

MATH INSPIRATIONS



Logic Training
Starter Pack

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Logic Training Starter Pack

What is the goal of Logic Training Starter Pack?

The purpose of this book is to provide students with a resource through which they can grow their problem solving skills and confidence before beginning to use Units 1-8. Both of these attributes aid in the development of problem solving, pattern recognition and communication skills which they'll need to be successful in Units 1-8. This book is designed as a bridge to the curriculum units to be used as you, the parent, completes the training course Creating Mathematical Minds.

What Are The Keys To Best Use Logic Training Starter Pack?

- Key #1: Consistency
 - This resource is designed so that you can use it according to your unique family needs. However, we have a few recommendations for you in order to maximize the effectiveness of including logic puzzles in your homeschool program. The first key is consistency. Our brains are not muscles, however, they grow and weaken in very much the same way. To grow muscle strength, one must be consistent in exercising. One day a week will result in little growth. Whereas 5 days a week will result in faster growth. With these puzzles, it is better for students to exercise their brains daily for short bursts rather than one scheduled day per week. As they work and struggle and grow their brains day after day, their brains will literally become stronger and smarter and more confident.
- Key #2: Focused Bursts Of Time
 - It is better for a student to focus intensely for short periods of time working on puzzles rather than for long periods of distracted time. We recommend 10 minutes every day at first. Just like our muscles get tired quickly when we first begin to exercise, our brains tire as well. Some even will say "their brains hurt." As students develop a logic puzzle routine, they will be able to increase the time spent on puzzles. Ideally, 20-30 minutes per day is the goal.
- Key #3: Focused Effort Is The Goal, Not Quantity
 - The goal of logic puzzles is to provide an experience for students to grow their thinking, test ideas and strategies and gain confidence as they independently solve puzzles. Make sure to emphasize and praise their effort rather than the number of puzzles they do. Some puzzles will be easier than others because they ask the student to think in a way which they are comfortable and familiar with. They may be able to complete these puzzles quickly. Other puzzles will be difficult, and students will often complete only one, and sometimes only part of one puzzle in their allotted time. This is expected and normal. Praise their focus and their



effort. Completing all the provided puzzles in a given week should not be expected.

- **Key #5: Everyone Should Start With The Beginner Puzzles**
 - In each puzzle set, there are beginner, intermediate and advanced puzzles. These labels correspond to the difficulty and time requirements of the puzzles, not to student ability. Every student should begin with the beginner sets so that they can grow confidence and strategies as they move to harder puzzles. Beginning with the intermediate and advanced puzzles often leads to frustration. It is like asking a person just starting to exercise to successfully run a triathlon or bench press hundreds of pounds – possible, yes, but really hard, if not impossible, for most.
- **Key #6: Make Logic Puzzles A Family Affair**
 - Print off copies of this book for each member of your family, yes you too! Strengthening one's brain and growing confidence is not just for kids. We all need it. Study after study shows that people who exercise their brains with puzzles live healthier lives. Also, the best way to motivate your students to continue to solve puzzles is for them to see their mentor doing it too.
- **Key #7: What To Do When They Are Frustrated Or Stuck?**
 - There are two types of frustration, one is the "I'm done and won't do any more" type and the other is the "I want to keep going but I don't know how" type. For the first, it's ok to let them walk away and come back the next day. For most, this will resolve the issue. If it doesn't, it's ok to move onto a new puzzle type as a fresh start. For the second type of frustration, have them tell you each rule of the puzzle one by one and have them review the puzzle they are on to see that they followed each rule correctly. Also, changing each rule into a question can be helpful. For example, for the rule "Every number, 1-5, must be in each row and column," you could ask your student "Does every column in your puzzle have 1-5?" or "Are there any rows in your puzzle where you are close to having 1-5?" Another approach is for you to work through the puzzle and see if you can find where they are stuck in order to help them see a clue or mistake they haven't seen. It's also ok for them to move onto the next puzzle in the set if they are really stuck.
- **Key #8: Introducing A New Puzzle**
 - When introducing a new puzzle set, read the rules together, looking at the given example after each rule and discussing how that rule is followed in the example. Clarify unknown words and if needed, watch the corresponding video in your mathinspirations.com account.
- **Key #9: No Answer Key**
 - There is no provided answer key for any of the puzzles in this book. There are two reasons for this: One, students and mentors become dependent on



answer keys to know if an answer is correct. A key goal of the logic puzzle experience is knowing that one's solution is correct, in other words, learning to be an independent thinker. When a student is done with a puzzle and isn't sure if their answer is correct, simply review the given rules of the puzzle with them and have them check to see if any rules are broken. If they are not broken, then the puzzle is correct. Each puzzle has only one solution unless stated. Second, answer keys reinforce the focus on right answers and speed rather than on the student's ability to think, explain, prove, observe patterns and problem solve.

- Key #10: Have fun!
 - The goal of these puzzles is to provide another resource for students to use to grow their confidence and brain power. For most, in repeating the pattern of learning a new puzzle and having success solving them day after day, week after week, they're successes equate to fun. Being smart is fun! If you are finding your student is not having fun, have them search through the book and find puzzles that appeal to them and look interesting.



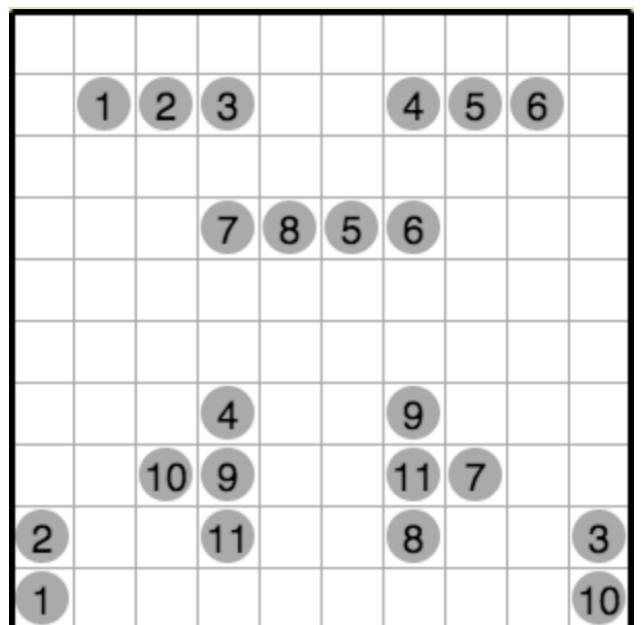
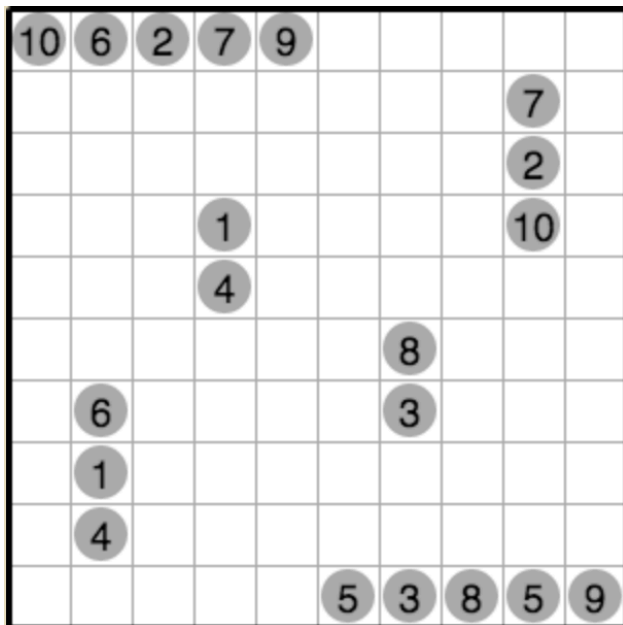
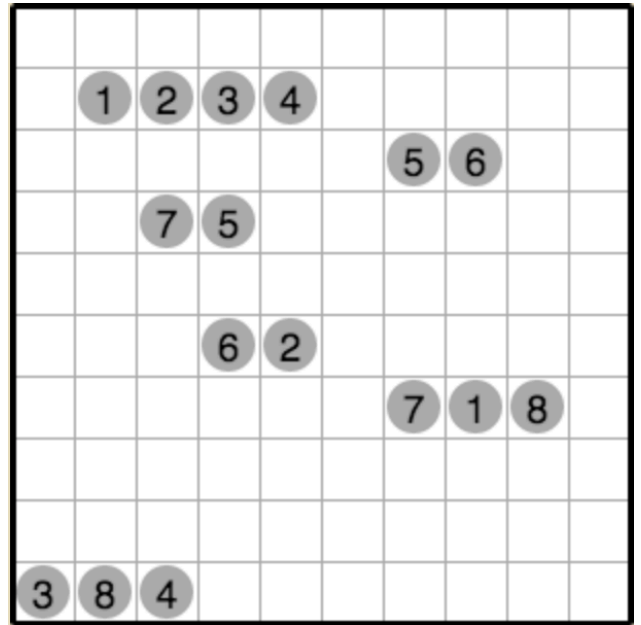
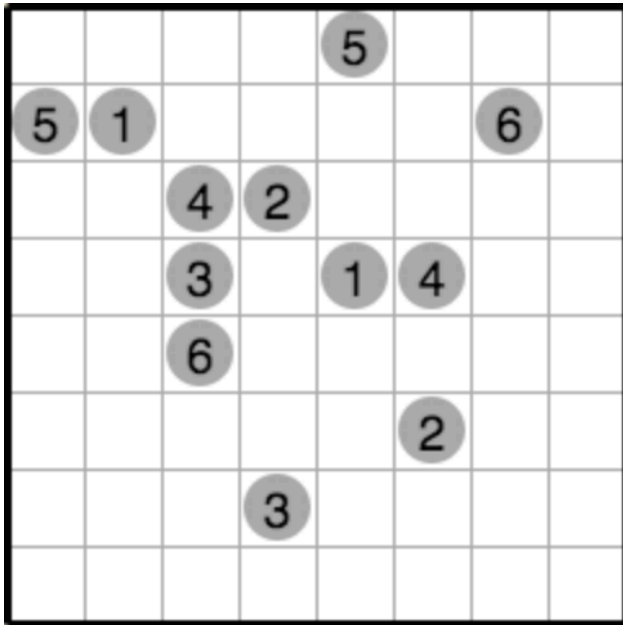
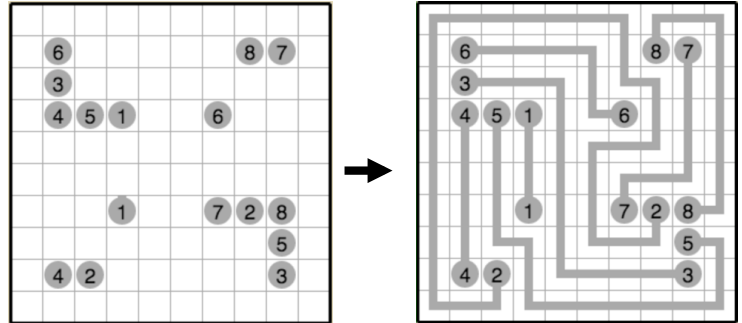


Logic Training – Beginner

Week October 9, 2015

Instructions:

Arukone puzzles, also known as Numberlinks were first published in 1897 in the Brooklyn Daily Eagle and were made popular in Japan by the publisher Nikoli. The objective of Arukone puzzles is to connect two circles with the same number by a line, 1's with 1's, 2's with 2's and so on. The line can only follow a vertical or horizontal path, no diagonals. A line must not cross or touch itself or another line.



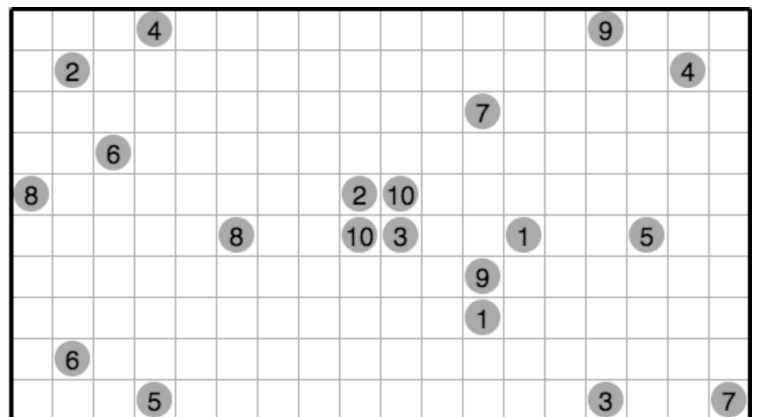
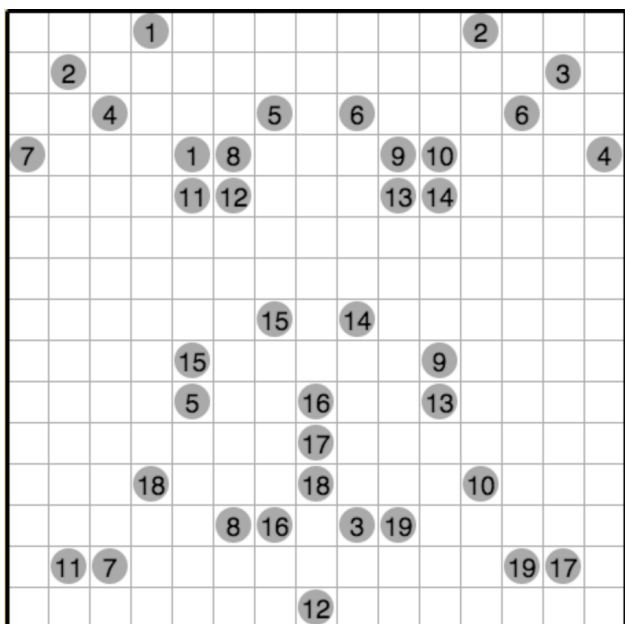
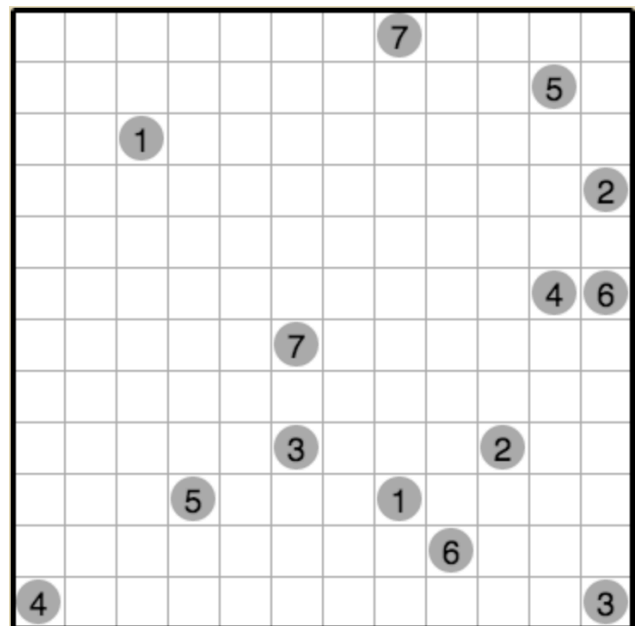
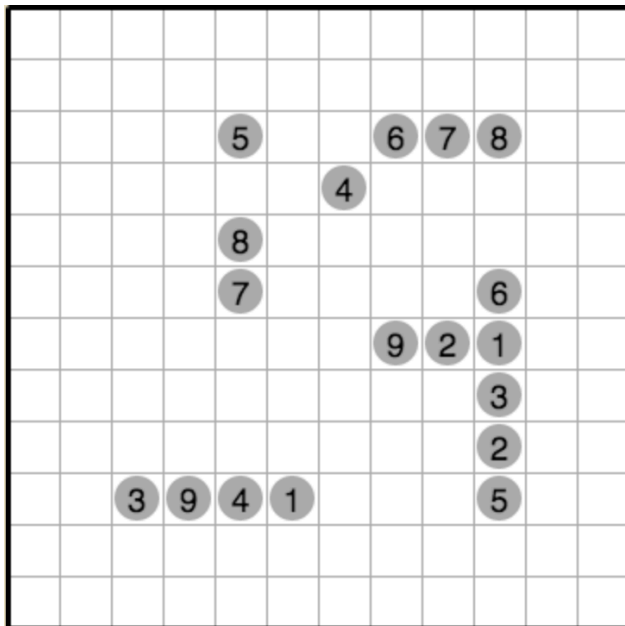
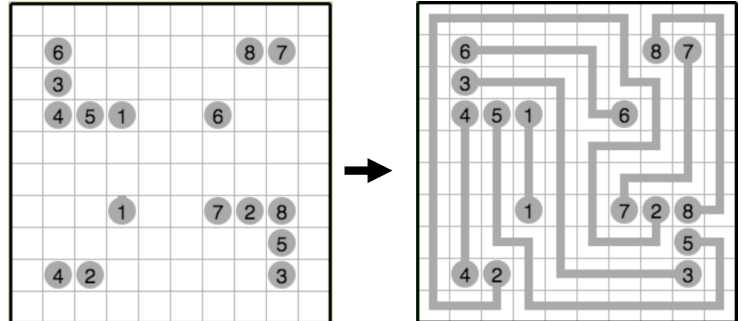


Logic Training – Advanced

Week October 9, 2015

Instructions:

Arukone puzzles, also known as Numberlinks were first published in 1897 in the Brooklyn Daily Eagle and were made popular in Japan by the publisher Nikoli. The objective of Arukone puzzles is to connect two circles with the same number by a line, 1's with 1's, 2's with 2's and so on. The line can only follow a vertical or horizontal path, no diagonals. A line must not cross or touch itself or another line.



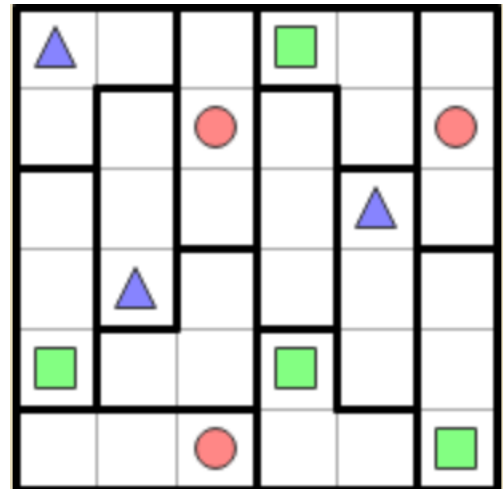
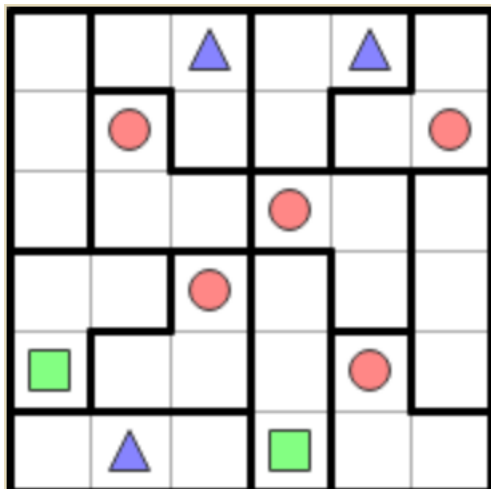
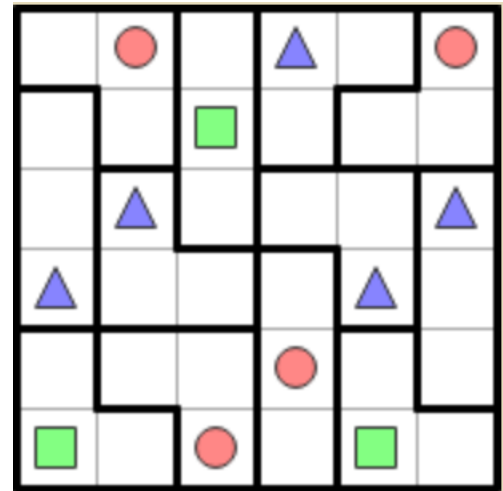
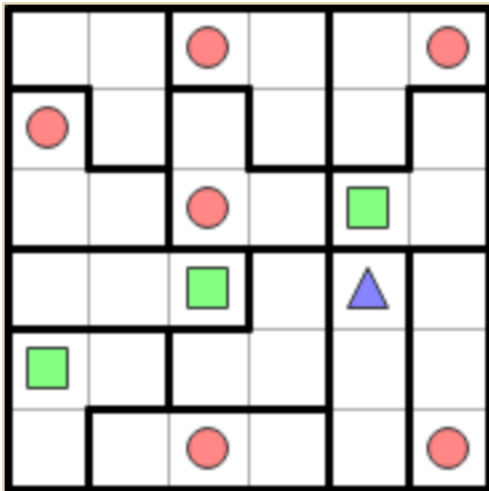
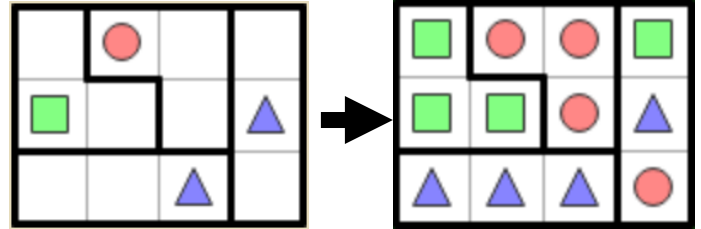


Logic Training – Beginner

Week September 11, 2015

Instructions:

Draw a triangle, circle or a square into each box in the diagram. The shapes within a region (the black outlined groups of 3 squares) must be either all different OR all identical. The same shapes must not be adjacent (next to) each other across a black border region. For example, you could not place a square in the bottom left corner of this puzzle because of the green square across the black region boundary line above it.



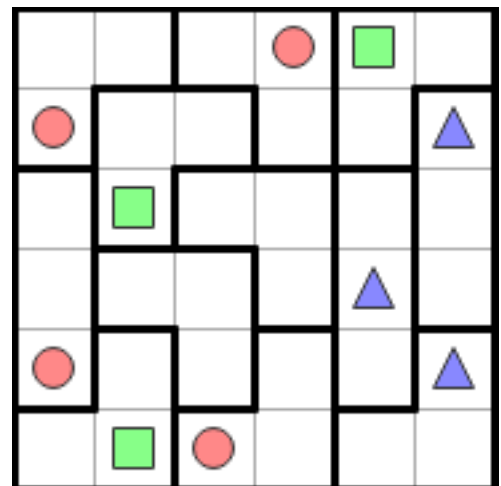
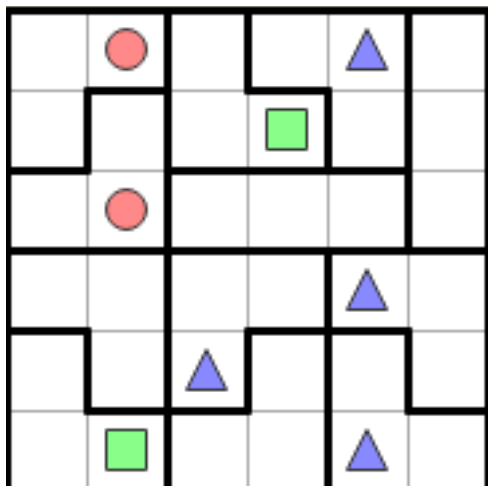
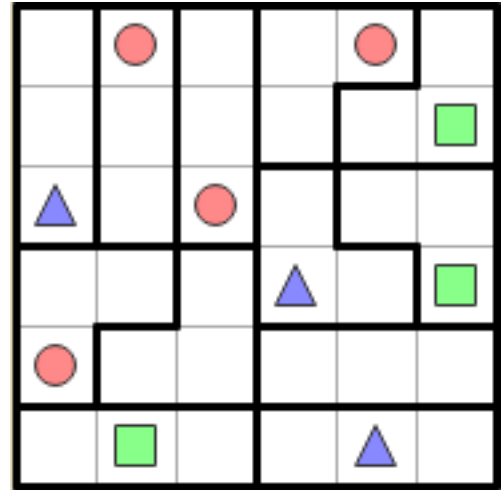
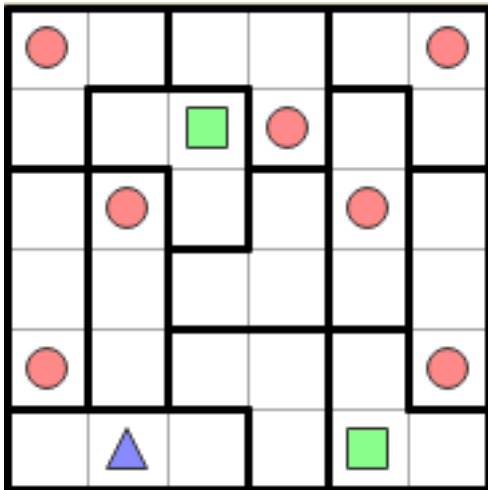
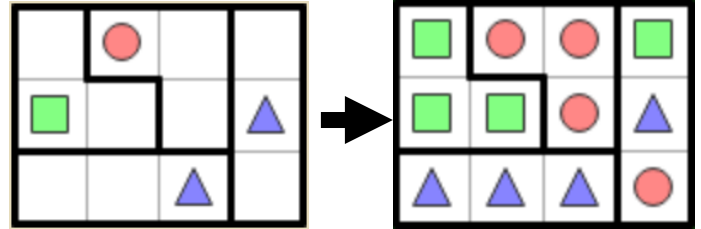


Logic Training – Intermediate

Week September 11, 2015

Instructions:

Draw a triangle, circle or a square into each box in the diagram. The shapes within a region (the black outlined groups of 3 squares) must be either all different OR all identical. The same shapes must not be adjacent (next to) each other across a black border region. For example, you could not place a square in the bottom left corner of this puzzle because of the green square across the black region boundary line above it.



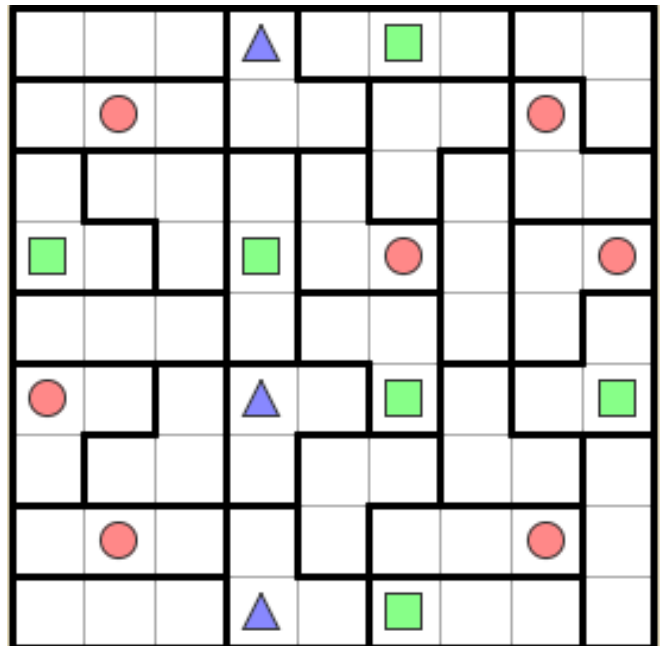
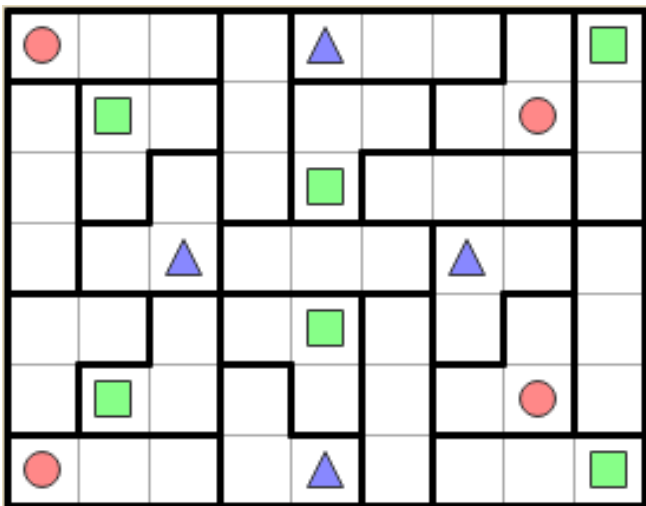
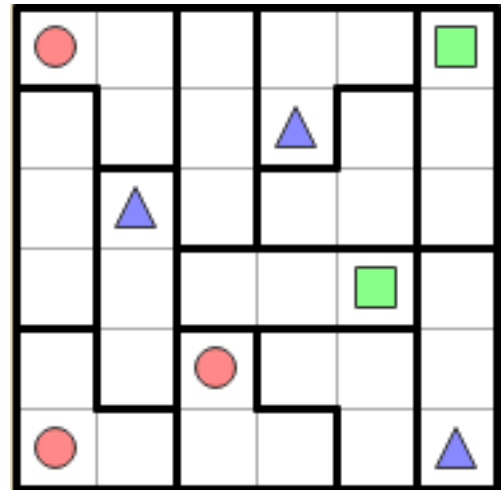
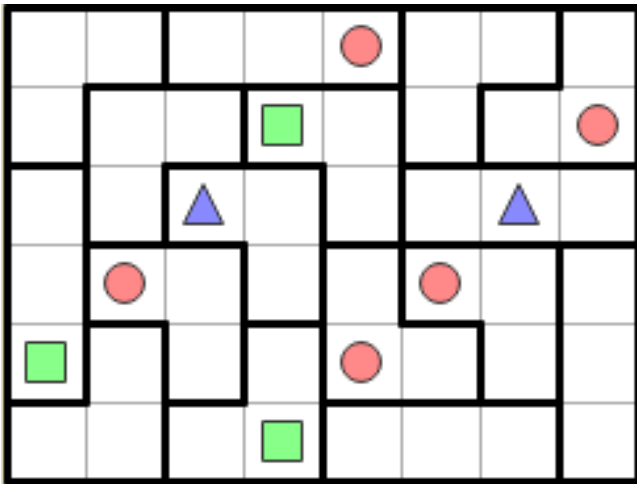
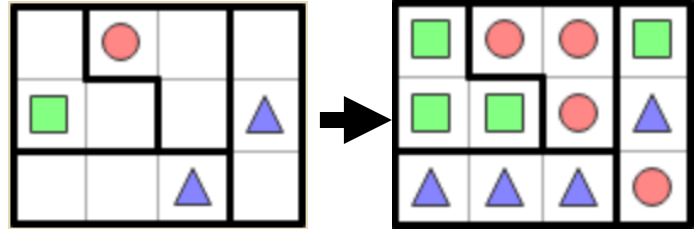


Logic Training – Advanced

Week September 11, 2015

Instructions:

Draw a triangle, circle or a square into each box in the diagram. The shapes within a region (the black outlined groups of 3 squares) must be either all different OR all identical. The same shapes must not be adjacent (next to) each other across a black border region. For example, you could not place a square in the bottom left corner of this puzzle because of the green square across the black region boundary line above it.



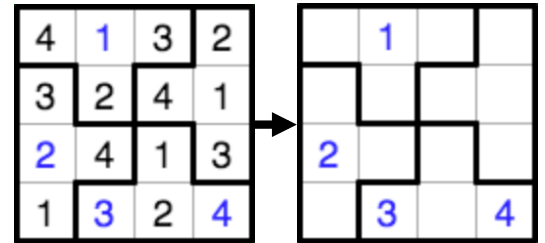


Logic Training – Beginner

Week February 5, 2016

Instructions:

Jigsaw Sudoku puzzles are part of the Latin Square family of puzzles like last week's Latin Sums puzzles. They follow all of the same rules as the classic Sudoku game, namely no repeating a number in any horizontal or vertical row. In addition to these rules, the puzzle is divided into "rooms" in which again, you are not allowed to repeat any numbers within the room. Each row, column and room should use the numbers 1 to n , where n is the number of rows in the puzzle.



A grid of 16 Jigsaw Sudoku puzzles. Each puzzle is a square grid with rooms defined by thick black lines. Some cells contain numbers from 1 to n , where n is the number of rows in the puzzle. The puzzles are arranged in a 4x4 grid:

- Row 1: 4x4, 4x4, 4x4, 4x4
- Row 2: 4x4, 4x4, 4x4, 4x4
- Row 3: 5x5, 5x5, 5x5, 5x5
- Row 4: 6x6, 6x6, 6x6, 6x6

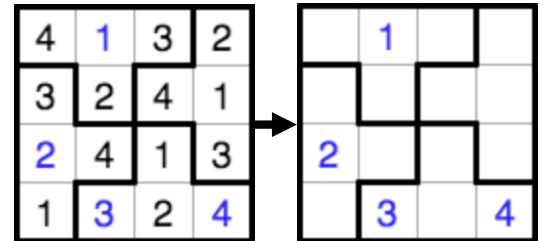


Logic Training – Intermediate

Week February 5, 2016

Instructions:

Jigsaw Sudoku puzzles are part of the Latin Square family of puzzles like last week's Latin Sums puzzles. They follow all of the same rules as the classic Sudoku game, namely no repeating a number in any horizontal or vertical row. In addition to these rules, the puzzle is divided into "rooms" in which again, you are not allowed to repeat any numbers within the room. Each row, column and room should use the numbers 1 to n, where n is the number of rows in the puzzle.



The image displays a 4x4 grid of 16 Jigsaw Sudoku puzzles. Each puzzle is a 4x4 grid with a unique room layout. The rooms are defined by thick black lines. Some cells contain blue numbers, while others are empty. The puzzles are arranged in a 4x4 grid:

- Row 1:**
 - Puzzle 1: Rooms (1,2), (3,4), (1,3), (2,4), (1,4), (2,3), (3,2), (4,1). Numbers: (1,2)=4, (2,3)=3, (3,4)=5, (4,1)=1, (4,2)=2.
 - Puzzle 2: Rooms (1,2), (3,4), (1,3), (2,4), (1,4), (2,3), (3,2), (4,1). Numbers: (1,2)=3, (2,1)=5, (3,4)=1, (4,2)=2, (4,3)=4.
 - Puzzle 3: Rooms (1,2), (3,4), (1,3), (2,4), (1,4), (2,3), (3,2), (4,1). Numbers: (1,2)=1, (1,3)=2, (1,4)=4, (2,3)=3, (4,1)=5.
 - Puzzle 4: Rooms (1,2), (3,4), (1,3), (2,4), (1,4), (2,3), (3,2), (4,1). Numbers: (1,2)=2, (1,3)=1, (1,4)=4, (2,4)=3, (3,2)=5.
- Row 2:**
 - Puzzle 5: Rooms (1,2), (3,4), (1,3), (2,4), (1,4), (2,3), (3,2), (4,1). Numbers: (1,1)=5, (2,1)=2, (2,2)=4, (3,4)=6, (4,3)=3, (4,1)=1.
 - Puzzle 6: Rooms (1,2), (3,4), (1,3), (2,4), (1,4), (2,3), (3,2), (4,1). Numbers: (1,2)=2, (1,4)=4, (2,1)=5, (2,2)=6, (3,3)=6, (3,4)=5, (4,1)=6, (4,2)=1, (4,3)=2.
 - Puzzle 7: Rooms (1,2), (3,4), (1,3), (2,4), (1,4), (2,3), (3,2), (4,1). Numbers: (1,2)=1, (2,3)=4, (3,4)=6, (4,1)=2, (4,2)=3, (4,3)=5.
 - Puzzle 8: Rooms (1,2), (3,4), (1,3), (2,4), (1,4), (2,3), (3,2), (4,1). Numbers: (1,1)=1, (2,3)=5, (3,2)=2, (3,3)=3, (4,4)=6, (4,1)=4.
- Row 3:**
 - Puzzle 9: Rooms (1,2), (3,4), (1,3), (2,4), (1,4), (2,3), (3,2), (4,1). Numbers: (1,1)=6, (2,2)=4, (3,2)=5, (3,3)=3, (4,2)=2, (4,3)=1.
 - Puzzle 10: Rooms (1,2), (3,4), (1,3), (2,4), (1,4), (2,3), (3,2), (4,1). Numbers: (1,3)=4, (1,4)=3, (1,4)=6, (2,3)=2, (3,1)=5, (4,3)=1.
 - Puzzle 11: Rooms (1,2), (3,4), (1,3), (2,4), (1,4), (2,3), (3,2), (4,1). Numbers: (1,2)=2, (2,1)=1, (3,3)=3, (4,2)=4, (4,3)=5.
 - Puzzle 12: Rooms (1,2), (3,4), (1,3), (2,4), (1,4), (2,3), (3,2), (4,1). Numbers: (1,3)=3, (2,2)=2, (2,3)=1, (3,1)=3, (3,4)=4, (4,3)=5.
- Row 4:**
 - Puzzle 13: Rooms (1,2), (3,4), (1,3), (2,4), (1,4), (2,3), (3,2), (4,1). Numbers: (1,1)=2, (1,2)=1, (2,2)=3, (3,1)=6, (3,2)=5, (3,3)=4, (4,3)=3.
 - Puzzle 14: Rooms (1,2), (3,4), (1,3), (2,4), (1,4), (2,3), (3,2), (4,1). Numbers: (1,4)=6, (2,2)=2, (2,3)=1, (3,1)=3, (3,4)=4, (4,3)=5.
 - Puzzle 15: Rooms (1,2), (3,4), (1,3), (2,4), (1,4), (2,3), (3,2), (4,1). Numbers: (1,1)=1, (2,2)=2, (3,3)=4, (4,2)=5, (4,3)=6, (4,1)=3.
 - Puzzle 16: Rooms (1,2), (3,4), (1,3), (2,4), (1,4), (2,3), (3,2), (4,1). Numbers: (1,1)=1, (2,1)=2, (3,4)=3, (4,1)=4, (4,2)=5, (4,3)=6.

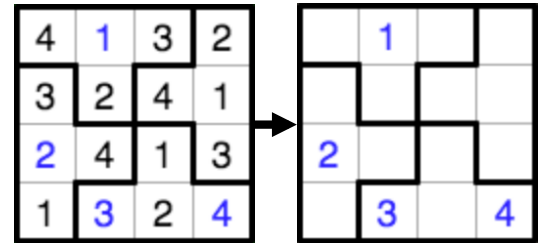


Logic Training – Advanced

Week February 5, 2016

Instructions:

Jigsaw Sudoku puzzles are part of the Latin Square family of puzzles like last week's Latin Sums puzzles. They follow all of the same rules as the classic Sudoku game, namely no repeating a number in any horizontal or vertical row. In addition to these rules, the puzzle is divided into "rooms" in which again, you are not allowed to repeat any numbers within the room. Each row, column and room should use the numbers 1 to n , where n is the number of rows in the puzzle.



	4				6
			3		
				1	2
5					

4					
		3	2		
					1
5			6		

3	2				1
	4				5
6					

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

4	8					9		
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	9	8						3
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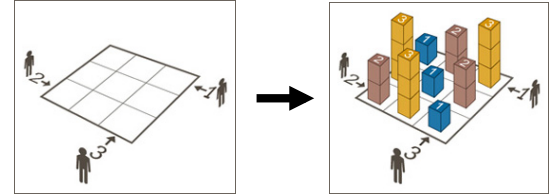


Logic Training – Beginner

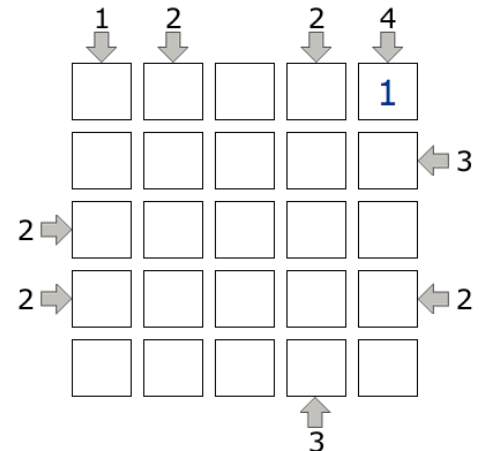
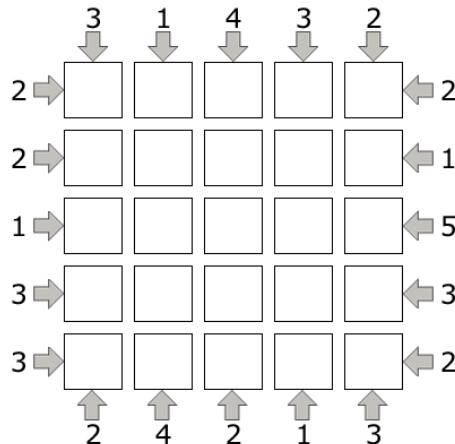
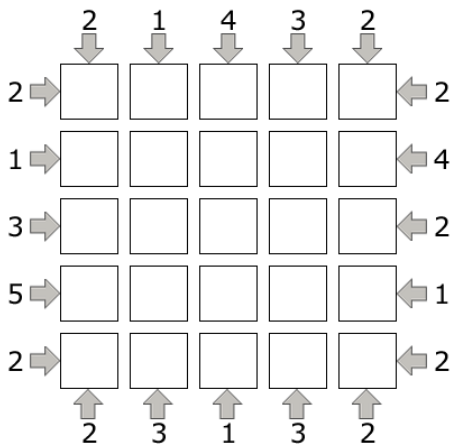
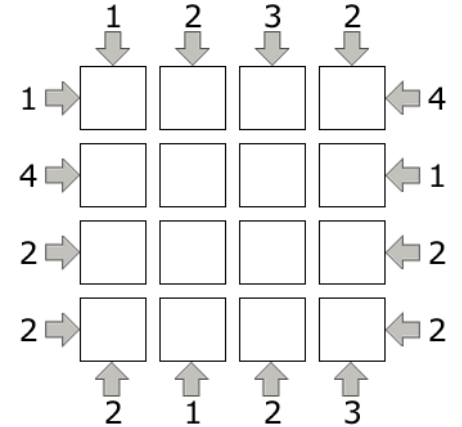
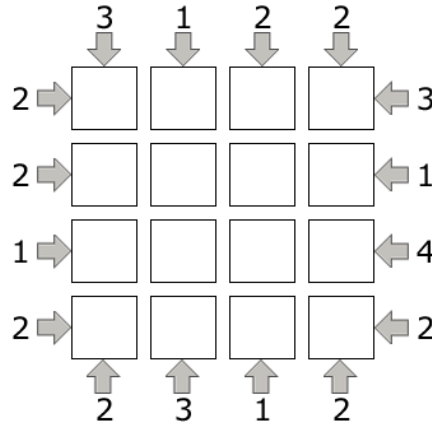
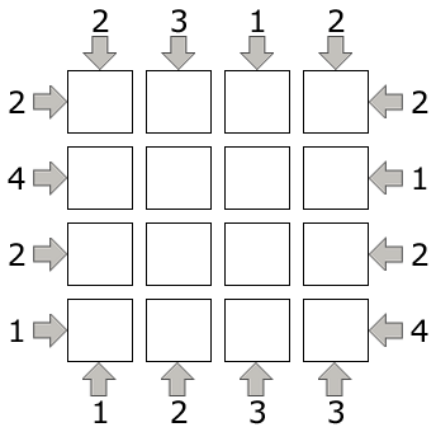
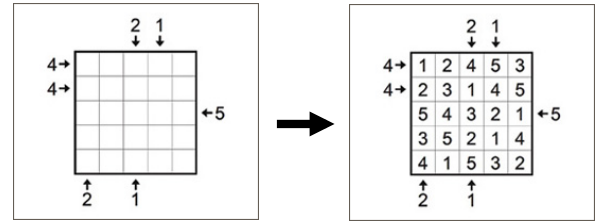
Week November 13, 2015

Instructions:

Skyscrapers is a building arranging logic puzzle that is solved by placing buildings of different heights in a grid so the number of visible buildings, as viewed from the direction of each given clue (the number and arrow on the outside), is equal to the value of the clue as shown in the pictures to the right:



In other words, the object is to place a skyscraper (its number representing the building's number of stories) in each square, 1,2,3... and so on up to the number of rows, so that no two skyscrapers in a row or column have the same number of floors and the number of visible skyscrapers, as viewed from the direction of each clue, is equal to the value of the clue. Note that the higher skyscrapers block the view of lower skyscrapers located behind them.



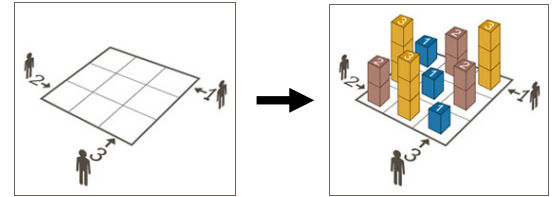


Logic Training – Intermediate

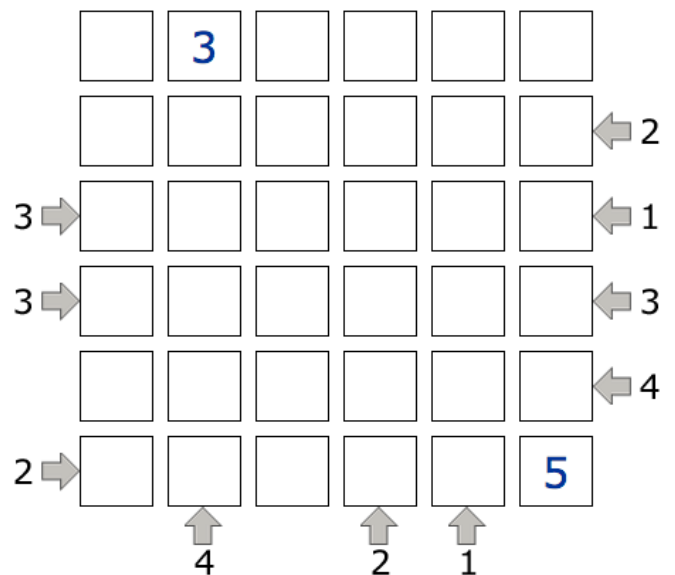
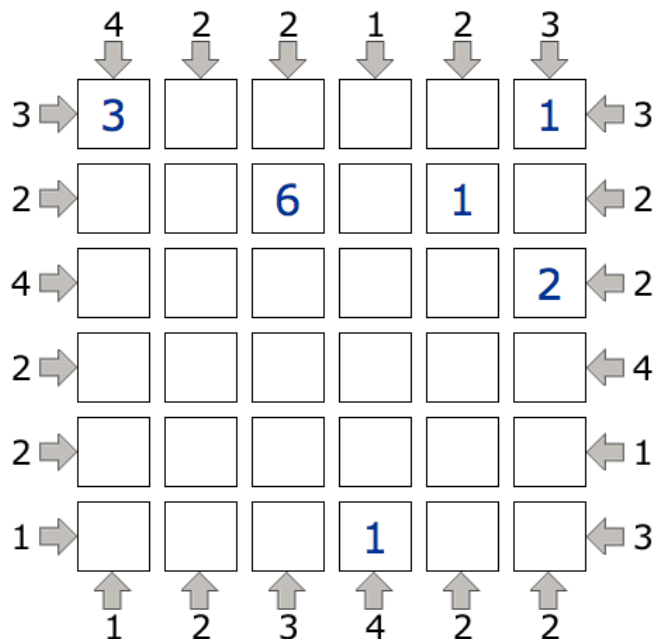
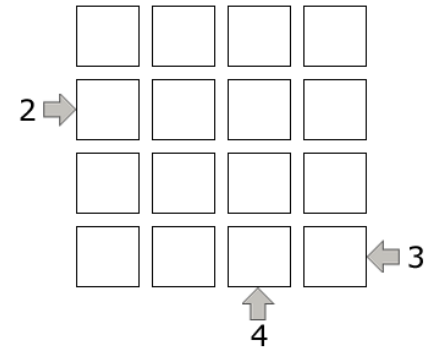
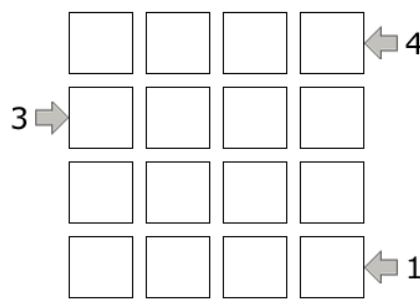
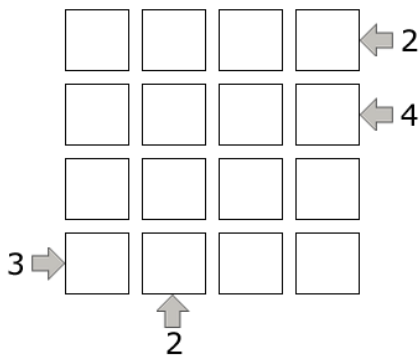
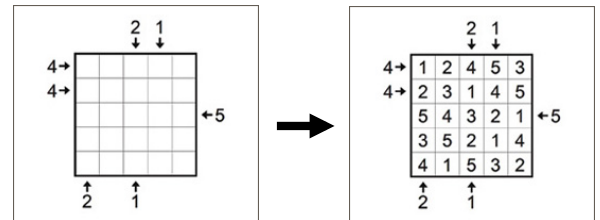
Week November 13, 2015

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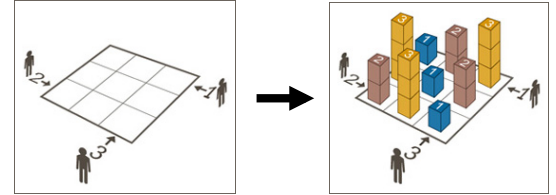


Logic Training – Advanced

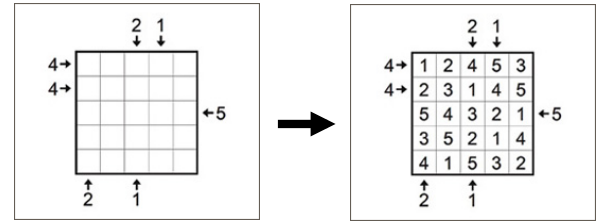
Week November 13, 2015

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		4	5	3		
	↓	↓	↓			
			4			
3	→		3			
3	→				2	
						← 1
						← 3
		1				← 3
3	→					← 2
		↑		↑	↑	↑
		1		4	3	4

		4	5	3		
	↓	↓	↓			
			4			
3	→		3			
3	→				2	
						← 1
						← 3
		1				← 3
3	→					← 2
		↑		↑	↑	↑
		1		4	3	4



Logic Training – Advanced

Week November 13, 2015

	2	3	3	1	4	3	5	2	2		
3	↓	↓	↓	↓	↓	↓	↓	↓	↓	← 2	
						5	3				
4	→							3		6	← 2
1	→			4					2		← 3
4	→	1		2		4					← 3
3	→		3	4				7	8		← 3
2	→			6				8		1	← 4
4	→		1				5				← 1
2	→					3					← 3
3	→			1						4	← 3
	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	
	3	2	2	5	3	3	1	4	3		