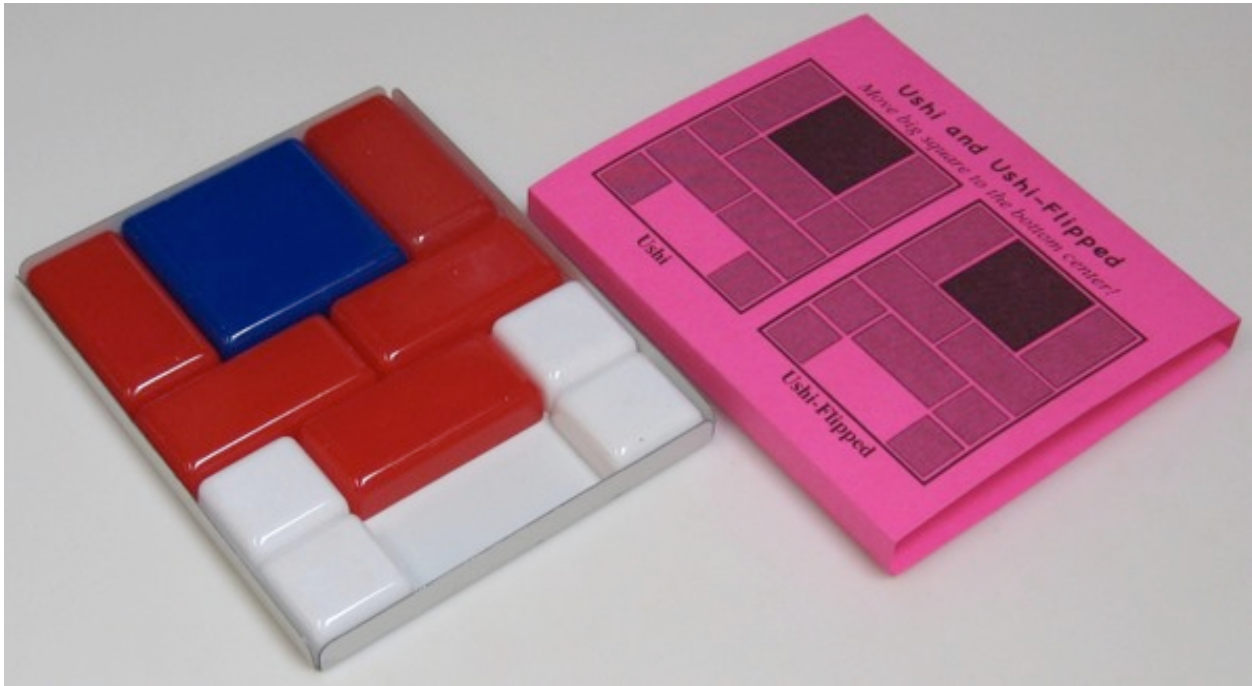
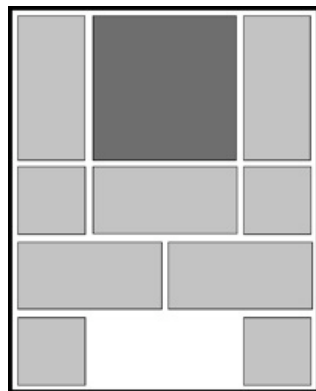


# Ushi And Ushi-Flipped

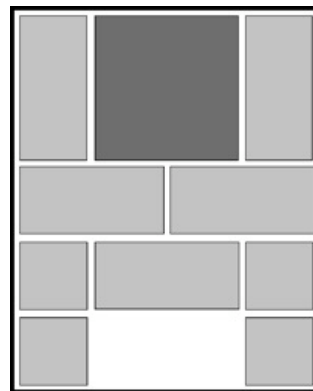


*Originally made by Himawari Japan 1981;  
this puzzle formed from two 1961 Adams Co. Dad's Puzzles,  
with cardboard sleeve by J. A. Storer 2007.*  
(cardboard sleeve, metal tray, and 10 plastic pieces, 3.75 x 3 x 5/16 inches,  
the sleeve has directions for Ushi and Ushi Flipped)

The standard Ushi puzzle is shown on the left and on the right is a common variation where the center portion is flipped:



*Ushi*



*Ushi Flipped*

# Ushi Solution

Here is a Ushi solution of 108 straight-line moves; it can be converted to 98 rectilinear moves by combining steps 11/12, 16/17, 20/21, 27/28, 38/39, 50/51, 54/55, 57/58, 81/82, 106/107:

8 X X 9	8 X X 9	8 X X 9	8 X X 9	8 X X 9	8 X X 9	8 X X 9	8 X X 9	8 X X 9
8 X X 9	8 X X 9	8 X X 9	8 X X 9	8 X X 9	8 X X 9	8 X X 9	8 X X 9	8 X X 9
1 5 5 2	1 5 5 2	1 5 5 2	1 5 5 2	1 5 5 2	1 5 5 2	1 5 5 2	1 5 5 2	1 5 5 2
6 6 7 7	6 6 7 7	6 6 7 7	7 7 7 7	7 7 7 3	7 7 3 4	7 7 3 4	7 7 3 4	7 7 3 4
3 4	3 4	6 6 3 4	6 6 3 4	6 6 4	6 6	6 6	6 6	7 7 6 6
8 X X 9	8 X X 9	8 X X 9	8 X X 9	X X 9	X X 9	X X 1 9	X X 1 9	X X 1 9
8 X X 9	8 X X 9	8 X X 9	8 X X 9	X X 9	X X 9	X X 9	X X 9	X X 3 9
1 2	1 2	3 1 2	3 1 2	8 3 1 2	8 3 1 2	8 3 2	8 3 2	8 2
3 5 5 4	3 5 5 4	5 5 4	5 5 4	8 5 5 4	8 5 5 4	8 5 5 4	8 5 5 4	8 5 5 4
7 7 6 6	7 7 6 6	7 7 6 6	7 7 6 6	7 7 6 6	7 7 6 6	7 7 6 6	7 7 6 6	7 7 6 6
X X 1 9	X X 1 9	X X 1 9	X X 1 9	X X 1	X X 1	X X 1	X X 1	8 X X 1
X X 3 9	X X 3 9	X X 3 9	X X 3 9	X X 3	X X 3	X X 3	X X 3	8 X X 3
8 5 5 2	8 5 5 2	8 5 5	8 5 5	8 5 5 9	8 5 5 9	8 5 5 9	8 5 5 9	5 5 9
8 4	8 4	8 4 2	8 4 2	8 4 2 9	8 4 2 9	8 4 2 9	8 4 2 9	4 2 9
7 7 6 6	7 7 6 6	7 7 6 6	7 7 6 6	7 7 6 6	7 7 6 6	7 7 6 6	7 7 6 6	7 7 6 6
8 X X 1	8 X X 1	8 X X 1	8 X X 1	8 X X 1	8 X X 1	8 X X 1	8 X X 1	8 X X 1
8 X X 3	8 X X 3	8 X X 3	8 X X 3	8 X X 3	8 X X 3	8 X X 3	8 X X 3	8 X X 3
4 5 5 9	4 5 5 9	4 5 5 9	4 5 5 9	4 5 5 9	4 5 5 9	4 5 5 9	4 5 5 9	4 5 5 9
4 2 9	4 2 9	7 7 2 9	7 7 2 9	7 7 9	7 7 9	7 7 9	7 7 9	7 7 9
7 7 6 6	7 7 6 6	6 6	6 6	6 6 2	6 6 2	6 6 2 9	6 6 2 9	6 6 2 9
X X 1	X X 1	X X 1	X X 3 1	X X 3 1	X X 3 1	X X 3 1	X X 3 1	X X 3 1
X X 3	X X 3	X X 3	X X	X X 5 5	X X 5 5	X X 5 5	X X 5 5	X X 5 5
8 4 5 5	8 4 5 5	8 4 5 5	8 4 5 5	8 4	8 4	8 4 9	8 4 9	8 4 9
8 7 7 9	8 7 7 9	8 7 7 9	8 7 7 9	8 7 7 9	8 7 7 9	8 7 7 9	8 7 7 9	8 7 7 9
6 6 2 9	6 6 2 9	6 6 2 9	6 6 2 9	6 6 2 9	6 6 2 9	6 6 2	6 6 2	6 6 2
X X 3 1	X X 3 1	X X 3 1	X X 3 1	X X 3 1	X X 3 1	X X 3 1	X X 3 1	X X 3 1
X X 5 5	X X 5 5	X X 5 5	X X 5 5	X X 4 9	X X 4 9	X X 4 9	X X 4 9	X X 4 9
8 7 7 9	8 7 7 9	8 7 7 9	8 7 7 9	8 7 7 9	8 7 7 9	8 7 7 9	8 7 7 9	8 7 7 9
8 6 6 2	8 6 6 2	8 6 6 2	8 6 6 2	8 6 6 2	8 6 6 2	8 6 6 2	8 6 6 2	8 6 6 2
1 5 5	1 5 5	5 5	5 5 4	5 5 4	5 5 4 9	5 5 4 9	5 5 4 9	5 5 4 9
X X 4	X X 4	X X 4	X X	X X	X X 9	X X 9	X X 9	X X 9
3 X X 9	3 X X 9	3 X X 9	3 X X 9	3 X X 9	3 X X 9	3 X X 2	3 X X 2	3 X X 2
8 7 7 9	8 7 7 9	8 7 7 9	8 7 7 9	8 7 7 9	8 7 7 9	8 7 7	8 7 7	8 7 7
8 6 6 2	8 6 6 2	8 6 6 2	8 6 6 2	8 6 6 2	8 6 6 2	8 6 6	8 6 6	8 6 6
5 5 4 9	5 5 4 9	5 5 4 9	5 5 4 9	5 5 9	5 5 9	5 5 9	5 5 9	X X 5 5
1 X X 9	1 X X 9	X X 9	X X 9	X X 4 9	X X 4 9	X X 4 9	X X 4 9	X X 4 9
3 X X 2	X X 2	X X 2	X X 2	X X 2	X X 2	X X 2 9	X X 2 9	X X 2 9
8 7 7	8 7 7	1 8 7 7	1 8 7 7	1 8 7 7	1 8 7 7	1 8 7 7	1 8 7 7	1 8 7 7
8 6 6	3 8 6 6	3 8 6 6	3 8 6 6	3 8 6 6	3 8 6 6	3 8 6 6	3 8 6 6	3 8 6 6
X X 5 5	X X 5 5	X X 5 5	X X 5 5	X X 5 5	X X 5 5	X X 5 5	X X 5 5	X X 5 5
X X 4 9	X X 4 9	X X 4 9	X X 4 9	X X 4 9	X X 4 9	X X 4	X X 4	X X 2 4
1 2 9	1 8 2 9	1 8 2 9	1 8 2 9	1 8 2 9	1 8 2 9	1 8 2 9	1 8 2 9	1 8 9
8 7 7	8 7 7	3 8 7 7	3 8 7 7	3 8 7 7	3 8 7 7	3 8 9	3 8 9	3 8 9
3 8 6 6	3 6 6	6 6	6 6	6 6 7 7	6 6 7 7	6 6 7 7	6 6 7 7	6 6 7 7
X X 5 5	X X 5 5	X X 5 5	X X 5 5	5 5 2	5 5 2 4	5 5 2 4	5 5 2 4	5 5 2 4
X X 2 4	X X 2 4	X X 2 4	X X 2 4	X X 4	X X 4	X X 8	X X 8 9	X X 8 9
1 8 9	8 9	X X 8 9	X X 8 9	X X 8 9	X X 8 9	X X 8 9	X X 8 9	X X 8 9
3 8 9	3 1 8 9	3 1 8 9	3 1 8 9	3 1 8 9	3 1 8 9	3 1 9	3 1 9	3 1 7 7
6 6 7 7	6 6 7 7	6 6 7 7	6 6 7 7	6 6 7 7	6 6 7 7	6 6 7 7	6 6 7 7	6 6
5 5 2 4	5 5 2 4	5 5 2 4	5 5 2 4	2 4	2 4	2 4	2 4 8	2 4 8 9
X X 8 9	X X 8 9	X X 8 9	X X 8 9	5 5 8 9	5 5 8 9	5 5 8 9	5 5 8 9	5 5 8 9
X X 8 9	X X 8 9	X X 8 9	X X 8 9	X X 8 9	X X 8 9	X X 8 9	X X 8 9	X X 8 9
3 1 7 7	3 1 7 7	X X 7 7	X X 7 7	X X 7 7	X X 7 7	X X 7 7	X X 7 7	X X 7 7
6 6	3 1 6 6	3 1 6 6	3 1 6 6	3 1 6 6	3 1 6 6	3 1 6 6	3 1 6 6	3 1 6 6
2 4 8 9	2 4 8 9	2 4 8 9	2 4 8 9	2 4 8 9	2 4 8 9	2 4 8 9	2 4 8 9	2 4 8 9
5 5 8 9	5 5 8 9	5 5 8 9	5 5 8 9	5 5 8 9	5 5 8 9	5 5 8 9	5 5 8 9	5 5 8 9
X X 7 7	X X 7 7	X X 7 7	X X 7 7	7 7	7 7	7 7 6 6	7 7 6 6	7 7 6 6
X X	X X 6 6	X X 6 6	X X 6 6	X X 6 6	X X 6 6	X X	X X 3	X X 3
3 1 6 6	3 1	3 1	3 1	X X 3 1	X X 3 1	X X 3 1	X X 1	X X 1
2 4 8 9								
5 5 8 9								
7 7 6 6								
X X 3								
X X 1								

# Ushi Flipped Solution

Here is a Ushi Flipped solution of 110 straight-line moves; it can be converted to 103 rectilinear moves by combining steps 28/29, 40/41, 52/53, 56/57, 59/60, 83/84, 108/109:

8 X X 9 8 X X 9 5 5 6 6 1 7 7 2 3	8 X X 9 8 X X 9 5 5 6 6 1 7 7 2 3 7 7 4	8 X X 9 8 X X 9 5 5 6 6 1 2 3 7 7 4	8 X X 9 8 X X 9 6 6 5 5 1 2 3 7 7 4	8 X X 9 8 X X 9 6 6 5 5 1 2 3 7 7 4	8 X X 9 8 X X 9 6 6 2 5 5 1 3 7 7 4	8 X X 9 8 X X 9 6 6 2 5 5 1 3 7 7 4	8 X X 9 8 X X 9 6 6 2 5 5 1 3 7 7 4	X X 9 X X 9 6 6 2 8 5 5 1 3 7 7 4
X X 9 X X 9 8 6 6 2 8 5 5 1 3 7 7 4	X X 9 X X 9 8 6 6 2 8 5 5 1 3 7 7 4	X X 9 2 X X 9 8 6 6 8 5 5 1 3 7 7 4	X X 9 2 X X 9 8 6 6 1 8 5 5 3 7 7 4	X X 9 2 X X 9 8 6 6 1 8 5 5 4 3 7 7	X X 9 2 X X 9 8 6 6 1 8 5 5 4 3 7 7	X X 9 2 X X 9 8 6 6 1 8 5 5 4 3 7 7	X X 9 2 X X 9 8 6 6 1 8 5 5 4 3 7 7	X X 9 2 X X 9 6 6 1 8 5 5 4 8 3 7 7
X X 2 X X 9 6 6 9 1 8 5 5 4 8 3 7 7	X X 2 X X 9 6 6 9 1 8 5 5 4 8 3 7 7	X X 2 1 X X 9 6 6 9 8 5 5 4 8 3 7 7	X X 2 1 X X 9 6 6 9 8 5 5 4 8 3 7 7	X X 2 9 X X 9 6 6 9 8 5 5 4 8 3 7 7	X X 2 9 X X 9 6 6 9 8 5 5 4 8 3 7 7	X X 2 9 X X 9 6 6 9 8 5 5 4 8 3 7 7	X X 2 9 X X 9 6 6 9 8 5 5 4 3 7 7	X X 2 9 X X 9 6 6 9 8 5 5 4 3 7 7
X X 1 X X 2 9 8 6 6 9 8 5 5 3 7 7 4	X X 1 X X 2 8 6 6 9 8 5 5 9 3 7 7 4	X X 1 2 X X 2 8 6 6 9 8 5 5 9 3 7 7 4	X X 1 2 X X 2 8 6 6 9 8 5 5 9 3 7 7 4	8 X X 1 8 X X 2 6 6 9 5 5 9 3 7 7 4	8 X X 1 8 X X 2 6 6 9 5 5 9 7 7 4	8 X X 1 8 X X 2 6 6 9 5 5 9 7 7 4	8 X X 1 8 X X 2 6 6 9 5 5 9 7 7 4	8 X X 1 8 X X 2 6 6 9 5 5 9 7 7 4
8 X X 1 8 X X 2 3 6 6 5 5 9 7 7 4 9	8 X X 1 8 X X 2 3 6 6 5 5 9 7 7 4 9	X X 1 X X 2 8 3 6 6 8 5 5 9 7 7 4 9	X X 1 X X 2 8 3 6 6 8 5 5 9 7 7 4 9	X X 1 X X 2 8 3 6 6 8 5 5 9 7 7 4 9	X X 1 2 X X 6 6 8 3 6 6 8 5 5 9 7 7 4 9	X X 1 2 X X 6 6 8 3 6 6 8 5 5 9 7 7 4 9	X X 1 2 X X 6 6 8 3 6 6 8 5 5 9 7 7 4 9	X X 1 2 X X 6 6 8 3 6 6 8 5 5 9 7 7 4 9
X X 1 2 X X 6 6 8 3 9 8 5 5 9 7 7 4	X X 1 2 X X 6 6 8 3 9 8 5 5 9 7 7 4	X X 1 2 X X 6 6 8 3 9 8 5 5 9 8 7 7 4	X X 6 6 X X 3 9 8 5 5 9 8 7 7 4	X X 6 6 X X 3 9 8 5 5 9 8 7 7 4	X X 6 6 X X 3 9 8 5 5 9 8 7 7 4	X X 6 6 X X 3 9 8 5 5 9 8 7 7 4	X X 6 6 X X 3 9 8 5 5 9 8 7 7 4	X X 6 6 X X 3 9 8 5 5 9 8 7 7 4
1 2 6 6 X X 3 X X 9 8 5 5 9 8 7 7 4	2 6 6 X X 3 1 X X 9 8 5 5 9 8 7 7 4	2 6 6 X X 3 1 X X 9 8 5 5 9 8 7 7 4	2 X X 3 1 X X 9 8 5 5 9 8 7 7 4	2 X X 3 1 X X 9 8 5 5 9 8 7 7 4	2 X X 3 1 X X 9 8 5 5 9 8 7 7 4	2 X X 3 1 X X 9 8 5 5 9 8 7 7 4	2 X X 3 1 X X 9 8 5 5 9 8 7 7 4	2 X X 3 1 X X 9 8 5 5 9 8 7 7 4
6 6 3 9 2 X X 9 1 X X 4 8 5 5 8 7 7	6 6 3 9 2 X X 9 1 X X 4 8 5 5 8 7 7	6 6 3 9 2 X X 9 1 X X 4 8 5 5 8 7 7	6 6 3 9 2 X X 9 X X 4 8 5 5 1 8 7 7	6 6 3 9 X X 9 X X 4 2 8 5 5 1 8 7 7	6 6 3 9 X X 9 X X 4 2 8 5 5 1 8 7 7	6 6 3 9 X X 9 X X 4 2 8 5 5 1 8 7 7	6 6 3 9 X X 9 X X 4 2 8 5 5 1 8 7 7	6 6 3 9 X X 9 X X 4 2 8 5 5 1 8 7 7
X X 6 6 X X 4 3 2 8 9 1 8 9 7 7 5 5	X X 6 6 X X 4 3 2 8 9 1 8 9 7 7 5 5	X X 6 6 X X 4 3 2 8 9 1 8 9 7 7 5 5	X X 6 6 X X 4 3 2 8 9 1 2 8 9 7 7 5 5	6 6 X X 4 3 X X 8 9 1 2 8 9 7 7 5 5	6 6 X X 4 3 X X 8 9 1 2 8 9 7 7 5 5	6 6 X X 4 3 X X 8 9 1 2 8 9 7 7 5 5	6 6 X X 4 3 X X 8 9 1 2 8 9 7 7 5 5	6 6 X X 4 3 X X 8 9 1 2 8 9 7 7 5 5
6 6 4 3 X X 8 9 X X 8 9 1 2 7 5 5 7 7	6 6 4 3 X X 8 9 X X 8 9 1 2 5 5 7 7	6 6 4 3 X X 8 9 X X 8 9 1 2 5 5 7 7	6 6 4 3 X X 8 9 X X 8 9 2 5 5 1 7 7	6 6 4 3 X X 8 9 X X 8 9 5 5 1 2 7 7	6 6 4 3 X X 8 9 X X 8 9 5 5 1 2 7 7	6 6 4 3 X X 8 9 X X 8 9 5 5 1 2 7 7	6 6 4 3 X X 8 9 X X 8 9 5 5 1 2 7 7	6 6 4 3 X X 8 9 X X 8 9 5 5 1 2 7 7
4 3 8 6 6 8 9 X X 9 X X 5 5 1 2 7 7	4 3 8 9 6 6 8 9 X X X X 5 5 1 2 7 7	4 3 8 9 6 6 8 9 X X 5 5 X X 1 2 7 7	4 3 8 9 6 6 8 9 X X 5 5 X X 7 7 1 2	4 3 8 9 6 6 8 9 X X 5 5 X X 7 7 1 2	4 3 8 9 6 6 8 9 X X 5 5 X X 7 7 1 2	4 3 8 9 6 6 8 9 X X 5 5 X X 7 7 1 2	4 3 8 9 6 6 8 9 X X 5 5 X X 7 7 1 2	4 3 8 9 6 6 8 9 X X 5 5 X X 7 7 1 2
4 3 8 9 6 6 8 9 5 5 7 7 X X 1 X X 2	4 3 8 9 6 6 8 9 5 5 7 7 X X 1 X X 2	4 3 8 9 6 6 8 9 5 5 7 7 X X 1 X X 2						