HOW TO SOLVE
CROSS SUMS / KAKURO / SUM TOTALS

SOLVING TIPS

The puzzles variously known as Cross Sums, Kakuro, and Sum Totals are essentially crosswords in which digits from 1 through 9 are entered into the spaces of the diagram instead of letters. The "definition" for each entry is the sum of the numbers to be entered; these sums appear in white in the black boxes adjacent to their spaces. There are frequently two sums in a black box, divided by a diagonal white line. If a sum appears above and to the right of the diagonal line, it indicates an ACROSS sum for the spaces immediately to the right. If the sum appears below and to the left of the diagonal line, it indicates a DOWN sum for the spaces immediately below it. Certain rules always apply:
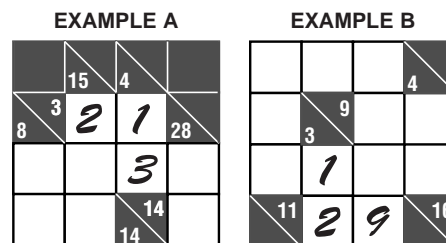
1. Only the digits 1 through 9 are used; there are never zeros or numbers higher than 9.

2. No digit is used more than once in an entry. The answer to a 2-digit sum of four, for example, must be made up of the digits 1 and 3 (in either order), never 2 and 2.

3. The digits in an entry may appear in any order; the order is determined by the crossing entries. The digits for a 3-digit sum of seven, for example, could appear as 1-2-4; 1-4-2; 2-1-4; 2-4-1; 4-1-2; or 4-2-1.

4. Unlike a crossword, in which the same word will not appear twice, sums may be repeated within a puzzle. If you have entered 1 and 3 in answer to a 2-digit sum of four in one place, you may use the same digits in the same order (or a different order) in another.

5. Though there may be several possible combinations of digits for a given sum, only one is correct and will provide the necessary crossings with the answers to other sums. There is only one correct solution to the puzzle.

GETTING STARTED

A good rule of thumb is to look for 2-digit entries with very low or very high sums (3 or 4, or 16 or 17), since these will have the fewest possible combinations.

For example, a 2-digit three (1 and 2) and a 2-digit four (1 and 3) have only the digit 1 in common, so you can enter both combinations when they cross. See Example A.

There are several possible combinations for a 2-digit eleven: 2 and 9; 3 and 8; 4 and 7; or 5 and 6 — but if the 2-digit eleven crosses a 2-digit three, the only digit they share is 2. The 2 can be entered, and so on. See Example B.

EXAMPLE A   **EXAMPLE B**

The combination tables on the following page will help you recognize which longer sums have the fewest possible combinations, and what digits different sums have in common. All possibilities for 2-, 3-, 4-, 5- and 6-digit combinations, for each possible sum, are provided.

Crossings involving longer entries have more possible combinations, so you may not be able to eliminate all incorrect combinations at first. When stuck, try moving to a different part of the puzzle and working your way back to the problem spot. Or, if you can reduce the possibilities to just a few, try writing the different possibilities LIGHTLY in the corners of each square, and following each one through the puzzle until you reach an impossible interlock that disqualifies all but one of them.

DIGIT COMBINATIONS

2 DIGITS

```
 3:  1-2
 4:  1-3
 5:  1-4;  2-3
 6:  1-5;  2-4
 7:  1-6;  2-5;  3-4
 8:  1-7;  2-6;  3-5
 9:  1-8;  2-7;  3-6;  4-5
10:  1-9;  2-8;  3-7;  4-6
11:  2-9;  3-8;  4-7;  5-6
12:  3-9;  4-8;  5-7
13:  4-9;  5-8;  6-7
14:  5-9;  6-8
15:  6-9;  7-8
16:  7-9
17:  8-9
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3 DIGITS

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 6:  1-2-3;
 7:  1-2-4
 8:  1-2-5;  1-3-4
 9:  1-2-6;  1-3-5;  2-3-4
10:  1-2-7;  1-3-6;  1-4-5;  2-3-5
11:  1-2-8;  1-3-7;  1-4-6;  2-3-6;  2-4-5
12:  1-2-9;  1-3-8;  1-4-7;  1-5-6;  2-3-7;  2-4-6;  3-4-5
13:  1-3-9;  1-4-8;  1-5-7;  2-3-8;  2-4-7;  2-5-6;  3-4-6
14:  1-4-9;  1-5-8;  1-6-7;  2-3-9;  2-4-8;  2-5-7;  3-4-7;  3-5-6
15:  1-5-9;  1-6-8;  2-4-9;  2-5-8;  2-6-7;  3-4-8;  3-5-7;  4-5-6
16:  1-6-9;  1-7-8;  2-5-9;  2-6-8;  3-4-9;  3-5-8;  3-6-7;  4-5-7
17:  1-7-9;  2-6-9;  2-7-8;  3-5-9;  3-6-8;  4-5-8;  4-6-7
18:  1-8-9;  2-7-9;  3-6-9;  3-7-8;  4-5-9;  4-6-8;  5-6-7
19:  2-8-9;  3-7-9;  4-6-9;  4-7-8;  5-6-8
20:  3-8-9;  4-7-9;  5-6-9;  5-7-8
21:  4-8-9;  5-7-9;  6-7-8
22:  5-8-9;  6-7-9
23:  6-8-9
24:  7-8-9
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4 DIGITS

```
10:  1-2-3-4
11:  1-2-3-5
12:  1-2-3-6;  1-2-4-5
13:  1-2-3-7;  1-2-4-6;  1-3-4-5
14:  1-2-3-8;  1-2-4-7;  1-2-5-6;  1-3-4-6;  2-3-4-5
15:  1-2-3-9;  1-2-4-8;  1-2-5-7;  1-3-4-7;  1-3-5-6;  2-3-4-6
16:  1-2-4-9;  1-2-5-8;  1-2-6-7;  1-3-4-8;  1-3-5-7;  1-4-5-6;  2-3-4-7;  2-3-5-6
17:  1-2-5-9;  1-2-6-8;  1-3-4-9;  1-3-5-8;  1-3-6-7;  1-4-5-7;  2-3-4-8;  2-3-5-7;  2-4-5-6
18:  1-2-6-9;  1-2-7-8;  1-3-5-9;  1-3-6-8;  1-4-5-8;  1-4-6-7;  2-3-4-9;  2-3-5-8;  2-3-6-7;  2-4-5-7;  3-4-5-6
19:  1-2-7-9;  1-3-6-9;  1-3-7-8;  1-4-5-9;  1-4-6-8;  1-5-6-7;  2-3-5-9;  2-3-6-8;  2-4-5-8;  2-4-6-7;  3-4-5-7
20:  1-2-8-9;  1-3-7-9;  1-4-6-9;  1-4-7-8;  1-5-6-8;  2-3-6-9;  2-3-7-8;  2-4-5-9;  2-4-6-8;  2-5-6-7;  3-4-5-8;  3-4-6-7
21:  1-3-8-9;  1-4-7-9;  1-5-6-9;  1-5-7-8;  2-3-7-9;  2-4-6-9;  2-4-7-8;  2-5-6-8;  3-4-5-9;  3-4-6-8;  3-5-6-7
22:  1-4-8-9;  1-5-7-9;  1-6-7-8;  2-3-8-9;  2-4-7-9;  2-5-6-9;  2-5-7-8;  3-4-6-9;  3-4-7-8;  3-5-6-8;  4-5-6-7
23:  1-5-8-9;  1-6-7-9;  2-4-8-9;  2-5-7-9;  2-6-7-8;  3-4-7-9;  3-5-6-9;  3-5-7-8;  4-5-6-8
24:  1-6-8-9;  2-5-8-9;  2-6-7-9;  3-4-8-9;  3-5-7-9;  3-6-7-8;  4-5-6-9;  4-5-7-8
25:  1-7-8-9;  2-6-8-9;  3-5-8-9;  3-6-7-9;  4-5-7-9;  4-6-7-8
26:  2-7-8-9;  3-6-8-9;  4-5-8-9;  4-6-7-9;  5-6-7-8
27:  3-7-8-9;  4-6-8-9;  5-6-7-9
28:  4-7-8-9;  5-6-8-9
29:  5-7-8-9
30:  6-7-8-9
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DIGIT COMBINATIONS

5 DIGITS

15: 1-2-3-4-5
16: 1-2-3-4-6
17: 1-2-3-4-7; 1-2-3-5-6
18: 1-2-3-4-8; 1-2-3-5-7; 1-2-4-5-6
19: 1-2-3-4-9; 1-2-3-5-8; 1-2-3-6-7; 1-2-4-5-7; 1-3-4-5-6
20: 1-2-3-5-9; 1-2-3-6-8; 1-2-4-5-8; 1-2-4-6-7; 1-3-4-5-7; 2-3-4-5-6
21: 1-2-3-6-9; 1-2-3-7-8; 1-2-4-5-9; 1-2-4-6-8; 1-2-5-6-7; 1-3-4-5-8; 1-3-4-6-7; 2-3-4-5-7
22: 1-2-3-7-9; 1-2-4-6-9; 1-2-4-7-8; 1-2-5-6-8; 1-3-4-5-9; 1-3-4-6-8; 1-3-5-6-7; 2-3-4-5-8; 2-3-4-6-7
23: 1-2-3-8-9; 1-2-4-7-9; 1-2-5-6-9; 1-2-5-7-8; 1-3-4-6-9; 1-3-4-7-8; 1-3-5-6-8; 1-4-5-6-7; 2-3-4-5-9; 2-3-4-6-8; 2-3-5-6-7
24: 1-2-4-8-9; 1-2-5-7-9; 1-2-6-7-8; 1-3-4-7-9; 1-3-5-6-9; 1-3-5-7-8; 1-4-5-6-8; 2-3-4-6-9; 2-3-4-7-8; 2-3-5-6-8; 2-4-5-6-7
25: 1-2-5-8-9; 1-2-6-7-9; 1-3-4-8-9; 1-3-5-7-9; 1-3-6-7-8; 1-4-5-6-9; 1-4-5-7-8; 2-3-4-7-9; 2-3-5-6-9; 2-3-5-7-8; 2-4-5-6-8; 3-4-5-6-7
26: 1-2-6-8-9; 1-3-5-8-9; 1-3-6-7-9; 1-4-5-7-9; 1-4-6-7-8; 2-3-4-8-9; 2-3-5-7-9; 2-3-6-7-8; 2-4-5-6-9; 2-4-5-7-8; 3-4-5-6-8
27: 1-2-7-8-9; 1-3-6-8-9; 1-4-5-8-9; 1-4-6-7-9; 1-5-6-7-8; 2-3-5-8-9; 2-3-6-7-9; 2-4-5-7-9; 2-4-6-7-8; 3-4-5-6-9; 3-4-5-7-8
28: 1-3-7-8-9; 1-4-6-8-9; 1-5-6-7-9; 2-3-6-8-9; 2-4-5-8-9; 2-4-6-7-9; 2-5-6-7-8; 3-4-5-7-9; 3-4-6-7-8
29: 1-4-7-8-9; 1-5-6-8-9; 2-3-7-8-9; 2-4-6-8-9; 2-5-6-7-9; 3-4-5-8-9; 3-4-6-7-9; 3-5-6-7-8
30: 1-5-7-8-9; 2-4-7-8-9; 2-5-6-8-9; 3-4-6-8-9; 3-5-6-7-9; 4-5-6-7-8
31: 1-6-7-8-9; 2-5-7-8-9; 3-4-7-8-9; 3-5-6-8-9; 4-5-6-7-9
32: 2-6-7-8-9; 3-5-7-8-9; 4-5-6-8-9
33: 3-6-7-8-9; 4-5-7-8-9
34: 4-6-7-8-9
35: 5-6-7-8-9

6 DIGITS

21: 1-2-3-4-5-6
22: 1-2-3-4-5-7
23: 1-2-3-4-5-8; 1-2-3-4-6-7
24: 1-2-3-4-5-9; 1-2-3-4-6-8; 1-2-3-5-6-7
25: 1-2-3-4-6-9; 1-2-3-4-7-8; 1-2-3-5-6-8; 1-2-4-5-6-7
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33: 1-2-6-7-8-9; 1-3-5-7-8-9; 1-4-5-6-8-9; 2-3-4-7-8-9; 2-3-5-6-8-9; 2-4-5-6-7-9; 3-4-5-6-7-8
34: 1-3-6-7-8-9; 1-4-5-7-8-9; 2-3-5-7-8-9; 2-4-5-6-8-9; 3-4-5-6-7-9
35: 1-4-6-7-8-9; 2-3-6-7-8-9; 2-4-5-7-8-9; 3-4-5-6-8-9
36: 1-5-6-7-8-9; 2-4-6-7-8-9; 3-4-5-7-8-9
37: 2-5-6-7-8-9; 3-4-6-7-8-9
38: 3-5-6-7-8-9
39: 4-5-6-7-8-9