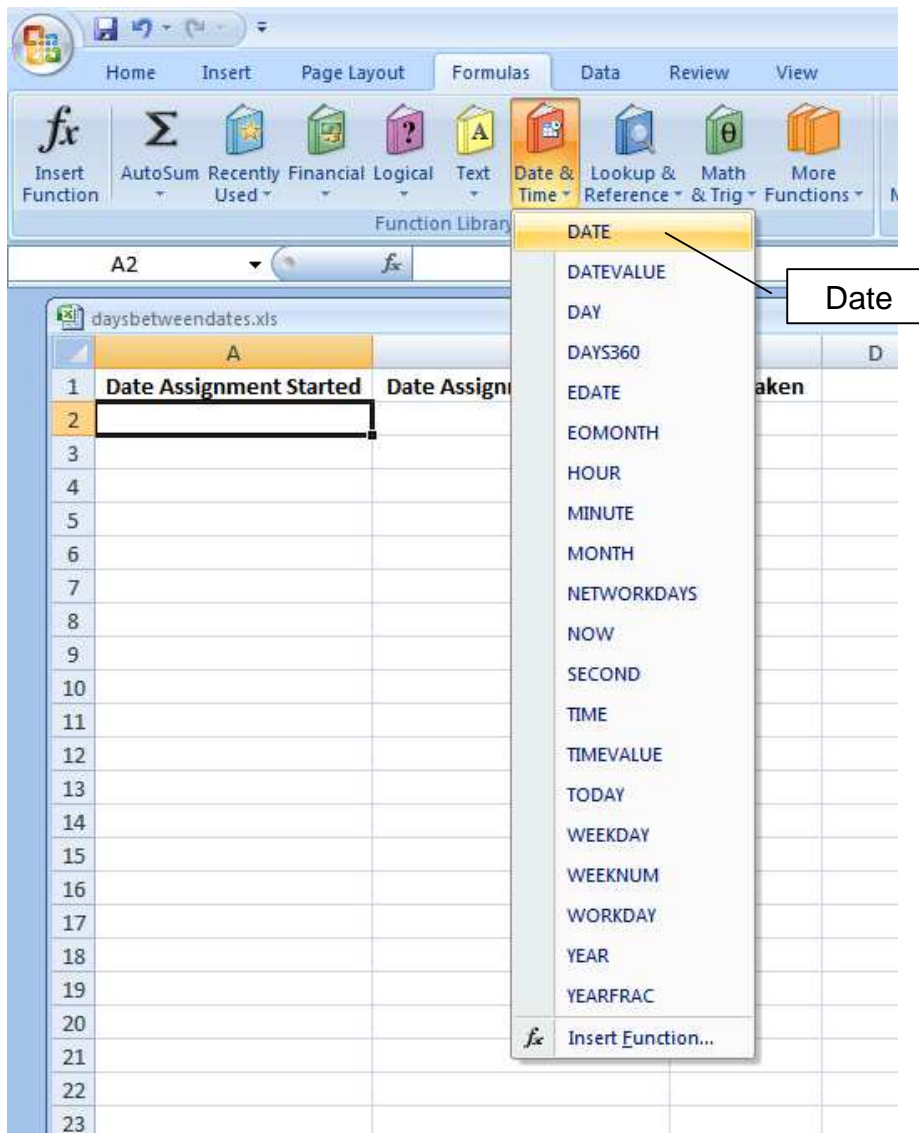
1. create a new spreadsheet shown below

|   | A                       | B                        | C          |
|---|-------------------------|--------------------------|------------|
| 1 | Date Assignment Started | Date Assignment Finished | Days Taken |
| 2 |                         |                          |            |
| 3 |                         |                          |            |
| 4 |                         |                          |            |

2. make A2 the active cell
3. click on Formulas
4. in the Function Library tab click the Date & Time down arrow

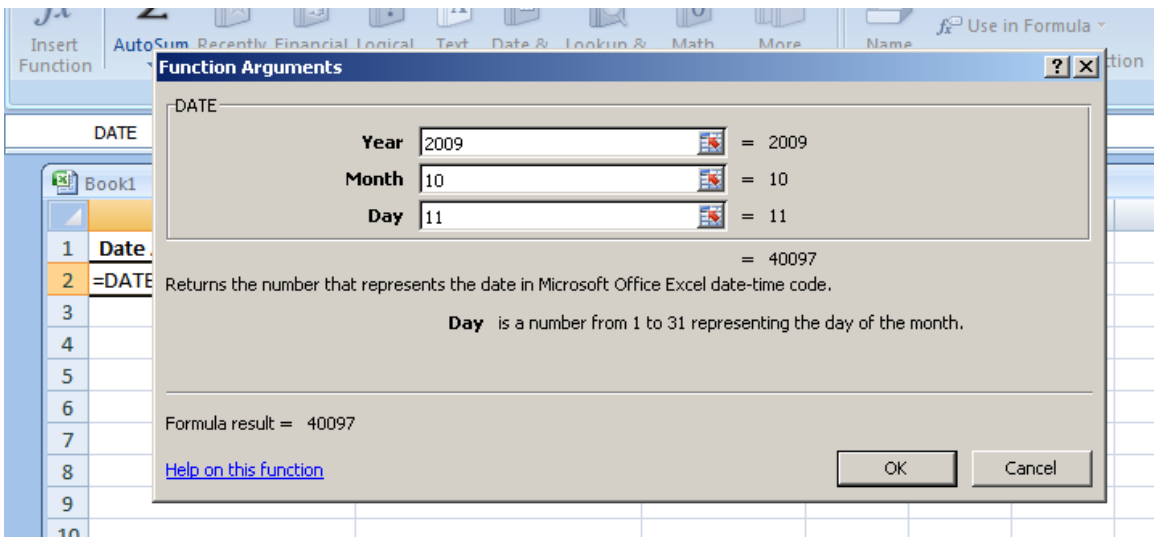
The screenshot shows the Excel 'Formulas' ribbon with the 'Date & Time' button highlighted. A callout box labeled 'Date & Time down arrow' points to this button. Below the ribbon, the spreadsheet is shown with cell A2 selected. A callout box labeled 'Function Library' points to the ribbon area.

## 5. choose DATE

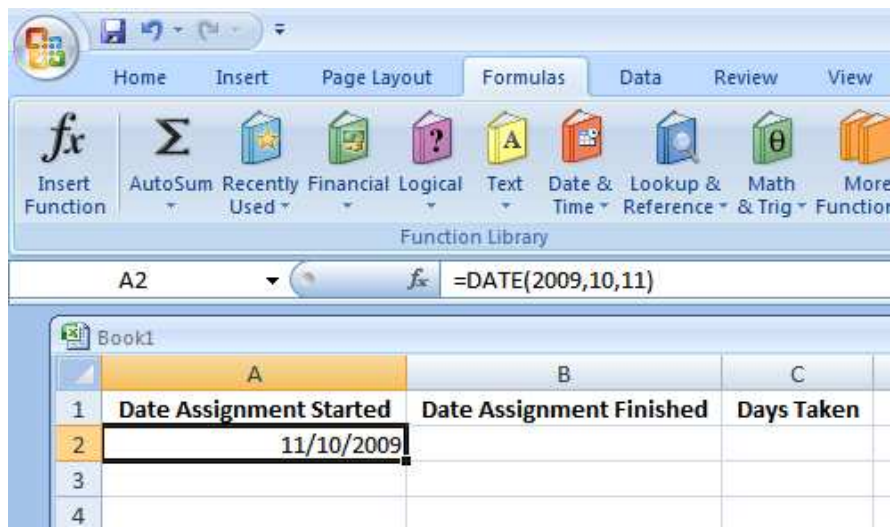


## 6. enter a date eg Year = 2009, Month = 10, Day = 11



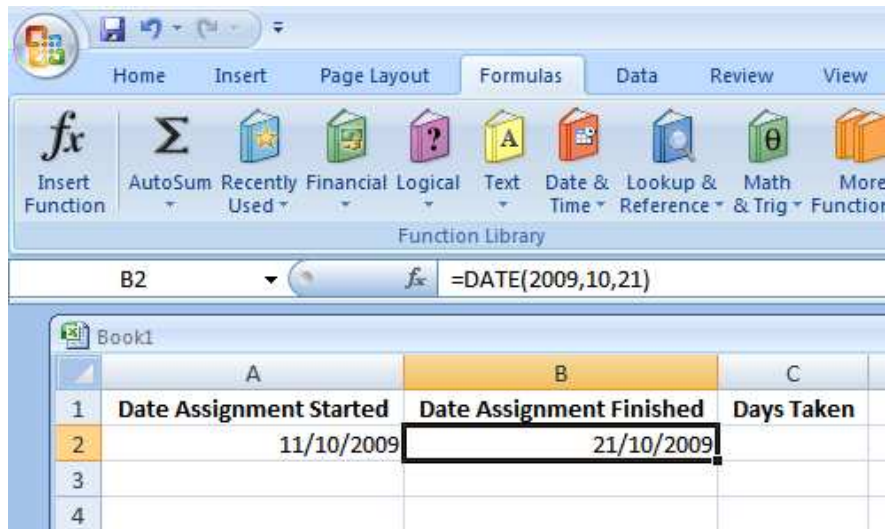


7. OK



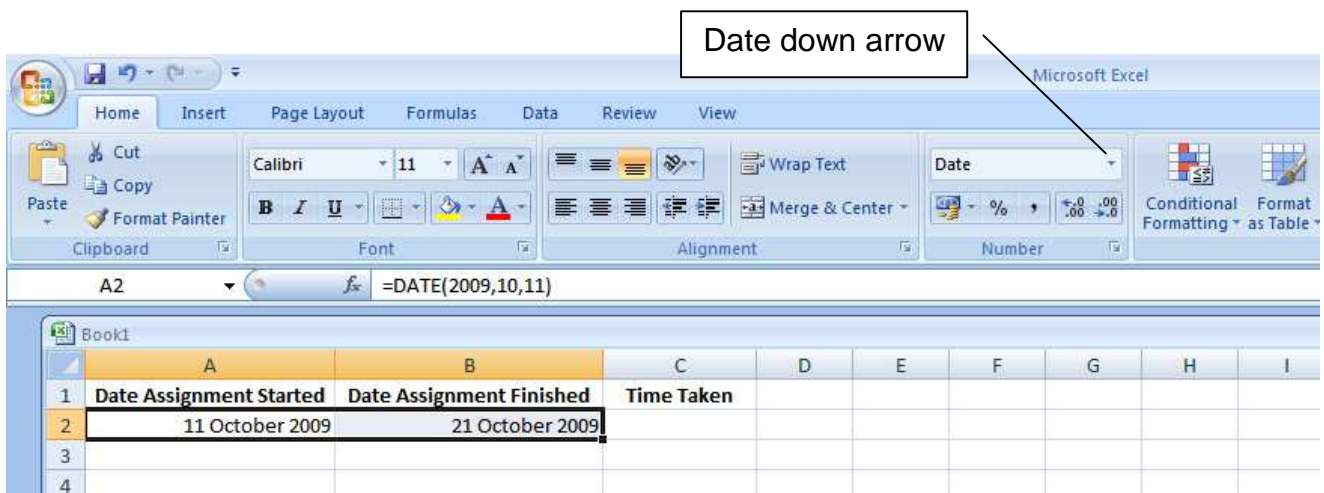
Notice the date in the formula bar. It is in the format Year, Month, Day. Notice the date in A2. It is in the format Day/Month/Year.

8. in the same way, in B21, enter the date 21 October 2009 for Date Assignment finished.



### Format the Dates

1. highlight the dates
2. click on Home in the Ribbon
3. in the Number panel click on the Date down arrow



## 4. choose Long Date

The screenshot shows the Microsoft Excel interface. The formula bar at the top displays the formula `=DATE(2009,10,11)`. The spreadsheet has the following data:

|    | A                       | B                        | C          | D | E |
|----|-------------------------|--------------------------|------------|---|---|
| 1  | Date Assignment Started | Date Assignment Finished | Days Taken |   |   |
| 2  | 11/10/2009              | 21/10/2009               |            |   |   |
| 3  |                         |                          |            |   |   |
| 4  |                         |                          |            |   |   |
| 5  |                         |                          |            |   |   |
| 6  |                         |                          |            |   |   |
| 7  |                         |                          |            |   |   |
| 8  |                         |                          |            |   |   |
| 9  |                         |                          |            |   |   |
| 10 |                         |                          |            |   |   |
| 11 |                         |                          |            |   |   |
| 12 |                         |                          |            |   |   |
| 13 |                         |                          |            |   |   |
| 14 |                         |                          |            |   |   |
| 15 |                         |                          |            |   |   |
| 16 |                         |                          |            |   |   |
| 17 |                         |                          |            |   |   |
| 18 |                         |                          |            |   |   |
| 19 |                         |                          |            |   |   |
| 20 |                         |                          |            |   |   |
| 21 |                         |                          |            |   |   |

The 'Format Cells' dialog box is open, showing various number formats. The 'Long Date' format is selected, which displays the date as '11 October 2009'. A callout box labeled 'Long Date' points to this option in the dialog.

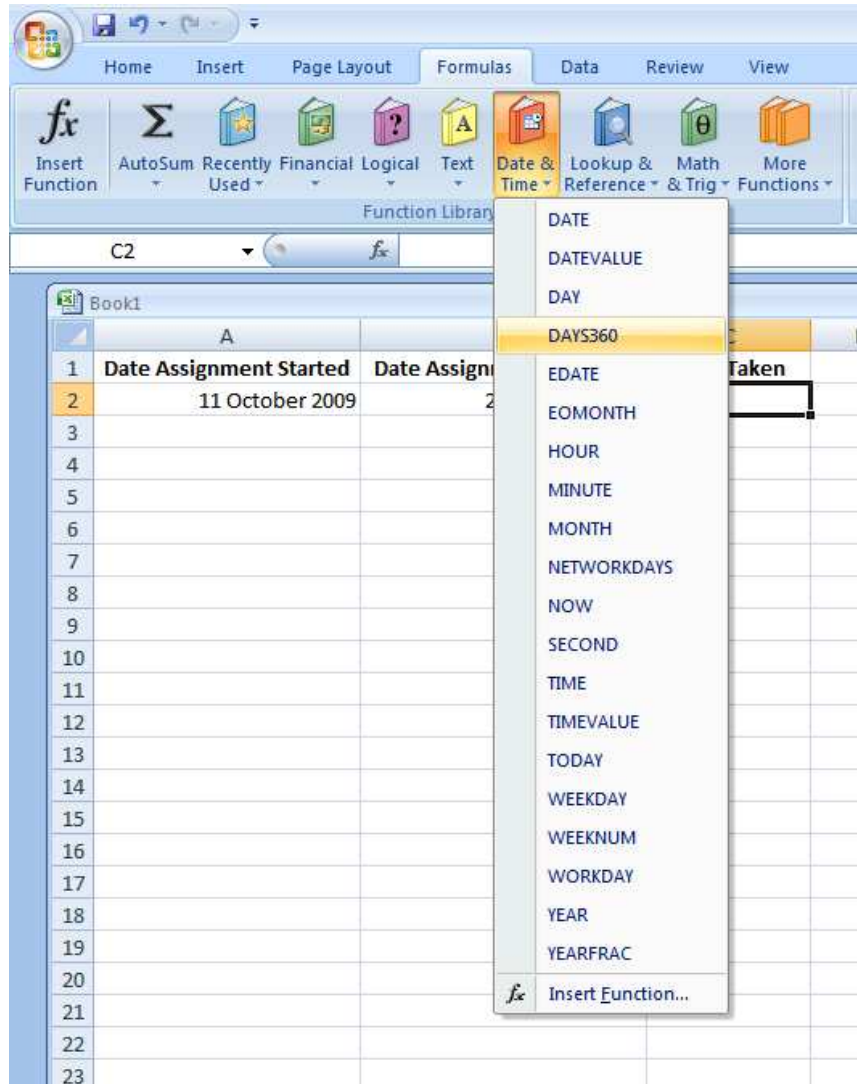
That's better.

|   | A                       | B                        | C          |
|---|-------------------------|--------------------------|------------|
| 1 | Date Assignment Started | Date Assignment Finished | Days Taken |
| 2 | 11 October 2009         | 21 October 2009          |            |
| 3 |                         |                          |            |
| 4 |                         |                          |            |

### 8.3 The Days360 Function

We use Days360 to work out the number of days between two dates.

1. make cell C2 active
2. click on Formulas
3. click on Date & Time down arrow
4. choose DAYS360



5. drag the Function Arguments box clear of A2 and A3
6. click in Start\_date
7. click A2
8. click in End\_date
9. click B2
10. enter True for Method (this means use the European date system)

The screenshot shows the Microsoft Excel interface with the **Formulas** tab selected. The **Function Library** group is active, and the **DAYS360** function is selected. The formula bar shows `=DAYS360(A2,B2,True)`. The spreadsheet below shows a table with the following data:

|   | A                              | B                               | C                                 | D | E | F | G |
|---|--------------------------------|---------------------------------|-----------------------------------|---|---|---|---|
| 1 | <b>Date Assignment Started</b> | <b>Date Assignment Finished</b> | <b>Days Taken</b>                 |   |   |   |   |
| 2 | 11 October 2009                | 21 October 2009                 | <code>=DAYS360(A2,B2,True)</code> |   |   |   |   |
| 3 |                                |                                 |                                   |   |   |   |   |
| 4 |                                |                                 |                                   |   |   |   |   |

The **Function Arguments** dialog box is open, showing the following arguments:

- Start\_date**: A2 = 40097
- End\_date**: B2 = 40107
- Method**: True = TRUE

The dialog box also displays the formula result: `= 10`. Below the arguments, it states: "Returns the number of days between two dates based on a 360-day year (twelve 30-day months)." and "Method is a logical value specifying the calculation method: U.S. (NASD) = FALSE or omitted; European = TRUE." The **OK** button is highlighted.

11. OK

|   | A                              | B                               | C                 |
|---|--------------------------------|---------------------------------|-------------------|
| 1 | <b>Date Assignment Started</b> | <b>Date Assignment Finished</b> | <b>Days Taken</b> |
| 2 | 11 October 2009                | 21 October 2009                 | 10                |
| 3 |                                |                                 |                   |
| 4 |                                |                                 |                   |

Time taken to complete the assignment is 10 days.

*Tidy Up*

1. centre the data under their headings

|   | A                              | B                               | C                 |
|---|--------------------------------|---------------------------------|-------------------|
| 1 | <b>Date Assignment Started</b> | <b>Date Assignment Finished</b> | <b>Days Taken</b> |
| 2 | 11 October 2009                | 21 October 2009                 | 10                |
| 3 |                                |                                 |                   |
| 4 |                                |                                 |                   |

2. Insert appropriate comments. Save. Print both the spreadsheet values and the formulae.

### **Exercise 8.2**

1. Use the Days360 function to work out how many days between now and your next birthday. Use the Now() function to automatically insert today's date (whatever date that is).

**We have** looked at the Average, Date and Days360 functions.

**Next** we look at logic.

### **Bibliography**

*www.homeandlearn.co.uk* accessed August 2009