How to Construct Crosswords & Word Searches

Created by John Park

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Overview

Working a crossword puzzle or word search can be a lot of fun, and educational, too. You can use word puzzles to help learn vocabulary words, as well as flex logic and visual pattern recognition skills.

If you'd like to make a custom word puzzle to share with students, classmates, friends, and family, there are lots of great tools out there to help you. With a few rules of thumb, you'll be constructing crosswords and word searches in no time.

Online Tools

These online puzzle builders will help you get started.

Armored Penguin Crossword Maker (https://adafruit.it/Cjt)

Instant Online Crossword Puzzle Maker (https://adafruit.it/Cjv)

Teacher's Corner Word Search Maker (https://adafruit.it/Cjy)
We'll also take a look at some downloadable puzzle applications for different operating systems.
Crossword Construction

Crossword Construction Rules of Thumb

Any arrangement of intersecting words with a set of accompanying clues can be considered a crossword puzzle. However, there are a few rules of thumb that good crosswords typically follow, which make them more satisfying to solve.

Make Many Intersections

Start by building a grid of connected words. The more intersections the better, as this helps puzzle solvers figure out more difficult clues once they've answered a few easier ones.

Don't Do This

Consider this example of a poorly constructed puzzle:
Even when you know most of the answers, there isn't enough interconnectivity between words to help you solve the last one.

This is Better

The addition of one more word and intersection pair helps the puzzle solver, as shown here:
The addition of an easy connecting word with two intersections helps the puzzle solver get a foothold and narrow in on the answer "FLORID".

As you can imagine, the more connections you make, the more each word can help the solver with the others.

Grid

Start with a moderate size grid which will allow you to use enough words to give the player a chance! A 15 x 15 grid is fairly standard, and is used for the daily New York Times puzzle (the Sunday puzzle is 21 x 21).
Professional crossword constructors will make their grids with very few black squares (roughly 15% black), comprised of around 70-80 words, and with a rotationally symmetrical mirror pattern, as shown here.

This is a great goal, but very difficult to create, so we'll loosen up the rules a bit when we're first starting!

Word List

While there's nothing better than an expertly crafted word grid, we'll use technology to assist our efforts. There are many software crossword generators available as apps or in-browser that can take a list of words as an input, and then create an interlocking grid of those words within a set of specified constraints.

A great way to increase the odds of making a high quality grid is to begin with a very long list of words and then allow the software to generate the grid. Remove any words that have a hard time fitting or get stranded off to the sides on their own islands.

Here are some miniature grid examples, using the online generator Armored Penguin Crossword maker (https://adafruit.it/Cjt).

Short List Troubles

This grid was made with an 8x8 grid and a very small word list. It wasn't able to make a successful puzzle, so we'll try
Longer List

Here, we've increased the number of words in the list, and the grid has improved somewhat. There are a lot of black squares and the grid is larger, but at least there are no islands.
We can look at this grid and see some potential problem words. What happens if we change "puppy" to "puppies"? swapping the 'Y' for an 'IES' may make it easier to connect words.
You can see that the grid has expanded again (to an awkward 14x15), but the density seems a bit better. This iterative process of adding to and changing your word list and then allowing the software to try new grid solutions can take some time, but lead to pretty good results.
Auto Fill and Manual Entry

At some point, you may decide to abdicate some control over you word list to the software. You can use your word list as the foundation, and then allow the software to pick words from a dictionary that can help it fit an optimal grid.

Unfortunately, most online puzzle constructors don't offer dictionary grid fills, but there are some excellent downloadable options for all platforms. Additionally, dedicated crossword creation software offers options to manually design the grid, and fill in grid letters individually for total control.

Crossfire (https://adafruit.it/Cjz) is very popular on mac os, and Crossword Compiler (https://adafruit.it/CjA) is a great choice on Windows. Both of those are $50 for a license, and offer a huge array of options. They are often used by professional crossword constructors.

If you're on an iPhone or iPad, check out the excellent, and free Crossword Maker for Cruciverbalists (https://adafruit.it/CjD)(CMFC).

Here's an example of the previous puzzle moved into CMFC.
Note how it already has done a nicer job of solving the grid in an 8x8 square with no islands.

Next, we'll start to manually add words to improve the grid. The software will even make suggestions of words from its dictionary as you start to type.
Clues

Now that we have a word grid we like, we get to start writing clues! This is where you can really get creative and tune the difficulty level of the puzzle.

For example, look at the word 'ATL'. You could make it very easy:

19. "Airport code for Atlanta"

Moderately difficult:

19. "Braves on MLB scoreboard"

Or fairly hard:

19. "Hub for 777 in GA"

Here's our finished puzzle with the clues added.
And, here's the blank version, ready for solving.

Across
1  Some Dutchmen
6  Two'some
7  Lao Tzu's "___ Te Ching"
9  Lab baby?
12  Fiction category for teens
13  "Awesome!"
14  Software used for 3D
15  Black and white instrument input
17  "Let's leave it ___ is."
18  Title for Arthur Conan Doyle
19  Hub for 777 in GA
20  "Either ___!"

3  Pronoun
4  Break for a toddler and parent
5  Ancient strategy game
8  Not as good, so to speak
10  Fork over
11  Blue Ribbon maker
12  Atari 2600 game, "___'s Revenge"
14  Karl Benz creation
15  Big name in jewelry
16  Squeak squelcher

Down
1  Times to come
2  Behold
Finally, here's a special Adafruit themed crossword for you to print out and try, or solve online (https://adafruit.it/CjH).
Here's the solution sheet if you want to check your answers later!

Next, we'll look at making word search puzzles.
Word Search Building

Word searches are even better suited to software generation than are crossword puzzles. You can simply feed in the full list of words, and off it goes! There are just a few options to choose, and if you want to get fancy, you can specify a custom shape for the puzzle as seen here!

This puzzle was made with the Teacher's Corner Word Search Maker (https://adafruit.it/Cjy).

The instructions are self explanatory, simply fill in your word list, and choose the dimensions and word placement rules.

If you want to build a custom shape, click the "Custom Word Search Grid" button. Then, set the number of squares for columns and rows, click 'Resize grid' and start clicking squares to define your shape!
When finished, press 'Save and Close'.

Now, when you go back to the main page and click 'Generate Word Search', your puzzle will be build inside the custom shaped grid!
That's all there is to it! Enjoy making your own custom word puzzles.