



Akaki's Picnic puzzles

A Akaki

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Summary

Pack the pieces into the basket. A series of mechanical puzzles of increasing difficulty.

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Akaki's Picnic is a series of small but tricky packing puzzles. Pack the pieces into the basket .

The 17 different puzzles use the same basket. You can print a basket to go with each puzzle, or use one common basket.

The goal of each puzzle is the same: **Insert the pieces inside the basket, flush with the rim.** There might be hidden voids left underneath, but the top surface should be filled:



Example of a correct solution. All pieces are inside the basket and the top is filled and flush with the rim.

The puzzles vary in difficulty, starting with the easy Cake Basket, and culminating in the monstrous Charcoal Basket. You can try them all in order, or check the bottom of the page for my recommended ones.

Here are the puzzles in a rough order of difficulty:

Easy

<p>Cake Basket: The easiest puzzle, it takes 11 moves and two rotations to solve. Made with three symmetrical pieces, yet the moves are all but symmetric. A good introduction to the series and packing puzzles in general.</p>
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<p>Fruit Basket: Can be solved with mostly linear moves (no rotations needed). If you count the sizes of the pieces, you will see it fills the whole basket without any internal voids.</p>

<p>Vegetable Basket is interesting in that it only uses linear moves (no rotations are needed). I designed it to be easy, but some people have reported they have found it one of the hardest of the series! ⚠ Vegetable Basket has an extra rule: the top surface must be completely filled in the solution (there is a second, easier solution if you allow for visible voids on top).</p>
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Medium

<p>Chicken Basket: Only three pieces, which when put together, don't form nearly a complete cube. Yet, there is only one way to pack them in the basket. This puzzle has the most complicated single motion in the series.</p>
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<p>Egg Basket: My personal favorite in the series, with a good balance of different motions. The pieces go in the basket in a specific order, one at a time, and each piece requires a different motion to pack it in.</p>
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Hamburger Basket: My other favorite, this puzzle has a confusing feature that fools even me. Every time I try and put this together, I get lost on the wrong path at a certain point.
◆ Salmiakki Basket: How do you pack the two identical candy pieces in? Might require gravity.
BBQ Basket: It involves an interesting move not found in any previous puzzles, that at first looks impossible, especially for experienced puzzlers. ⚠ This puzzle has an extra rule: the top surface of the basket must be completely filled in the solution (there is a second, easier solution if you allow for visible voids on top). This is a medium difficulty puzzle.

Hard

Subway Basket: The subway piece travels in a surprising direction to allow the next piece in.
Sandwich Basket: The U-shaped filling needs to get in between the large bread piece. Requires some coordinated motion to solve.
Chocolate Basket: This was the first one in the series I designed. It took a few revisions, but it developed into one of the hardest puzzles in the series. You can perhaps see how the top piece interacting with the basket handle in this puzzle developed into the many different ideas used in the other puzzles in the series.
Wine Basket: The hardest one of the ten original puzzles in the series. It takes 18 moves to complete this puzzle. Might require some dexterity. This was designed soon after Chocolate Basket. I hesitated publishing this design at first, because I thought solvers would find the solution too contrived and too complicated, but I have gotten very good feedback on it.

Extra hard

Nachos Basket was designed by puzzle designer William Hu. It uses diagonal half-cube shapes, allowing for some interesting movements not found in my designs. ⚠ This puzzle has an extra rule: the top surface of the basket must be completely filled in the solution (there is a second, easier solution if you allow for visible voids on top). This one is more difficult than even Wine Basket in the original series.

Peppermint Basket. Not to be outdone by William's Nachos Basket, I made this puzzle as a response. It is much more difficult than any of my previous puzzles; I think I wouldn't know how to solve this myself if I wasn't the designer. ⚠ This puzzle has the same extra rule: the top surface of the basket must be completely filled in the solution (there is a second, easier solution if you allow for visible voids on top).

Olive Basket: If you look closely, You will see one of the blocks is thinner than the others. This feature allows for a wild motion not seen before in the series. Olive Basket takes 27 moves to solve.

Foie Gras Basket: The diagonally notched piece allows for a satisfying movement that is almost like closing a lid on a box. Fitting the two large pieces in is hard enough, and you have two L-shaped pieces to fit after that. This puzzle requires more dexterity than the previous puzzles.

Charcoal Basket is the hardest in the series, surpassing even Peppermint Basket. It takes 31 moves to solve this puzzle, twice more than Wine Basket, and it has multiple moves not seen in the other puzzles.

How to print

The basket and the pieces can be printed in PLA with regular 0.2 mm layer height settings. I recommend 3 perimeter walls. No supports are needed (the basket handle has built-in support)

The filenames include my canonical filament color for each set of pieces. These are the colors I use when I print these for my [online store](#).

You can print one common basket for all puzzles, or print one basket for each puzzle. After printing the basket, remove the support clips from the handle, and glue the handle on with a drop or two of superglue on both sides. Do not cheat by leaving the handle unglued!

Some pieces are split into parts with connectors, and must be glued together with a drop of glue. Tip: to make the connectors strong, set “Solid infill threshold area” to 50 mm².

(Some pieces have small round voids in them. You can embed a small magnet here, but they are not required for the solution. I add them so the solver can use an external magnet to make some hard-to-reach moves easier)

Recommended puzzles

If you want a good selection of the different challenges, try them in this order:

1. Cake Basket, for a quick intro into what's in store
2. Chicken Basket, for a solid medium difficulty puzzle
3. Hamburger Basket, the one still gives me, as the designer, trouble to solve
4. Wine Basket, for a difficult challenge,
... and, if you're still enjoying the puzzles,
5. Peppermint Basket, for a totally different moveset from what you have seen before
6. Charcoal Basket, because I am still amazed that the simple shapes in a 3x3x3 space can have this many tricky moves

Links

These were originally published here <https://www.thingiverse.com/akaki/collections/akakis-picnic-basket-packing-puzzle-series> . You can find the OpenSCAD source files here, if you wish to change the size or the tolerances. The Thingiverse series also has a few more puzzles not published here, if you're hungry for even more.

There is also a wooden version by Cubic Dissection <https://cubicdissection.com/products/akaki-basket-packing-puzzle>

My video about the first puzzles in the series

Puzzle Guy on youtube tries to solve Peppermint Basket

You can also find videos by Puzzle Guy and others with the solutions of some of the puzzles.

Model files



akakis-picnic-basket.stl



cake-pink.stl



fruit-blue.stl



vegetable-wood-color.stl



chicken-red.stl



egg-yellow.stl



hamburger-light-brown.stl



salmiakki-black.stl



bbq-orange.stl



subway-gray.stl



sandwich-green.stl



chocolate-brown.stl



wine-purple.stl



peppermint-white.stl



nacho-yellow-and-brown.stl



foie-gras-tan.stl



olive-dark-green.stl



charcoal-black-with-glitter.stl

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