Microsoft Excel - Solver

Solver

Goal Seek calculated the possibility of a solution but can produce unrealistic results.

Use Solver for problems where you need to place constraints on a set of outcomes.

Constraints are limits that have to be placed on certain values for practical reasons, for example, you can only have 24 hours in a day.

Solver will give you the solution to more sophisticated optimisation calculations. You can find an optimal value or a target value for a formula in one cell, the target cell, on a worksheet. Solver works with a group of cells that are related, either directly or indirectly, to the formula in the target cell.

Solver adjusts the values in specific changing cells to produce the desired result in the target cell.

You able to apply constraints to any of the changing cells, the target cell, or other cells that are directly or indirectly related to the target cell. It is a very powerful tool and will help solve all sorts of mix and combination problems.

Solver is an Add-in program which may need to be loaded using Add-In pane in Excel Options.

Solver Example.

	January	February	March	Total Sales
London	£32,000.00	£43,000.00	£61,000.00	£136,000.00
York	£35,000.00	£23,121.00	£34,555.00	£ 92,676.00
Cardiff	£41,989.00	£56,989.00	£80,121.00	£179,099.00
Warrington	£48,978.00	£34,987.00	£35,476.00	£119,441.00
Ipswich	£55,967.00	£45,433.00	£45,348.00	£146,748.00
Surry	£62,956.00	£18,676.00	£65,786.00	£147,418.00
Essex	£34,232.00	£45,444.00	£56,888.00	£136,564.00

In Cell “H5” we have the total sales for “London”.

The forecast prediction for Months January – March.

The current value £136,000.00

We require the Total sales value for “London” to be £140,000.00.

London’s monthly figures are held in cells “E5:G5”

Solver will adjust the values between “E5:G5” (GUESS!!!) to produce the Total Sales result of our required £140,000.00.

We may want to **constraint** the monthly figures:

January <=5,000.00
February <=60,000.00
March <=75,000.00

Once Solver has been applied with the above constraints the following outcomes will be displayed.

Notice Solver has changed the monthly figures within the parameters of the constraints set above.

Before

	January	February	March	Total Sales
London	£32,000.00	£43,000.00	£61,000.00	£136,000.00
York	£35,000.00	£23,121.00	£34,555.00	£ 92,676.00
Cardiff	£41,989.00	£56,989.00	£80,121.00	£179,099.00
Warrington	£48,978.00	£34,987.00	£35,476.00	£119,441.00
Ipswich	£55,967.00	£45,433.00	£45,348.00	£146,748.00
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Essex	£34,232.00	£45,444.00	£56,888.00	£136,564.00

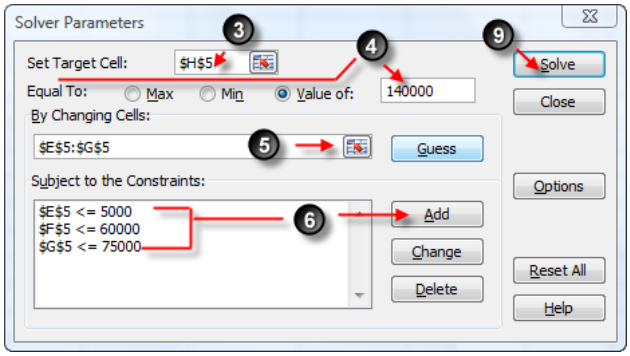
After

	January	February	March	Total Sales
London	£ 5,000.00	£60,000.00	£75,000.00	£140,000.00
York	£35,000.00	£23,121.00	£34,555.00	£ 92,676.00
Cardiff	£41,989.00	£56,989.00	£80,121.00	£179,099.00
Warrington	£48,978.00	£34,987.00	£35,476.00	£119,441.00
Ipswich	£55,967.00	£45,433.00	£45,348.00	£146,748.00
Surry	£62,956.00	£18,676.00	£65,786.00	£147,418.00
Essex	£34,232.00	£45,444.00	£56,888.00	£136,564.00

Applying Solver.

1. **Select** the **Data Tab** from the **Ribbon**.
2. **Select** the **Solver** button.

3. **Select** the Target Cell.
4. **Click** an **Equal To Option**, and enter a **value** if required.
5. **Select** the target cell that Solver can change.
6. Click **Add**.



7. **Enter** specific cell reference and constraint, and click **Add**.

   Repeat this process to apply as many constraints that may be required.

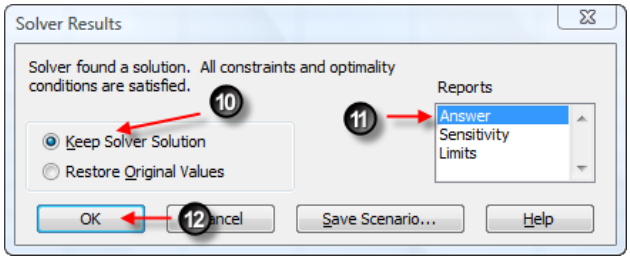
8. Click **Ok**.

9. Click **Solve**.

10. **Click** on the **Keep Solver Solution**.

11. **Select** the Required Report in this case **Answer**.

12. Click **Ok**.



13. A graphical report will be generated on a new worksheet.

    In this example the sheet has been named

    "Answer Report 1".

Microsoft Excel 12.0 Answer Report
Worksheet: [Book1]Sheet2
Report Created: 05/08/2008 21:53:34

Target Cell (Value Of)

Cell	Name	Original Value	Final Value
H5	London Total Sales	£ 136,000.00	£140,000.00

Adjustable Cells

Cell	Name	Original Value	Final Value
E5	London January	£ 32,000.00	£ 5,000.00
F5	London February	£ 43,000.00	£ 60,000.00
G5	London March	£ 61,000.00	£ 75,000.00

Constraints

Cell	Name	Cell Value	Formula	Status	Slack
E5	London January	£ 5,000.00	E5<=5000	Binding	0
F5	London February	£ 60,000.00	F5<=60000	Binding	0
G5	London March	£ 75,000.00	G5<=75000	Binding	0