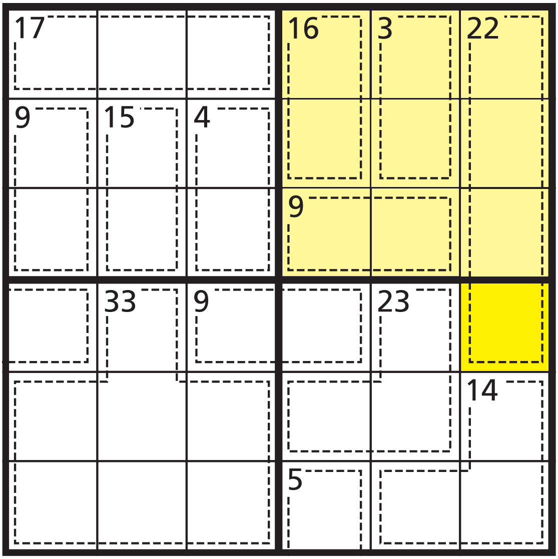
Killer Sudoku

The normal rules of Sudoku apply. In addition, the digits in each inner shape (marked by dots) must add up to the number in the top corner of that box. No digit can be repeated within an inner shape.

Example



We've provided a detailed explanation on the pages that follow, but here are some general tips:

Examine this section of a Killer Sudoku puzzle. Don't let the empty grid put you off. Look for sum boxes with very high and very low totals. They're likely to provide a limited choice of contents.

Remember that the numbers in each row, each column and each 3x3 block must always add up to 45. (1+2+3+4+5+6+7+8+9=45.) See the tinted block above. The numbers in the block add up to 50. Notice that one of the inner boxes extends beyond the block by one cell. The number in this, the bright yellow cell, must be 50-45. In other words, 5.

Use your Kakuro skills to identify sum boxes that have unique digit answers. For example, the 16 above can only be filled with a 7 and a 9. See the table on the final page for details.

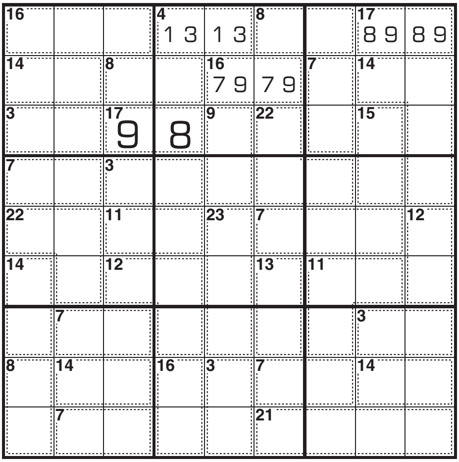
Look for unusual sum box shapes. They often lead to a square that's easy to complete.

Finally, don't forget the basic rules of Sudoku. It's easy to get tangled up in sums when the standard rules will get you there.

Solving Killer: a guided tour

If you are new to Killer Sudoku, we recommend that you work through this easy-to-follow step-by-step guide to solving a puzzle. It provides the perfect introduction to the techniques that can be employed to tackle this, the king of Sudoku puzzles.

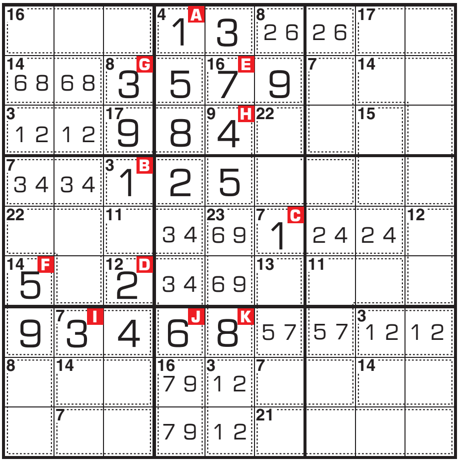
Killer Sudoku puzzles may look intimidating, but don't be put off by the empty grids. The puzzles follow the rules of normal Sudoku – place a digit from 1–9 so that each row, column and 3x3 block contains all of the digits from 1–9. In addition, the digits in each inner shape (marked by dots) must add up to the number in the top corner of that shape. No digit is repeated in an inner shape.



Start by looking for sums that use unique combinations of digits. In the top row of the grid above, the 17 in the right-hand block can only be made up of 8 and 9. Similarly, the 4 in the top row of the centre block can only be made up of 3 and 1. It can't be 2 and 2, as digits can't be repeated within a shape.

Use these **unique combinations** to narrow down the possibilities. In the second row there's a 16 in the centre block, which can only be made up of 7 and 9. The 17 in the third row can only be made up of 8 and 9, and as the centre block already contains the 7 and 9 from the 16, the 9 must go in the left-hand block.

Don't forget the **basic rules** of Sudoku – it's very easy to get tangled up in the sums. For example, the first and third rows of the above grid already contain 8, in the centre and right-hand blocks. The 8 must therefore be in the second row of the left-hand block. It can't go in the third box so the 14 in the first and second boxes must be made up of 8 and 6.



The 3 shape in the centre column at the bottom of the grid must be made up of 1 and 2. The 1 for the 4 shape in the first row must therefore be placed in box A, as it can't go in the centre column. The 1 for the 3 shape in the fourth row must then be in box B. The 1 in the centre block must be in the third column. It's too small to make up the 22 or 13 shapes, so it must be part of the 7 shape in box C.

With 2 being placed in the fourth and fifth rows, its position in the sixth row must be in box D, as it's too small to make up the 14 or 22 shapes. The 23 shape in the central column has a unique answer of 6, 8 and 9, so the 16 shape in the top centre block must have the 7 in box E.

The total number of digits in each 3x3 block always adds up to 45. In the bottom left-hand block, the shapes extend outside the block by one box. Add up the shape totals covered within the block (14+7+8+14+7)=50. Subtract 45 to work out the digit in the box outside the block – in this case 5 in box F. Complete the 14 shape with a 9.

The 8 shape in the second row must be made up of 3 and 5, as 1 and 2 have already been placed in both of its columns, and it can't be 4 and 4. There's already a 3 in the top centre block, so the 3 must go in box G.

The 23 and 3 shapes in the centre column have unique numbers, so the 9 shape in the centre column must be made up of the remaining digits - 4 and 5. Having placed box G, the 5 must go outside the top centre block and the 4 in box H.

The 7 shape in the seventh row must be made up of 3 and 4, as the 1 and 2 are already used in the 3 shape at the end of the row. After placing box G, the 3 must go in box I and the shape is completed with a 4.

In the fourth column, the only digits that are unknown are 3, 4 and 6. Having placed the 7 shape in box I, the only option for box J is now 6. Box K cannot be 6 or 9, so must be 8.

Text: Win Magyar

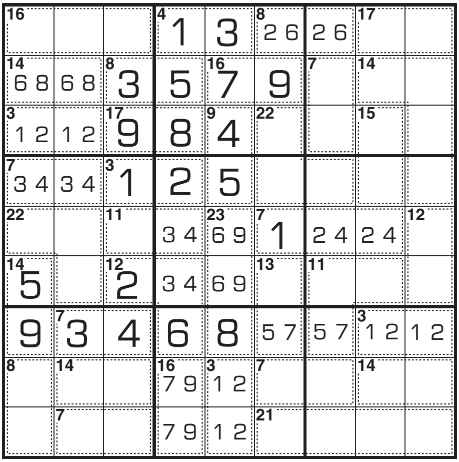
Guided tour (continued)

From this point on, the puzzle becomes easier. Some of the next steps are described below.

The positions of 3 and 4 in the fourth column can be fixed, as 4 will complete the 12 shape that starts in the sixth row.

The 13 sum in the sixth column must be made up of 8 and 5, as 7 will be used in the 16 shape in the fourth column. 8 must be in the centre block as there's already an 8 in the bottom centre block. Having placed 5 in the seventh row, 7 can now be placed next to it. The only place for 7 in the centre block is in the top right-hand corner.

Only 2 and 6 remain to be placed in the top centre block. 2 can't be part of the 22 shape, as it's too small a number, so must go in the top right-hand corner, and 6 in the remaining empty box. The 15 shape in the eighth column can't contain 6, 8 or 9 in the third row, so must contain 7. 8 completes the shape.



Unique Digit Answers

Look for sums that contain unique combinations of digits. They're always helpful. For example, 3 can only be made up of two digits and they must be 1+2. Even if you don't know the order of digits, ALWAYS note the options in the grid, where they are known.

3 →	1 • 2	**10** →	1 • 2 • 3 • 4
4 →	1 • 3	**11** →	1 • 2 • 3 • 5
16 →	7 • 9	**29** →	5 • 7 • 8 • 9
17 →	8 • 9	**30** →	6 • 7 • 8 • 9
6 →	1 • 2 • 3	**15** →	1 • 2 • 3 • 4 • 5
7 →	1 • 2 • 4	**16** →	1 • 2 • 3 • 4 • 6
23 →	6 • 8 • 9	**34** →	4 • 6 • 7 • 8 • 9
24 →	7 • 8 • 9	**35** →	5 • 6 • 7 • 8 • 9

Warm-up

You have followed the guide to solving this puzzle. Now, try to work through it by yourself.