



# Prague 2018



## 27th World Puzzle Championship

# Instruction booklet



### Partners



# Schedule

## **Thursday 8. 11. 2018**

9:00-9:45	Individual round 1	Shading
10:00-10:40	Individual round 2	Objects
11:05-12:05	Individual round 3	Skyscrapers
14:00-15:00	Individual round 4	Polygons
15:15-16:45	Individual round 5	Variations
17:10-18:40	Individual round 6	Combinations

## **Friday 9. 11. 2018**

9:00-9:45	Individual round 7	Paths
10:00-10:45	Individual round 8	Dissections
11:10-12:10	Individual round 9	Numbers
14:00-14:45	Individual round 10	Double trouble
15:00-15:45	Individual round 11	Regional
16:00-17:00	Individual round 12	Innovative
17:25-17:55	Team round 1	Combined puzzle
18:10-18:55	Team round 2	Hexa ABC with coral loop

## **Saturday 10. 11. 2018**

9:00-10:30	Individual round 13	Twisted
10:00-11:30	Team round 3	Ariadne's thread
14:00-16:00	Individual playoff	
17:00-17:45	Team playoff	

# Competition rules

## Scoring and bonuses

Points will be awarded only for fully and correctly solved puzzles. In general, there is no partial credit unless it is stated otherwise in the round's description.

### Individual rounds

A bonus of 10 points for each full remaining minute will be awarded to any competitor who correctly solves each puzzle in a round. At the judge's discretion,  $0.6 \times$  bonus will be awarded in the case of a single minor mistake in no more than 1 puzzle. For the avoidance of doubt, a minor mistake is considered at most two incorrectly filled cells in at most one of the puzzles.

### Team rounds

A bonus of 40 points for each full remaining minute will be awarded to any team who correctly solves all the puzzles in a round. If there are any mistakes, then no bonus will be awarded.

Overall team score is calculated as a sum of 4 individual scores and 3 scores from team rounds.

## Competition Hall Rules

1. Each competitor has to sit at his/her pre-allocated desk in individual rounds. Teams have to work at their pre-allocated desks/areas for team rounds.
2. Prior to the start of each round, competitors must ensure they are at their desks ready for the start of the round. Late arrivals may not be permitted to enter the competition hall to take part in a round (at the discretion of the organizers).
3. Prior to the start of each round, competitors have to clearly write their name, team and reference number on the front of their competition booklet into the allocated space. If this information is not complete, then the organizers reserve the right not to award any points to that competitor for that round. Competitors must not open their booklets before the official start of the round.
4. When the signal for the start of the round has been given, competitors may open their booklets and begin solving the puzzles.
5. During each individual round, competitors have to keep silent, unless declaring completion of a round.
6. During team rounds, team members may talk to each other, but should do this with respect to other teams.
7. To declare a round complete, a competitor must close his/her booklet, clearly state "finished" and raise his/her arm with the booklet. The competitor's arm must be raised until the booklet is collected. The same rules apply for the team competition.
8. Competitors or teams who complete a round with more than five minutes in advance, are allowed to leave the competition hall quietly.
9. Competitors or teams who complete a round with five minutes or less left are not allowed to leave their desks or tables in order to not to cause unnecessary disruption to fellow competitors.
10. When a competitor leaves the competition hall for any reason, he/she will be not allowed to continue in that round.
11. When the signal to finish round is given, competitors have to stop solving immediately, close their booklets, put their pens/pencils down and their hands up with their booklets for collecting.
12. At the end of a round, competitors have to remain seated until all booklets have been collected. The signal to get up and leave will be given by the supervisor.
13. Mobile phones and electronic devices are not permitted to use in the competition hall. The devices have to be turned off and must not be placed on the competitor's desk.
14. Only team captains and official observers equipped with a name tag are allowed to enter the competition hall while either individual or team rounds are taking place. Other non-competing participants may enter the competition hall at the discretion of the organizers.
15. Competitors may not use cameras or other recording devices during rounds. Only official observers may do so, at the discretion of the organizers. They have to respect the competitors and not use flash photography or cameras with excessive sounds.
16. When a competitor believes that there is a problem with a puzzle, they must clearly state that puzzle is wrong by writing "Wrong puzzle" next to it. The competitor must not notify the organizers during the round. This will be investigated upon completion of the round.
17. Puzzles can be completed in any order within a round. The points' value of a puzzle is an indication of its expected difficulty, although individual solving experience may differ. The difficulty of an example puzzle does not necessarily reflect the difficulty of the corresponding competition puzzle.
18. The boxed area below each puzzle is reserved for markers' notes – competitors must not write in this area.

### **Permitted items**

19. Permitted items which can be used in the competition hall (unless stated otherwise) are: pens, pencils, pencil sharpeners, erasers, rulers, blank papers and instruction booklets annotated with notes regarding puzzle instructions and preparation notes.
20. Drinks and snacks are permitted as long as they do not disturb other competitors with a strong smell or rustling packet.
21. It is strictly forbidden to use electronic devices such as music players and headphones or any type of calculator. Use of such equipment may lead to the disqualification of the competitor.
22. Any other items brought into the hall must be kept in a bag on the floor and placed under the competitor's desk, so as not to block the aisles.

### **Marking and Queries**

23. When a round has been evaluated, fully marked booklets are returned to a team member equipped with a country tag at a given location in a given time. Country tags will be distributed to each captain prior the start of the championships.
24. In case of any query after a booklet has been evaluated and returned to a competitor, the query must be raised through a team member with country tag to the organizers in the specified time. The schedule for the queries will be published before the competition. The booklet should be left with the organizers for investigation.
25. Puzzles may be photographed during the marking phase in order to prevent subsequent interventions.
26. Team captains are responsible for ensuring that any information given to them related to the competition is effectively relayed to their team.

### **Breach of Rules**

27. Any breach of these rules may lead to a competitor or team being disqualified from the round or competition.
28. The decision of the WPC tournament director (Jiří Hrdina) is final.

### **Final Remarks**

29. In case of a major mistake in one of the rounds, organisers reserve the right to cancel the round, either by removing it from the time schedule, or by not rewarding any points for it to any of the competitors.
30. The official puzzle booklets will contain 1-3 puzzles per page in the individual rounds. The rules of the puzzle and the corresponding points are always written next to it.
31. The official puzzle booklets will not contain puzzle examples. Therefore, we recommend to bring the Instruction Booklet, which contains an example of every puzzle which will be part of the championship.
32. In the team rounds, the official puzzle booklets may not contain the rules of puzzles / examples. It is advised to bring at least one Instruction Booklet for a team for these rounds.
33. In any case of inconsistency between the Instruction Booklet and the official puzzle booklets, e.g. rules or points, the information in the Instruction Booklet will be considered valid.
34. In the competition hall, a timer counting down to the end of the round will be visible for all the competitors.

### **Credits**

35. All the sample puzzles in this Instruction Booklet were made by organisers. They cannot be commercially used. All rights have been reserved.
36. We would like to thank the organizers of previous WSC & WPC, we use parts of the Competition Rules from the Instruction Booklets published in past.

## **Individual playoffs**

The top 10 competitors from the individual competition will qualify for the playoffs. In case of any equality between the points of the top competitors, all players with the same score will compete in the corresponding round. (If inevitable at some stage of the playoffs, next tiebreaking criteria are 1) score without time bonuses, 2) score in Round 5, 3) extra puzzle)

Time differences will be calculated proportionally based on the top score and the 10th top score. Maximal difference (between 1st and 10th place) will be 10 minutes.

Finals will be divided into three rounds. The first round will feature competitors who finished in positions 7-10, with staggered starts determined by points' differences. The winner of the first round, 'A', will progress into the second round along with competitors who finished in positions 4-6. 'A' will have a staggered start as determined by the 7th place competitor. The winner of the second round, 'B', will progress into the third round along with competitors who finished in positions 1-3. 'B' will have a staggered start as determined by the 4th place competitor. This round will determine the podium places for the 27th World Puzzle Championship.

The time limits for a single round will be 21, 28, 35 minutes respectively. The number of puzzles to be solved will be 3, 4, 5 respectively and their order is fixed and the same for all competitors. These puzzles will be chosen by play-off competitors from the sets of puzzles revealed by organisers on Saturday morning, all the puzzle types are from individual rounds 1-13. The selection of puzzles for the finals will take place before the corresponding play-off round, when all four competitors from this round are present at their desks.

For each round of finals, 6 (8, 10) different puzzles are prepared. The competitor on the best position in this round will choose one puzzle, which will be solved in this round of the finals (and selects its placement), and one puzzle, which will not be solved at all. The next competitor will choose from the remaining puzzles, one puzzle, which will be solved and one, which will not be solved. And so on until 3 (4, 5) puzzle types are chosen and placed.

## Individual playoffs

### Solving, Submission, Grading and Ranking

When a play-off competitor completes a puzzle, he/she must raise his/her hand to indicate to a judge to enter the submission period.

The entire puzzle will then be checked over the next minute. After one minute, if the puzzle is correct, the judge will allow the competitor to begin the next puzzle. If the puzzle is incorrect, the judge will return the incorrect puzzle to the competitor. The competitor can resubmit a returned puzzle at any time, and will again enter the submission period.

The first and second round of the play-off stops either with the end of the time limit, or when the first competitor solves correctly all puzzles in the round, whichever is earlier.

The third round of the play-off stops either with the end of the time limit, or when 3 competitors solve correctly all puzzles in the round, whichever is earlier.

The rank for a playoff round is determined by a) number of correctly solved puzzles, b) time of the last correct submission, c) score in preliminary rounds. In playoff rounds 1 and 2 we care only about the winner, other players are ranked according to the score in preliminary rounds. In the big finals all positions 1-4 are determined by playoff results.

## Team playoffs

Top 4 teams after the preliminary rounds will qualify for the playoffs. In case of any equality between the points of the top teams, all teams with the same score will compete in the finals.

Teams will start the playoff with time offsets based on the preliminary results. The time differences will be calculated proportionally to the team points from preliminary rounds. The difference between 1st and 4th team will be 6 minutes.

The playoffs will consist of individual part and a team puzzle.

### Individual part

There will be 4 different puzzle types – Coral, Japanese sums, Galaxies and As easy as ABCDE - with different degrees of difficulty at the four individual tables. For each puzzle type the competitor will get two puzzles and three grids. He/she has to match the two puzzles to two of the grids. The remaining grid will be used for the team puzzle.

Each team member will start solving one of the puzzle types, the assignment of the puzzles is part of the team tactics. The competitor cannot leave the table until both puzzles are correctly solved.

The puzzles will then be checked over the next minute. If any of the puzzles is incorrect, the judge will return it to the competitor. The competitor can resubmit a returned puzzle at any time, and will again enter the submission period.

If the solution is correct, the competitor will pass the remaining grid to the team table and can continue in two ways:

A) Go to the team table and start solving the team puzzle, but then he cannot help any of his teammates with individual puzzles any more; or B) Select one of his teammates and join him at his table.

#### *Additional rules:*

The time when the judge is checking the puzzles may be used for communication with teammates.

No more than 2 teammates can work on the individual puzzle type at any time.

When working together, both competitors must leave the table at the same time (sending one of the competitors to the team table earlier is not allowed).

Each competitor can only help one of his teammates. After a couple of teammates finishes the puzzles, the competitor who has started at the table can go help to another individual table, but the competitor who came to help must go to the team table.

### Team puzzle

The remaining grids from the individual puzzles are to be placed in the four quadrants of the central puzzle. The correct placement of the grids is part of the solving process. After the puzzle is finished, the judge has 1 minute to check the puzzle.

The team is finished when all the individual puzzles and the team puzzle are correctly solved.

The rank of the team is determined by the finishing time.

## Puzzle dictionary

To help you better understand the terminology used in puzzle rules here is a brief dictionary of the most common terms.

**GRID** – the diagram to be filled with numbers, letters or objects or to be painted. Usually it is represented as rectangular table, but it may have any kind of irregular shapes, even triangular, hexagonal, etc.

**CELL** – basic element of the grid, usually square or polygon

**ADJACENT cell** – any cell sharing one of the sides with the given cell (square has 4 adjacent cells)

**NEIGHBOURING cell** – any cell sharing at least one point with the given cell (square has 8 neighbouring cells)

**ORTHOGONALLY connected cells/area/region** – group of cells where you can connect any two cells from the group by path that travels only horizontally or vertically and uses only the cells from this group

**VERTEX** – point where the grid lines cross

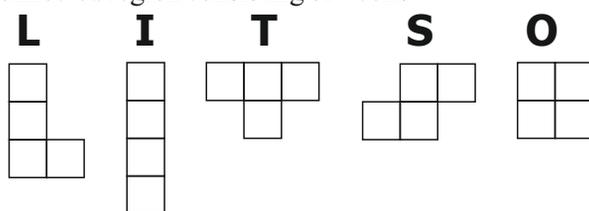
**PATH** - series of orthogonally connected cells, one cell wide that starts in one cell and ends in another cell. The term is also used for a line travelling through the centers of the neighbouring cells. The line can travel vertically and horizontally, but in some puzzles diagonal travelling is also allowed.

**LOOP** – similar to path except that the path is closed and does not have any starting or ending point

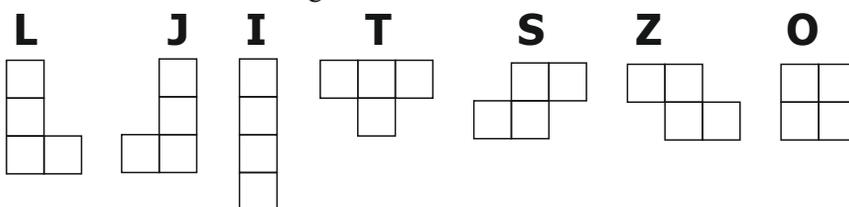
### TETROMINO

Tetromino is an orthogonally connected region consisting of 4 cells

There are 5 tetromino shapes:



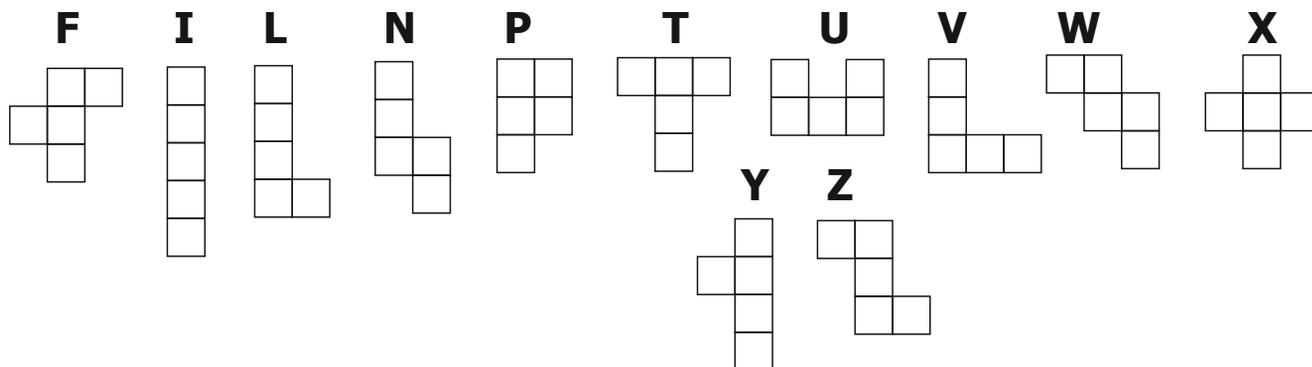
If reflection is not allowed, the wider set of tetrominoes might be used:



### PENTOMINO

Pentomino is an orthogonally connected region consisting of 5 cells

There are 12 pentomino shapes:





# Prague 2018



## Round 1 - Shading

45 minutes

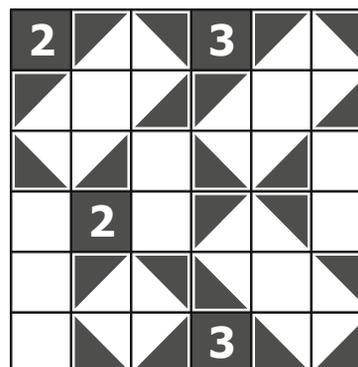
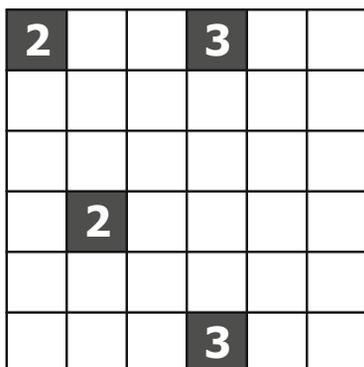
590 points

1. Shakashaka .....85 points
2. Heyawake .....80 points
3. Hitori .....30 points
4. LITS .....15 points
5. Tapa .....10 points
6. Nurikabe .....20 points
7. Cave .....80 points
8. Aquarium .....35 points
9. All or nothing .....50 points
10. Coral .....110 points
11. Kuromasu .....75 points

### 1) Shakashaka

85 points

Rules: Paint a triangle (▲, ▴, ▼, ▾) in some white cells. Some white cells may remain empty. A number in a grey cell indicates how many sides of triangles in orthogonally adjacent cells touch this cell. The remaining white space must form rectangular areas, oriented either horizontally, vertically or diagonally. Two white rectangles must not be orthogonally adjacent.



(See Puzzle 11 instructions and example moved to page 16, after Round 2.)

## 2) Heyawake

80 points

Rules: Blacken some of the cells in the grid so that no two black cells touch each other horizontally or vertically and all white cells are orthogonally connected. Strips of white cells should not extend horizontally or vertically over more than one area boundary. The numbers in the grid show the number of black cells in the corresponding area. Cells with numbers may be blackened.

2		2			
				1	
1					

2		2			
				1	
1					

## 3) Hitori

30 points

Rules: Blacken some cells in the grid, so that in every row and every column every number appears at maximum once. All the unpainted numbers have to be orthogonally connected. No two black cells may be horizontally or vertically adjacent.

1	1	3	5	4	3
6	4	5	1	2	6
4	2	3	6	1	2
5	6	2	4	5	6
2	3	5	1	6	4
3	5	1	4	1	5

1	1	3	5	4	3
6	4	5	1	2	6
4	2	3	6	1	2
5	6	2	4	5	6
2	3	5	1	6	4
3	5	1	4	1	5

## 4) LITS

15 points

Rules: Blacken some of the cells so that exactly four contiguous cells are blackened in each area, all black cells are orthogonally connected and no 2x2 area is completely blackened. If one considers the black cells in the areas as tetrominos, then the same tetrominos (also rotated or mirrored) must not touch horizontally or vertically.



### 5) Tapa

10 points

Rules: Blacken some empty cells in a way that all black cells are orthogonally connected and no 2x2 area is completely black. The numbers in the cells give hints on how to blacken the surrounding cells (even diagonally). Each number represents a group of horizontally or vertically adjacent cells; groups around a hint-cell have to be separated by at least one white cell. The order of the numbers is unimportant.

					2
		1 1			
		1 1			
			1 1		
			3		
2					

					2
		1 1			
		1 1			
			1 1		
			3		
2					

### 6) Nurikabe

20 points

Rules: Blacken some empty cells so that the grid is divided into white areas, each containing exactly one number and with the same area in cells as that number. Two white areas may only touch diagonally. All black cells must be orthogonally connected, but no 2x2 area can be entirely blackened.

			3		
				8	
		1			
	7				

			3		
				8	
		1			
	7				

### 7) Cave

80 points

Rules: Blacken some cells in the grid so that a cave system is formed which has the following properties: All the cave cells (the white cells) are orthogonally connected. All the walls (the black cells) are connected with the border of the grid, that is, there are no walls which are completely surrounded by white cells. Cells with numbers must not be blackened. Each number indicates how many cave cells are horizontally or vertically visible from that position, including the cell with the number itself.

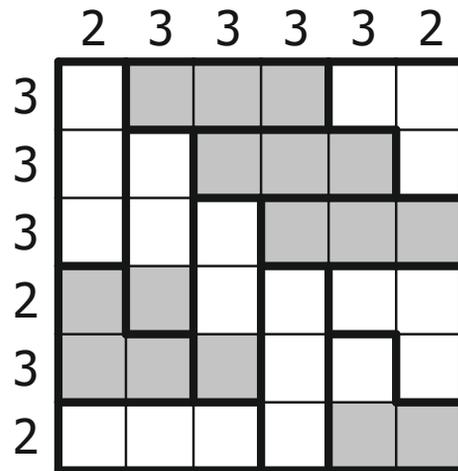
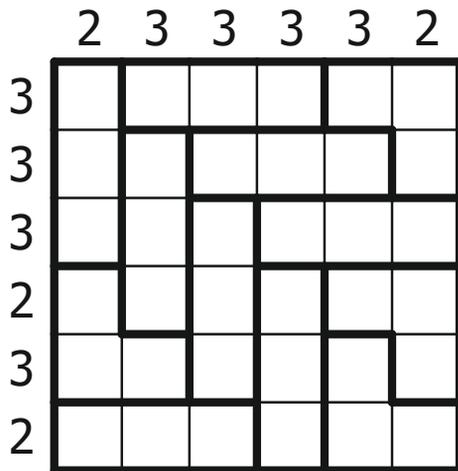
5					2
	5			2	
3					
					3
			6		

5					2
	5			2	
3					
					3
			6		

### 8) Aquarium

35 points

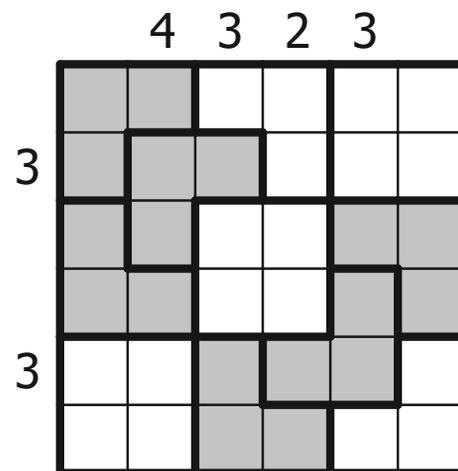
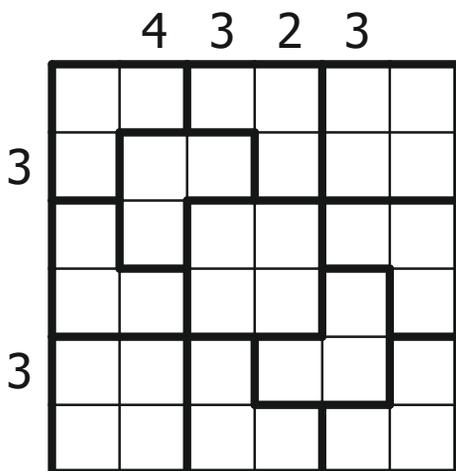
Rules: Fill some cells with water so that the numbers at the borders indicate how many cells in the corresponding row or column contain water. Within an area, the cells must be filled up from the bottom up. Within a row of an area, all cells must always be filled with water or none (even if there are other areas in between).



### 9) All or nothing

50 points

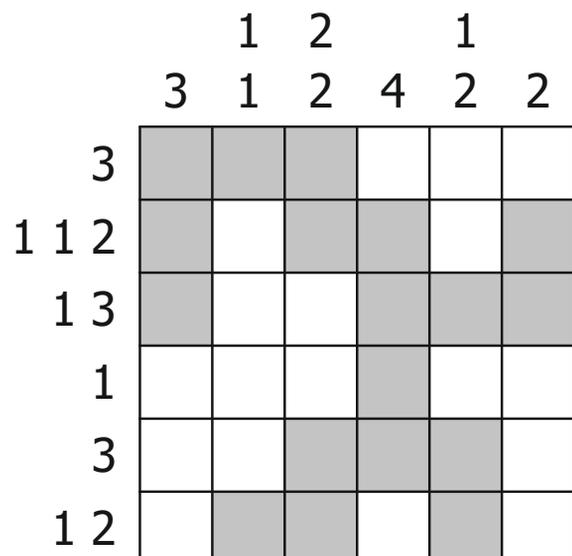
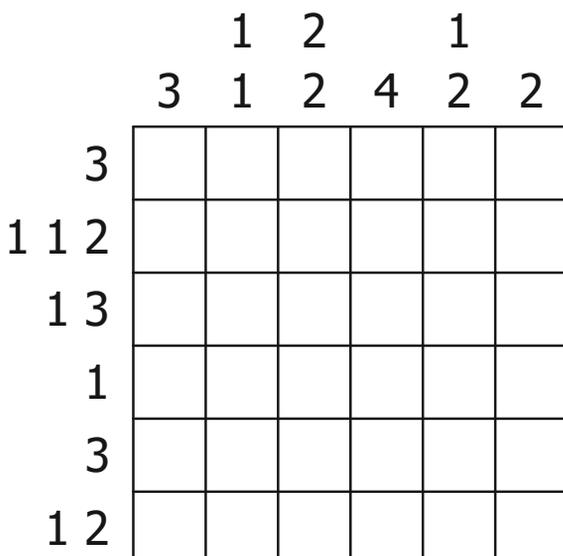
Rules: Blacken some areas so that the numbers on the edge indicate how many cells in the corresponding row or column are black. Within an area either all cells must be black or none.



### 10) Coral

110 points

Rules: Blacken some of the cells in the grid to create a coral. All black cells in the coral must be orthogonally connected. There must be no 2x2 squares of black cells. And all white cells must be connected to the edge of the grid. The numbers on the edge indicate the lengths of successive blocks of coral cells, but not necessarily in the correct order. There must be at least one blank cell between two blocks.





## Round 2 – Objects

**40 minutes**

**430 points**

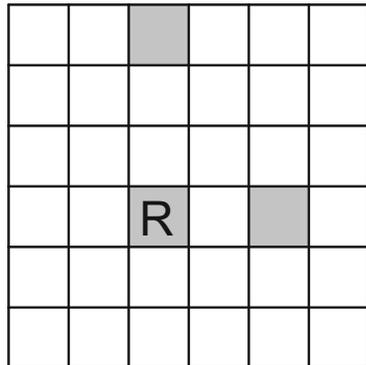
1. Scrabble .....85 points
2. Hashi .....20 points
3. Four winds .....10 points
4. Four winds .....15 points
5. Tents .....30 points
6. Overlapping squares .....15 points
7. Overlapping squares .....55 points
8. Magnets .....20 points
9. As Easy As ABC .....10 points
10. Akari .....10 points
11. Clouds .....20 points
12. Lighthouses .....45 points
13. Suguru .....35 points
14. Suguru diagonal .....15 points
15. Gaps .....20 points
16. Arrows .....25 points

# 1) Scrabble

85 points

Rules: Place some of the given words in the grid following the rules of scrabble. The words may be entered only horizontally from top to bottom or vertically from left to right, one letter per cell. The words may cross each other, but you are not allowed to create any other words (2 letters or more long) than the ones on the list. All the words must be orthogonally connected. All the cells where the words are crossing are given and you have to use all of them. Some letters are given as well.

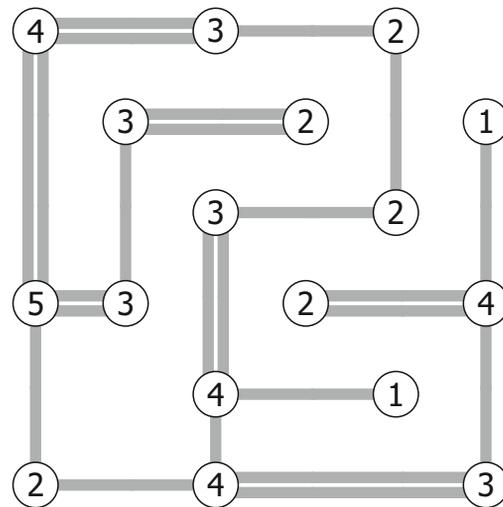
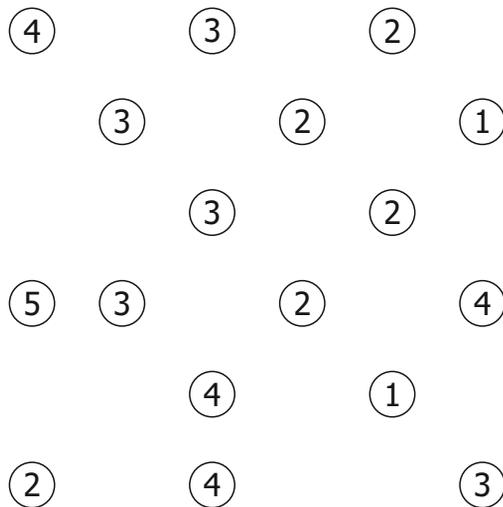
ANDY  
FRANK  
HENRY  
JOHN  
PAUL



# 2) Hashi

20 points

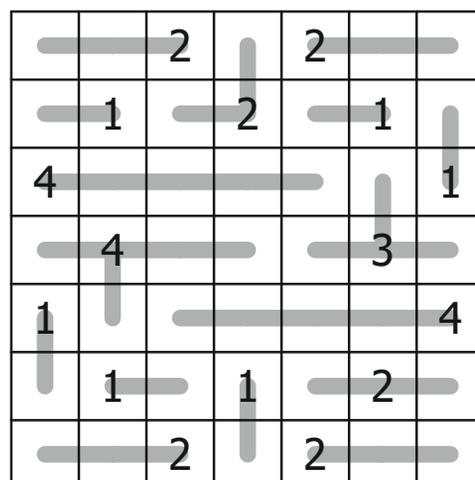
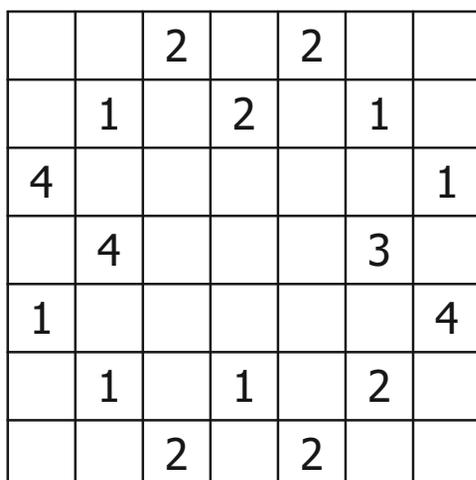
Rules: All islands have to be connected through bridges (every island has to be reachable from every other island). The bridges may only be built horizontally or vertically and may neither cross other bridges nor islands. Between two islands there are at maximum two bridges. The number in the island gives the number of bridges that are connected to this island.



# 3-4) Four winds

10, 15 points

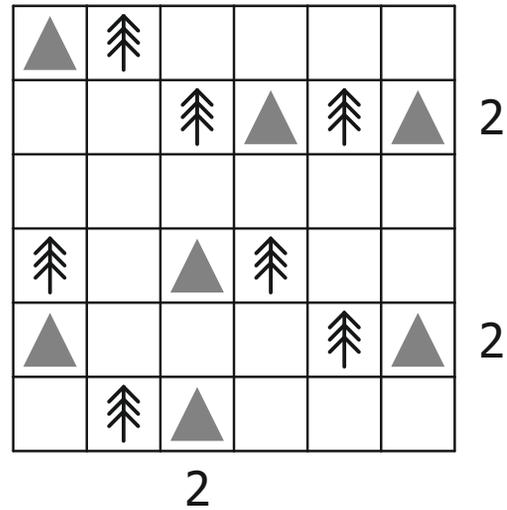
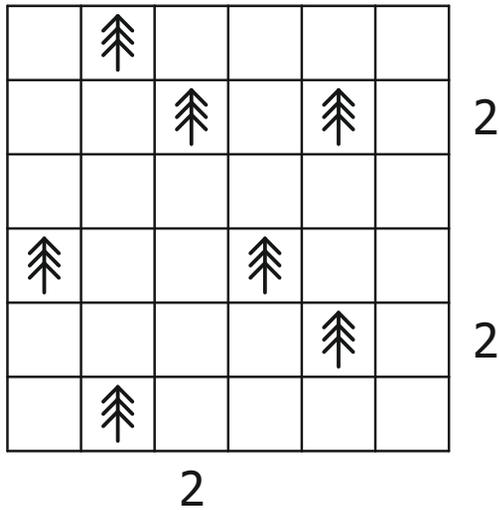
Rules: Draw one or more lines from each numbered cell so that each number indicates the total length of lines that are drawn from that cell, excluding the cell itself. Lines are either horizontal or vertical and connect the centers of adjacent cells without crossing or overlapping each other and the given numbers.



### 5) Tents

30 points

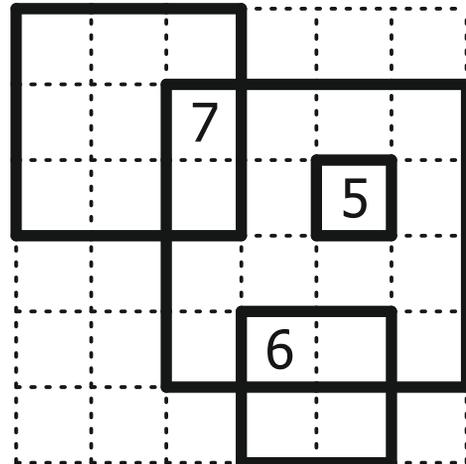
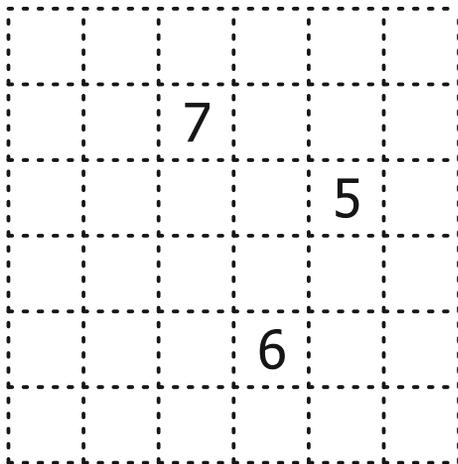
Rules: Enter tents into some of the cells, that every tree belongs to exactly one tent, that is located horizontally or vertically adjacent. Tents do not touch each other, not even diagonally. The numbers at the borders give the number of tents in that row or column.



### 6-7) Overlapping squares

15, 55 points

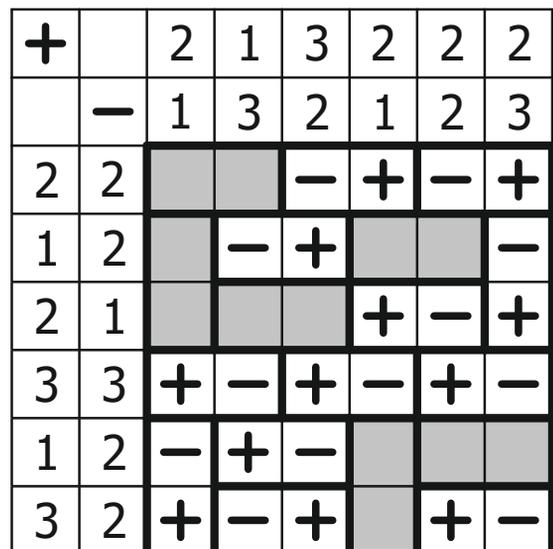
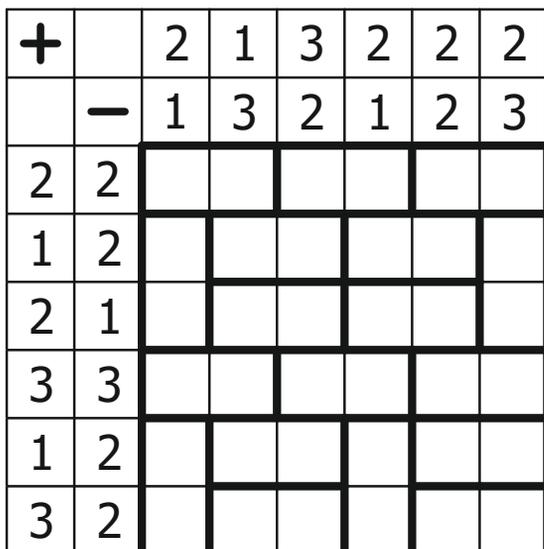
Rules: For given N (4 in the example) draw squares of sizes from 1x1 to NxN in the grid. The borders of squares do no overlap, nor touch in corner, but they can cross each other. The numbers indicate the sum of the square sizes of all the squares covering the cell.



### 8) Magnets

20 points

Rules: The grid is made up of magnetic and non-magnetic plates. Each magnetic plate has two halves: one positive (+) and one negative (-). Halves with the same symbol can not be horizontally or vertically adjacent. The numbers outside the grid indicate how many magnetic halves of each kind can be found in that row or column.



### 9) As Easy As ABC

10 points

Rules: Enter the letters from A to D (A to C in the example) into the grid, so that in every row and every column every letter occurs exactly once; in every row and every column two cells remain empty. The letters at the borders indicate the letter that comes first from the given viewpoint.

	B	C	A	C	B	
B						C
A						B
B						C
A						B
C						A
	C	A	B	B	A	

	B	C	A	C	B	
B	B		A	C		C
A	A	C			B	B
B		B		A	C	C
A		A	C	B		B
C	C		B		A	A
	C	A	B	B	A	

### 10) Akari

10 points

Rules: Place lightbulbs in some cells (one lightbulb per cell) so that all cells in the grid are lightened. Lightbulbs can give light in straight lines until the rays meet a black cell or the edge of the grid. Lightbulbs should not lighten each other. A digit in a cell indicates the number of the lightbulbs that are horizontally or vertically adjacent to that cell.

		0			
		1		1	
				1	
	2	2			

	○				
		0		○	
		1		1	
		○		1	○
○	2	2	○		
	○				

### 11) Clouds

20 points

Rules: Draw rectangular clouds, that are at least two cells wide and two cells high, into the grid. The clouds may not touch each other, not even diagonally. The numbers at the borders give the number of cells in that row or column, that are used by clouds.

	2	4	2	2	5	3	3
2							
5							
3							
5							
2							
2							
2							

	2	4	2	2	5	3	3
2		■	■				
5		■	■		■	■	■
3					■	■	■
5	■	■			■	■	■
2	■	■					
2				■	■		
2				■	■		

### 12) Lighthouses

45 points

Rules: Place ships (size 1 cell) in the grid so that no ship touches another ship or lighthouse, not even diagonally. The numbers represent lighthouses and indicate how many ships can be seen from the given lighthouse in horizontal and vertical directions. It does not matter if there is another ship or lighthouse between the ship and the lighthouse. All ships can be seen by at least one lighthouse.

		1			
	1				
				2	

				○	
○		1			
				○	
	1				
				2	
	○				

### 13) Suguru

35 points

Rules: Place a digit into every cell. Each outlined region must contain each digit from 1 to the number of cells in that region. Identical digits cannot touch, not even diagonally.

		4			3
	2			1	
					4
2					
	4			2	
2			1		

4	3	4	2	5	3
1	2	1	3	1	2
4	5	4	2	5	4
2	1	3	1	3	1
3	4	2	4	2	4
2	5	3	1	3	1

### 14) Suguru diagonal

15 points

Rules: Place a digit into every cell. Each outlined region must contain each digit from 1 to the number of cells in that region. Identical digits cannot touch, not even diagonally. The digits on the marked diagonal must be all different.

	2			
				4
2				
		3	5	

3	2	5	1	2
4	1	4	3	4
2	3	5	1	5
5	1	4	2	3
4	2	3	5	1

### 15) Gaps

20 points

Rules: Place 2 circles in each row and column so that no circles touch each other not even diagonally. The numbers around the grid show the number of empty cells between the two circles in the given row/column.

	1	1	6	1	6	1	1	1	1
3									
4									
4									
3									
3									
4									
4									
3									
3									

	1	1	6	1	6	1	1	1	1
3	○				○				
4			○						○
4	○					○			
3				○					○
3		○				○			
4				○					○
4		○						○	
3					○				○
3			○				○		

### 16) Arrows

25 points

Rules: In every cell at the border, an arrow has to be entered (horizontal, vertical or diagonal). Every arrow has to point to at least one number. Each number indicates how many arrows are pointing at this number.

	3	3	3
	1	1	5
	2	4	5

	↓	↓	↓	
→	3	3	3	↖
↗	1	1	5	↖
→	2	4	5	↖
	↗	↗	↑	

### 11) Kuromasu (from Round 1)

75 points

Rules: Blacken some of the cells in the grid so that no two black cells touch each other horizontally or vertically and all white cells are orthogonally connected. Cells with numbers must not be blackened. Each number indicates how many cells are horizontally or vertically visible from that position, including the cell with the number itself. Blackened cells block the view.

		5		
				4
	3			
			3	
4				6
		7		

■		5		■
			■	4
■	3	■		
	■		3	■
4			■	6
■		7		



## Round 3 – Skyscrapers

**60 minutes**

**595 points**

1. Skyscrapers with mirrors .....10 points
2. Skyscrapers with mirrors .....45 points
3. Skyscrapers with mirrors .....15 points
4. Skyscrapers with mirrors .....30 points
5. Skyscrapers with mirrors .....35 points
6. Skyscrapers with GT hints .....50 points
7. Skyscrapers / As Easy As ABC .....60 points
8. Skyscrapers myopia .....55 points
9. Skyscrapers with parks .....30 points
10. Skyscrapers with glass towers .....60 points
11. Stroll among skyscrapers .....35 points
12. Skyscrapers - first invisible .....25 points
13. Skyscrapers with sum baskets .....50 points
14. Sky snail .....30 points
15. Sky coral .....30 points
16. Sky battleships .....35 points

### 1-5) Skyscrapers with mirrors

10, 45, 15, 30, 35 points

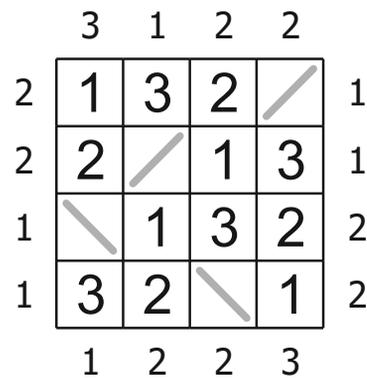
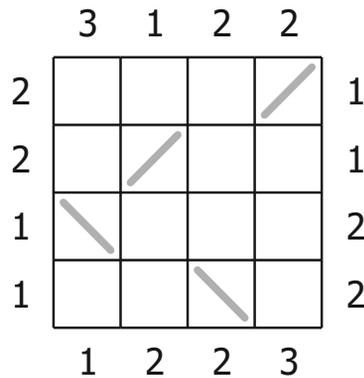
Rules: Place numbers from 1-N and one mirror in every row so that they do not repeat in any row and column. These numbers represent heights of the buildings. The numbers around the grid indicate the number of buildings you can see from the given viewpoint. The building is visible only when it is higher than all the buildings in front of it, both in front of the mirror and reflected by the mirror.

Variants are:

The mirrors are given (puzzles 1, 2)

Only the positions of the mirrors are marked, but you have to find out their orientation (puzzles 3, 4)

You have to find out both the positions of the mirrors and their orientation (puzzle 5).

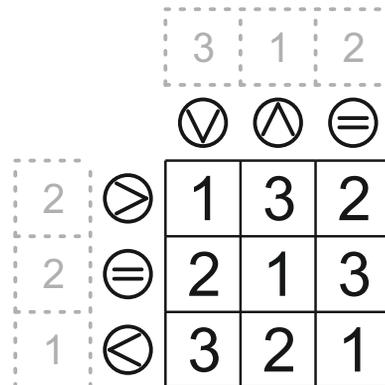
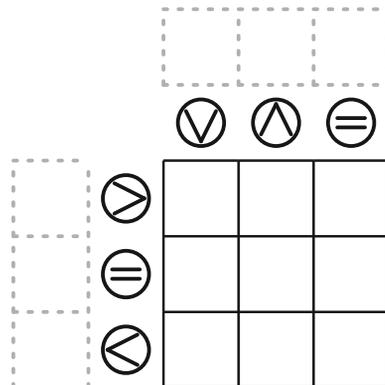


### 6) Skyscrapers with GT hints

50 points

Rules: Place numbers from 1-5 (1-3 in the example) in all the cells so that they do not repeat in rows and columns. These numbers represent heights of the buildings. The numbers around the grid indicate the number of buildings you can see from the given viewpoint. The building is visible only when it is higher than all the buildings in front of it.

The skyscraper hints are not given however. You can only see the comparison between the hints and the first row of inner numbers and between some of the hints. (You do not need to fill all the hints at the borders to score the points)



### 7) Skyscrapers / As Easy As ABC

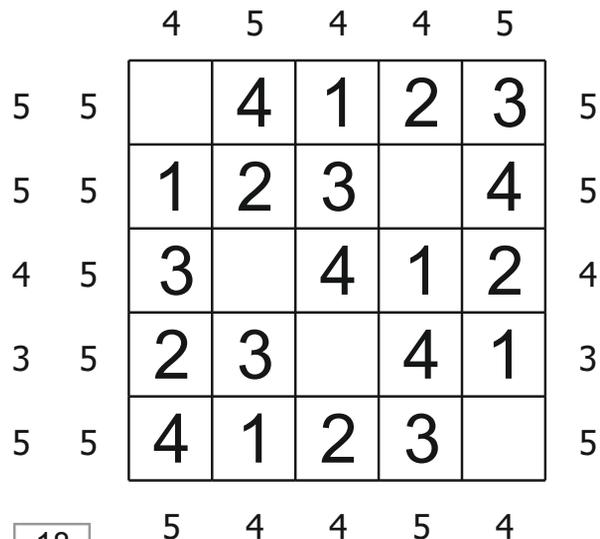
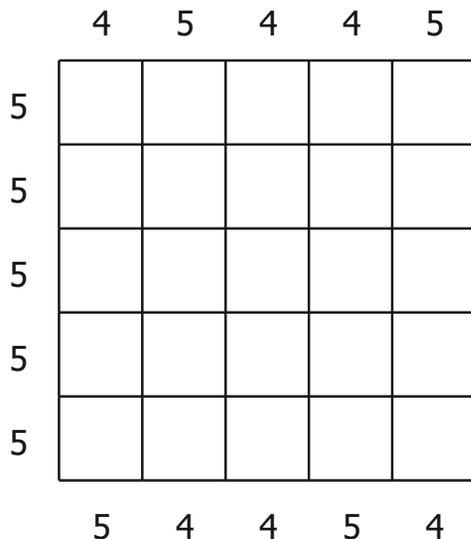
60 points

Rules: Place numbers from 1-4 in some cells so that they do not repeat in rows and columns. One cell in every row and column will remain empty.

In the skyscraper puzzle the numbers represent heights of the buildings. The numbers around the grid would indicate the number of buildings you can see from the given viewpoint. The building is visible only when it is higher than all the buildings in front of it.

In the As Easy As ABC puzzle the numbers around the grid would indicate the first number visible from the given viewpoint.

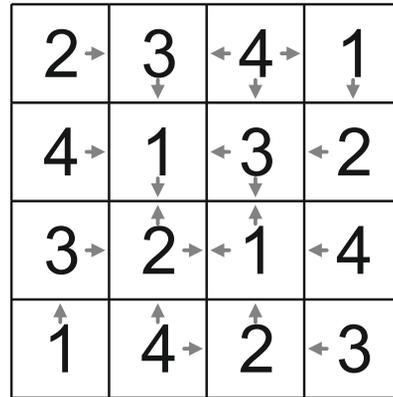
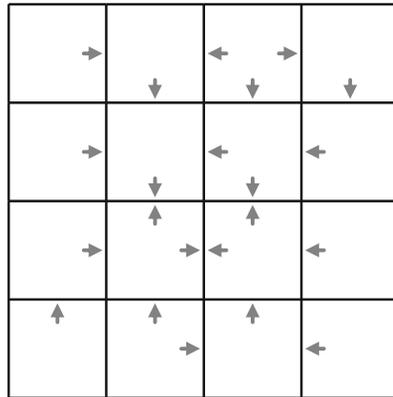
The hints around the grid are sums of the Skyscraper and As Easy As ABC hints.



### 8) Skyscrapers myopia

55 points

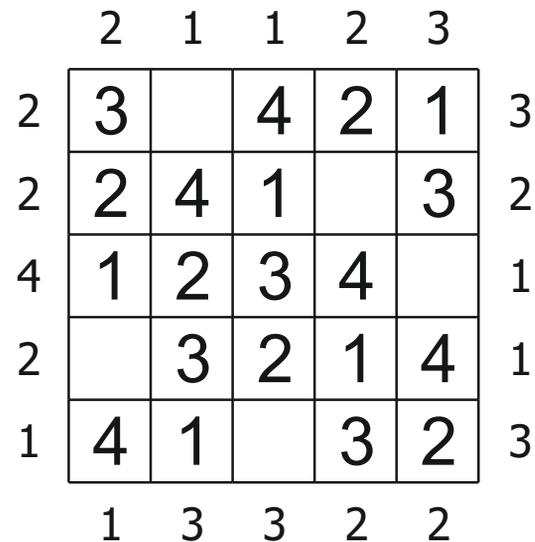
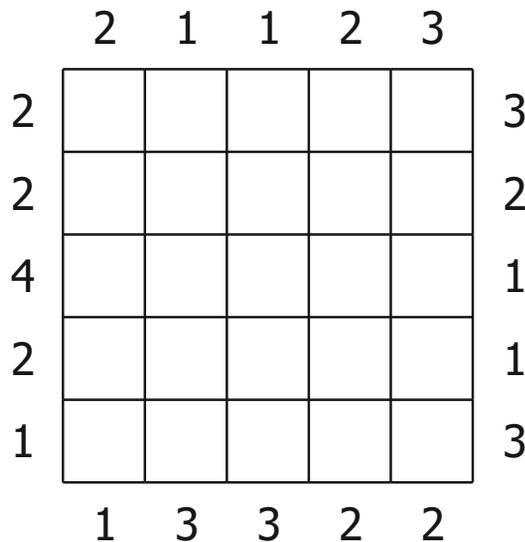
Rules: Place numbers from 1-5 (1-4 in the example) in all the cells so that they do not repeat in rows and columns. These numbers represent heights of the buildings. The building is visible only when it is higher than all the buildings in front of it. The arrows point in all the directions where the number of visible buildings from that cell is highest.



### 9) Skyscrapers with parks

30 points

Rules: Place numbers from 1-5 (1-4 in the example) in some of the cells so that they do not repeat in rows and columns. One cell in each row and column remains empty. The numbers represent heights of the buildings. The numbers around the grid indicate the number of buildings you can see from the given viewpoint. The building is visible only when it is higher than all the buildings in front of it.

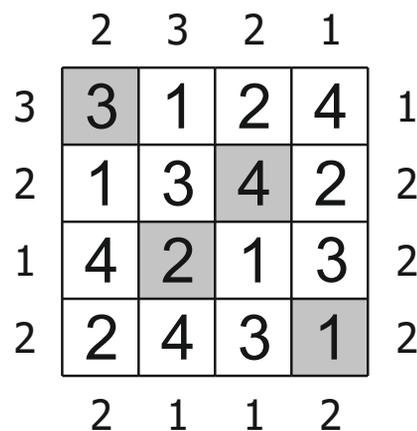
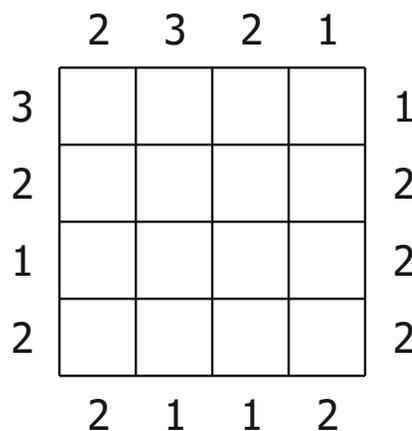


### 10) Skyscrapers with glass towers

60 points

Rules: Place numbers from 1-5 (1-4 in the example) in all the cells so that they do not repeat in rows and columns. These numbers represent heights of the buildings. The numbers around the grid indicate the number of buildings you can see from the given viewpoint. The building is visible only when it is higher than all the buildings in front of it.

One building in each row and column is invisible. The heights of invisible buildings are 1-5, each height exactly once. (You do not need to mark the glasstowers to score the points.)



### 11) Stroll among skyscrapers

35 points

Rules: Place numbers from 1-5 (1-4 in the example) in all the empty cells so that they do not repeat in rows and columns (do not consider the numbers in grey cells). The numbers in white cells represent skyscrapers. The numbers in the grey cells indicate the number of visible skyscrapers in the direction of the arrow (the grey cells themselves are of zero height). The building is visible only when it is higher than all the buildings in front of it.

		← 2	2 →		
	1 →			2 ↓	
↑ 2					← 4
2 →					2 ↓
	2 →			← 1	
		← 1	2 →		

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

25 points

### 12) Skyscrapers - first invisible

Rules: Place numbers from 1-5 (1-4 in the example) in all the cells so that they do not repeat in rows and columns. These numbers represent heights of the buildings. The numbers around the grid indicate the height of the first invisible skyscraper from the given direction. The building is visible only when it is higher than all the buildings in front of it.

	1	2	1	2	
2					3
3					2
3					1
1					3
	1	2	1	2	

	1	2	1	2	
2	3	4	2	1	3
3	1	2	4	3	2
3	4	3	1	2	1
1	2	1	3	4	3
	1	2	1	2	

### 13) Skyscrapers with sum baskets

50 points

Rules: Place numbers from 1-7 (1-4 in the example) in all the cells so that they do not repeat in rows and columns. These numbers represent heights of the buildings. The numbers around the grid indicate the number of buildings you can see from the given viewpoint. The building is visible only when it is higher than all the buildings in front of it.

In addition some baskets are outlined in the grid and sum of the digits in each basket is given. The numbers may repeat inside the basket.

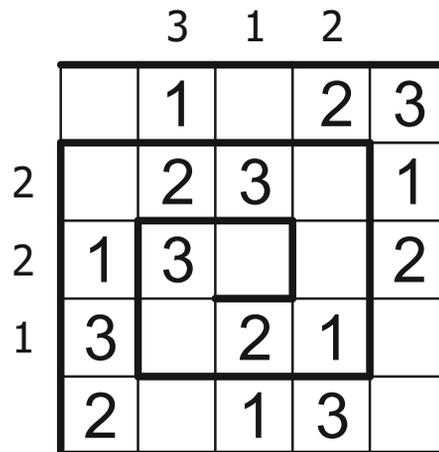
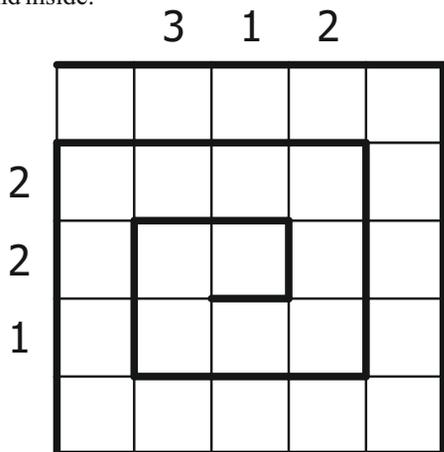
		3	3	
1				
3				

		3	3	
1	3	1	4	2
	4	2	3	1
	1	4	2	3
3	2	3	1	4

### 14) Sky snail

30 points

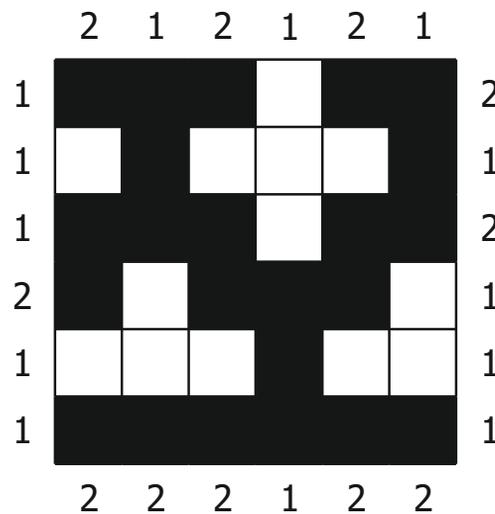
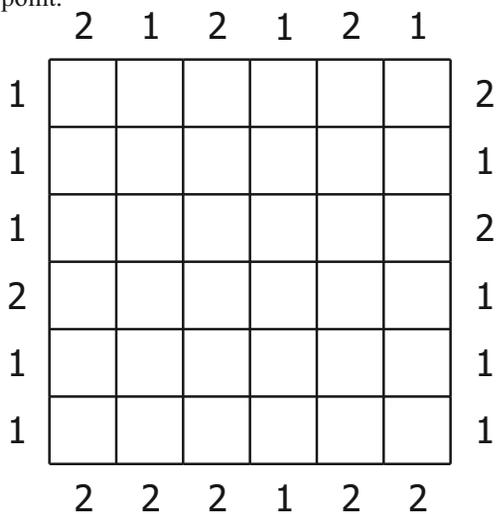
Rules: Place numbers from 1-4 (1-3 in the example) in some of the cells so that they do not repeat in rows and columns. Two cells in each row and column remain empty. The numbers represent heights of the buildings. The numbers around the grid indicate the number of buildings you can see from the given viewpoint. The building is visible only when it is higher than all the buildings in front of it. In addition the numbers must follow the sequence 1,2,3,4,1,2,3,4,etc (1,2,3,1,2,3 in the example) in the direction from the entrance of the maze toward the end inside.



### 15) Sky coral

30 points

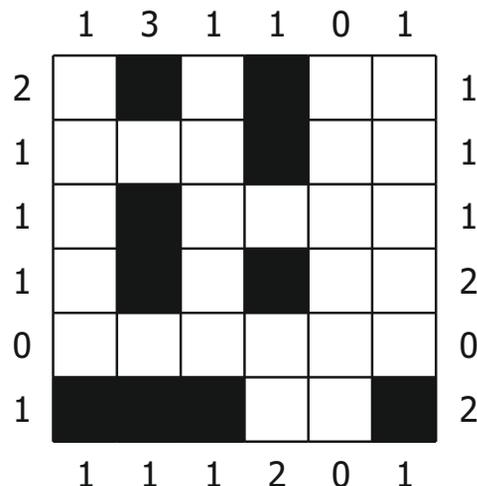
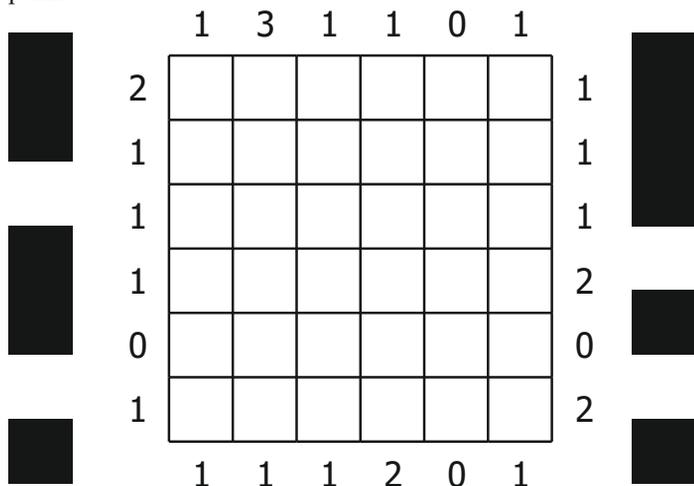
Rules: Blacken some of the cells to create a coral. All black cells in must be orthogonally connected. There must be no 2x2 squares of black cells. And all white cells must be connected to the edge of the grid. There are some blocks of black cells in each row and column separated by white cells. The lengths of the blocks represent also their height. The numbers at the borders indicate how many blocks are visible from the given viewpoint.



### 16) Sky battleships

35 points

Rules: Place standard fleet of battleships in the grid so that the ships do not touch each other not even diagonally. The size of the ship defines its height as well. The numbers around the grid indicate how many ships are then visible in the given row/column as in the skyscraper puzzle.





# Prague 2018



## Round 4 - Polygons

60 minutes

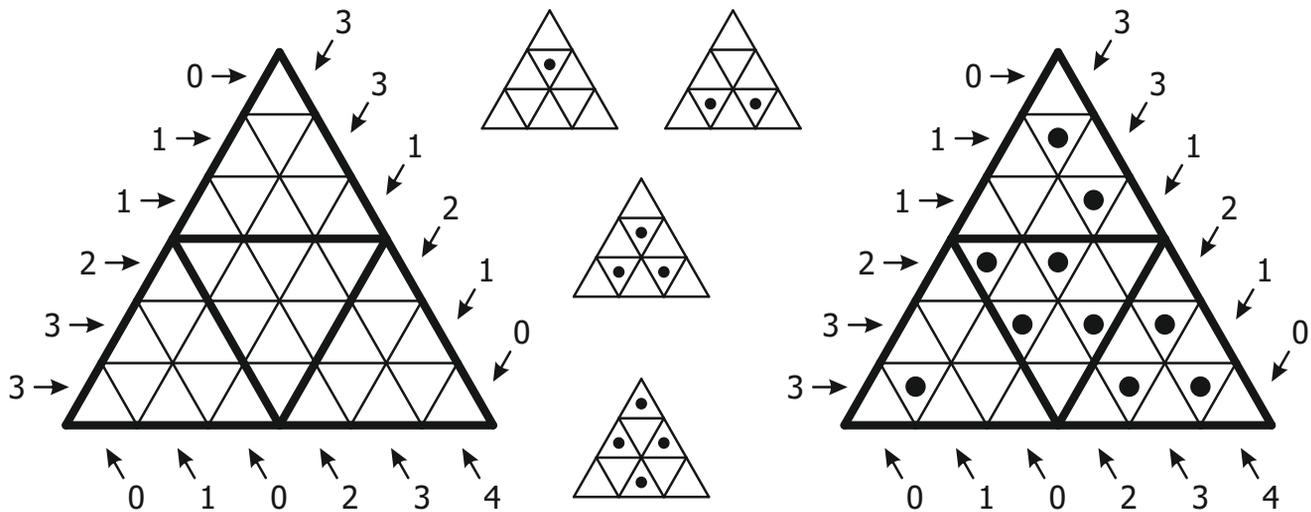
750 points

1. Halfdomino triangular .....60 points
2. Hexa skyscrapers .....35 points
3. Hexa skyscrapers .....45 points
4. Antimagic hexagon .....30 points
5. Antimagic hexagon with double cells .....15 points
6. Hexa ABC .....20 points
7. Hexa worms .....45 points
8. Hexa domino .....50 points
9. Slovak Sums .....10 points
10. Slovak Sums .....55 points
11. Seven tetrominoes .....35 points
12. Boomerangs .....30 points
13. Six winds .....15 points
14. Six winds with hooks .....25 points
15. Hexa slitherink .....30 points
16. Penta slitherlink .....70 points
17. Triangular combo .....4×45 points

# 1) Halfdomino triangular

60 points

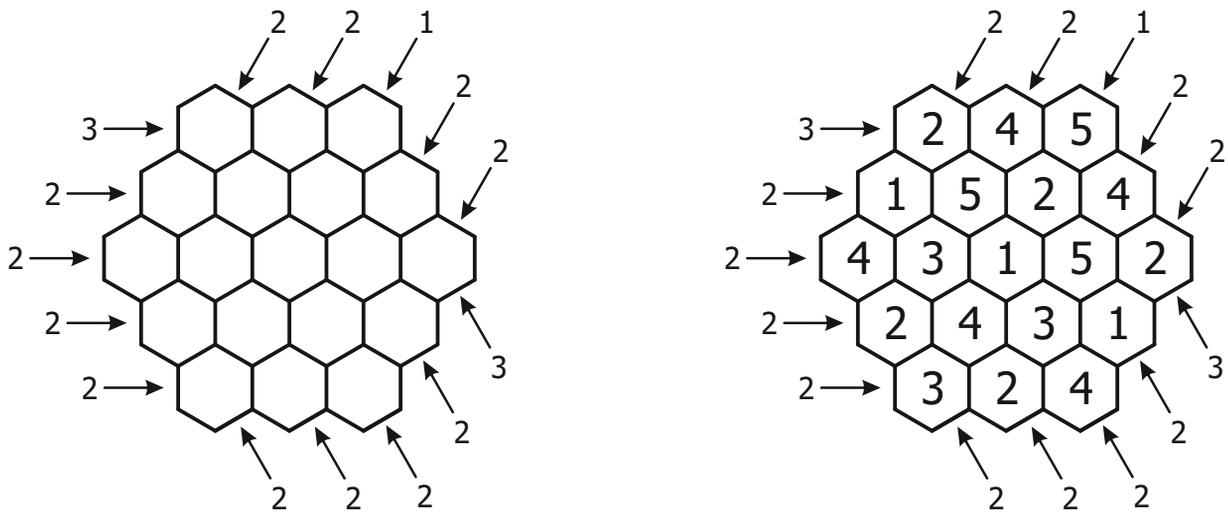
Rules: Place the triangular domino tiles in the grid, one in each triangular region. The tiles may be rotated. The numbers around the grid indicate the number of the individual domino points in all the rows in the three marked directions.



# 2-3) Hexa skyscrapers

35, 45 points

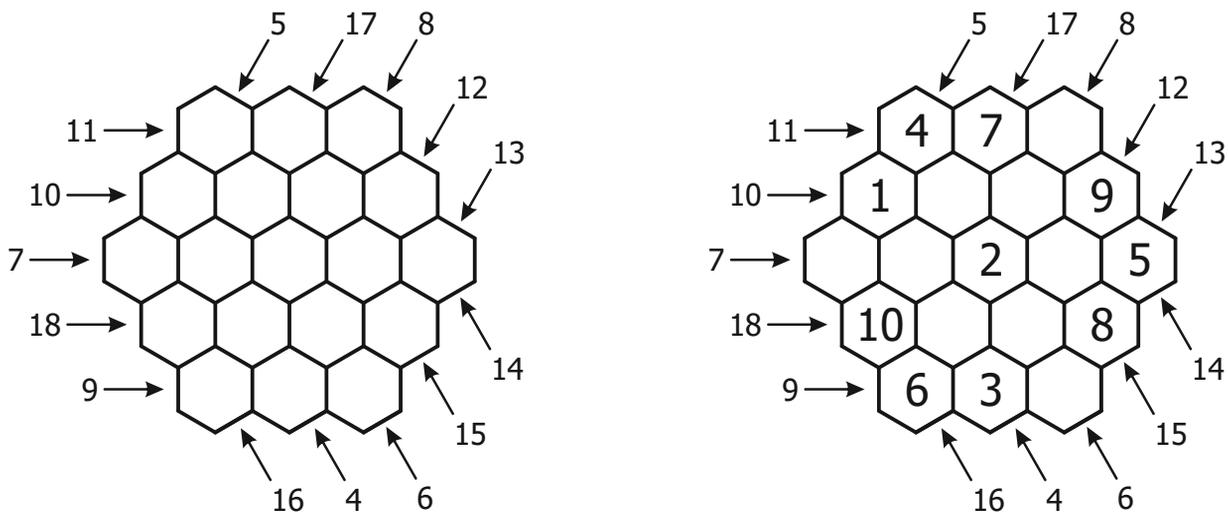
Rules: Place numbers from 1 to 7 in all the empty cells of the grid so that they do not repeat in any of the 21 rows in the three directions. The numbers represent the heights of building. Numbers around the grid indicate how many buildings are visible in the given direction. Lower buildings behind higher buildings are not visible. (Example with smaller grid and numbers 1-5)



# 4) Antimagic hexagon

30 points

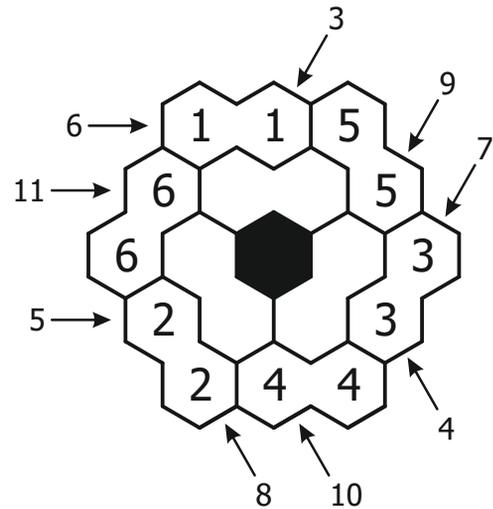
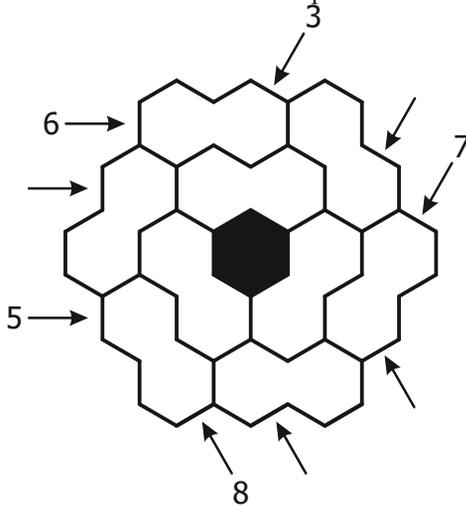
Rules: Place numbers from 1-14, every number exactly once, in the grid cells so that there are exactly 2 numbers in each of the 21 rows in the three directions. The numbers around the grid indicate the sum of the two numbers in the given row. (Example with smaller grid and numbers 1-10)



### 5) Antimagic hexagon with double cells

15 points

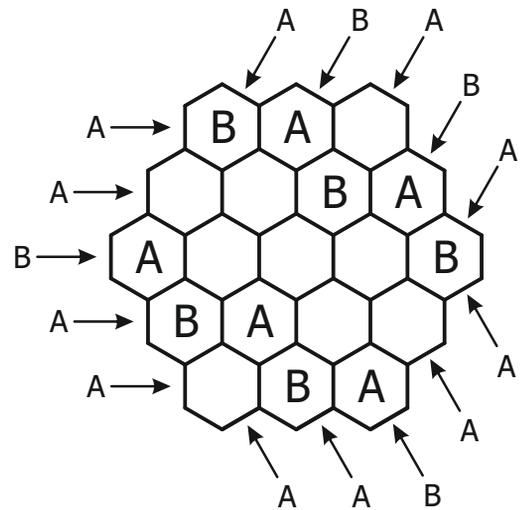
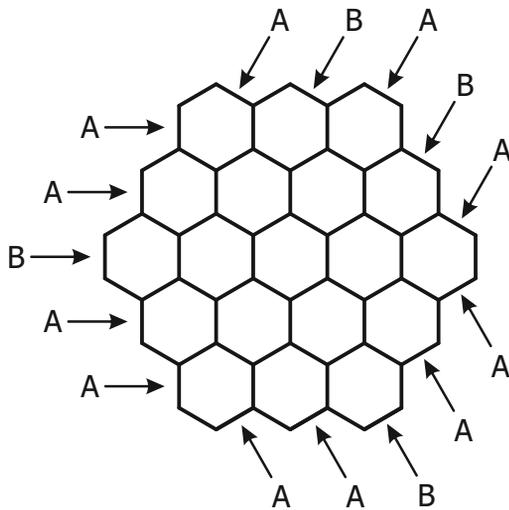
Rules: Place numbers from 1-9, every number exactly once, in the double cells. The numbers around the grid indicate the sums of all the numbers in the given row (every double cell is counted just once). Some sums are already given. Add the other sums so that all the sums are different numbers from 8 to 22. (Example with numbers 1-6 and sums from 3 to 11)  
 You only need to fill the double cells to score the points



### 6) Hexa ABC

20 points

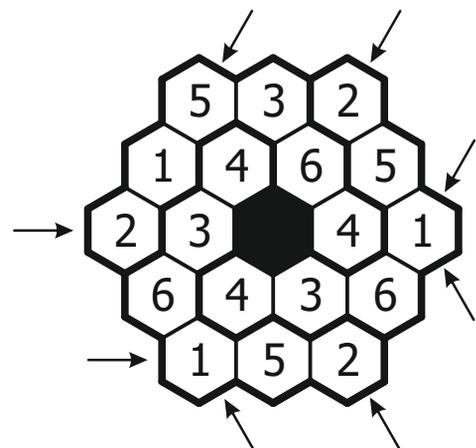
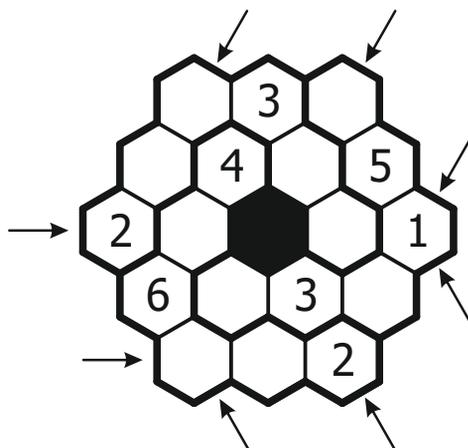
Rules: Place letters A,B,C in some of the cells in the grid so that each of the 21 rows contains each letter exactly once. The letters around the grid indicate the **second** letter in the given direction. (Example with smaller grid and letter A,B)



### 7) Hexa worms

45 points

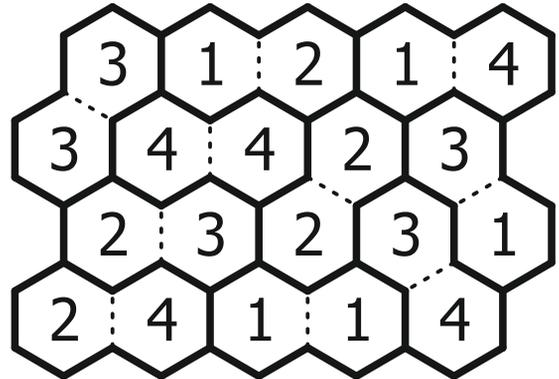
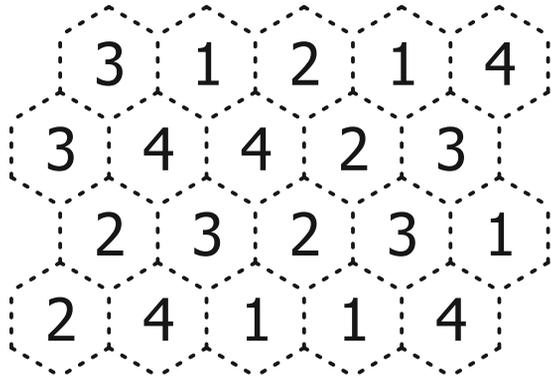
Rules: Place numbers from 1-6 in all the empty cells in the grid so that the numbers do not repeat in any outlined region and the marked rows. The numbers in each region must follow the worm rule of alternating higher and lower values. The same numbers may not touch each other anywhere in the grid.



### 8) Hexa domino

50 points

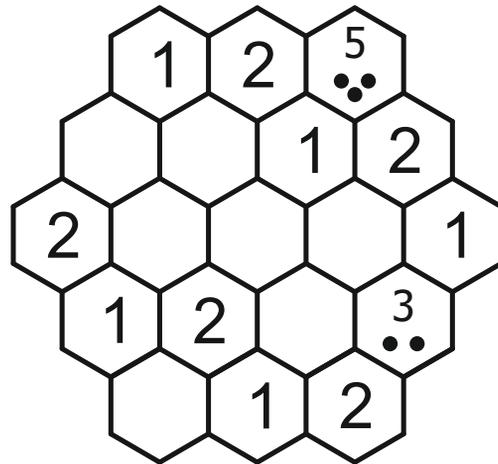
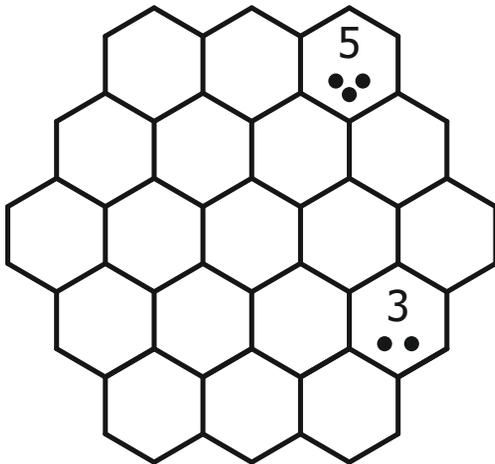
Rules: Full set of domino tiles from 00 to 66 is placed in the grid. Mark the border of the tiles. (Example with domino tiles 11 to 44)



### 9-10) Slovak sums

10, 55 points

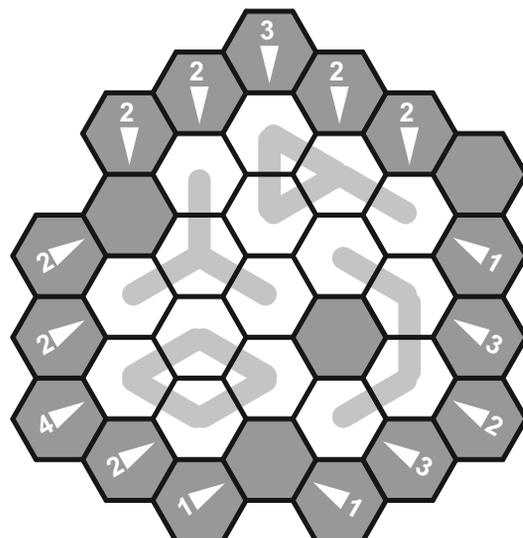
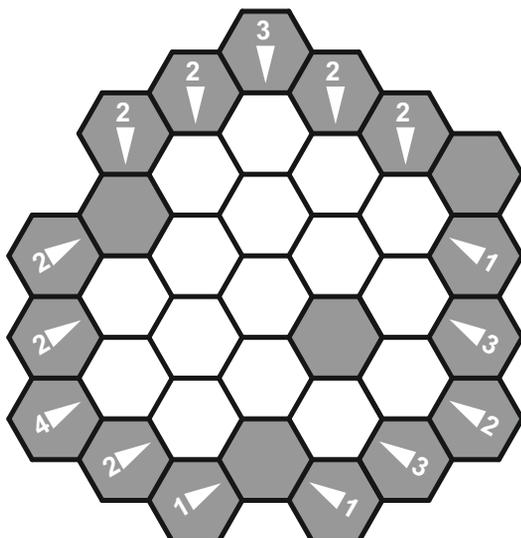
Rules: Place digits 1-2 resp. 1-4 in some of the cells in the grid so that each of the 21 resp. 27 rows contains each digit exactly once. The hints in some of the cells tell the sum and count of the touching digits.



### 11) Seven tetrominoes

35 points

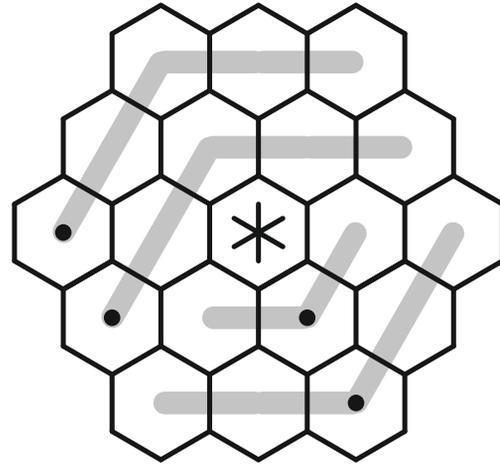
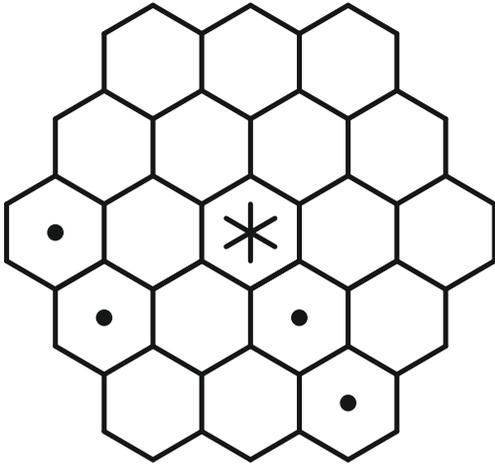
Rules: Divide white space into seven different tetrominoes (rotated or reflected tetromino is considered the same), numbers tell how many tetrominoes go to that row. (Example with 4 different tetrominoes)



## 12) Boomerangs

30 points

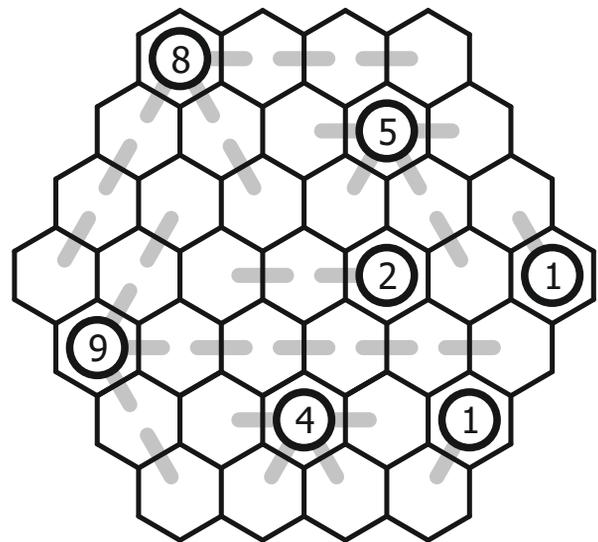
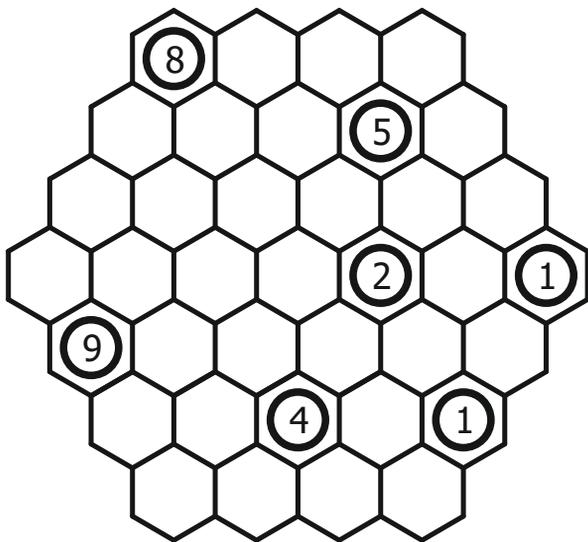
Rules: Place 11 boomerangs in the grid. Every boomerang consists of two segments of the same length that meet at the angle  $120^\circ$ . Boomerangs may not overlap and have to cover all the cells. One cell is marked on each boomerang. (Example with 4 boomerangs, the cell with star may not contain any boomerang)



## 13) Six winds

15 points

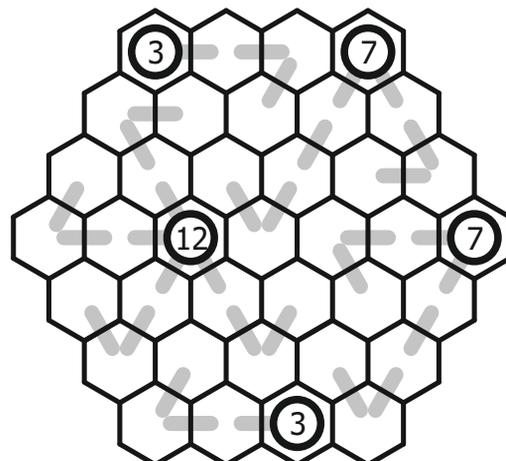
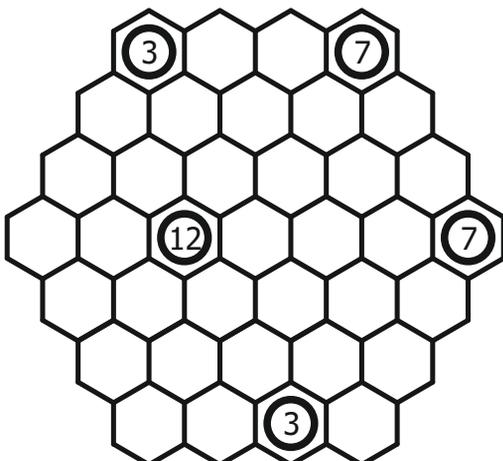
Rules: Draw some lines from the circles (up to six lines). The numbers in circles denote the total length of all the lines that originate in the cell with number. The cell with the number itself is not counted. The lines may not touch or cross each other. All cells are used exactly once.



## 14) Six winds with hooks

25 points

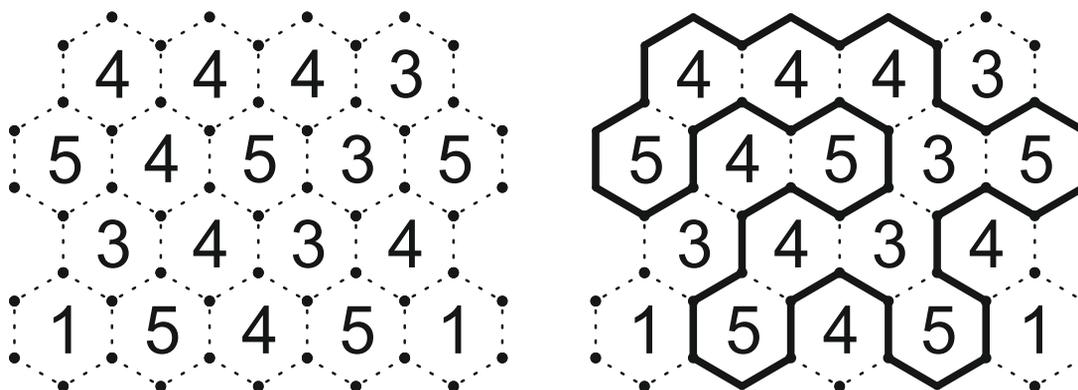
Rules: Draw hooked lines from the circles. Each line is hooked at the end, it means that it turns one cell back at the angle of  $60^\circ$  (see an example). The numbers in circles denote the total length of all the lines including the hooks that originate in the cell with number. The cell with the number itself is not counted. The minimum length of each hooked line is 3 (2 plus hook). The lines may not touch or cross each other. All cells are used exactly once.



### 15) Hexa slitherink

30 points

Rules: Draw a single continuous loop by connecting neighboring dots along the dotted lines. The numbers indicate how many edges of a cell are used for the loop. The loop may not touch or cross itself, and it does not need to touch all of the dots.



### 16) Penta slitherink

70 points

Rules: Draw a single continuous loop by connecting neighboring dots along the dotted lines. The numbers indicate how many edges of a cell are used for the loop. The loop may not touch or cross itself, and it does not need to touch all of the dots.



### 17) Triangular combination puzzle

4×45 points

Solve 4 puzzles - Skyscrapers, Kropki, Japanese sums and Pyramid that are arranged in a triangular scheme. The puzzles are connected in such a way that the adjacent cells of the neighbouring puzzles (linked by gray lines) contain the same numbers.

Rules of the individual puzzles:

#### Skyscrapers

Place numbers from 1 to 9 in all the empty cells of the grid so that they do not repeat in any of the 27 rows in the three directions. The numbers represent the heights of building. Numbers around the grid indicate how many buildings are visible in the given direction. Lower buildings behind higher buildings are not visible.

#### Kropki

Place numbers from 1 to 9 in all the empty cells of the grid so that they do not repeat in any of the 27 rows in the three directions. If there is a black circle between two cells, one of the numbers in these two cells must be twice the value of the number in the other cell. If there is a white circle between two cells, one of the numbers in these two cells must be one more than the number in the other cell. If there is no circle between two digits, none of these two properties may hold. The circle between 1 and 2 may be either black or white.

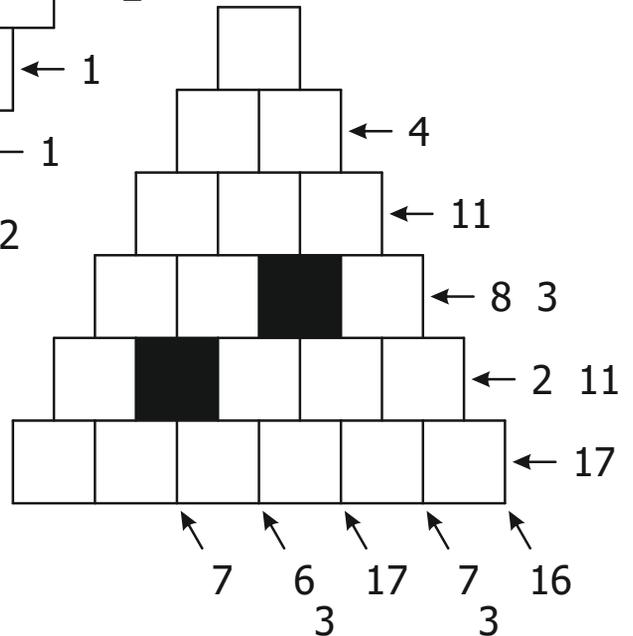
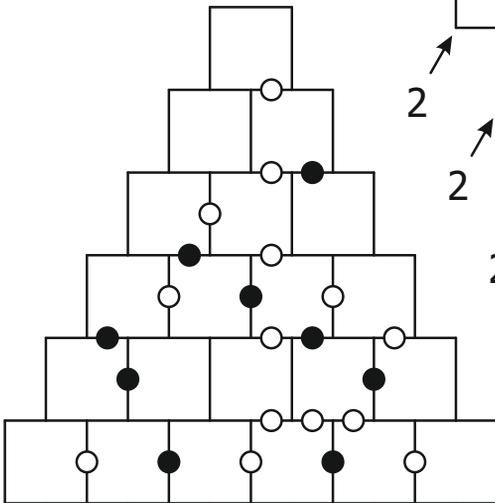
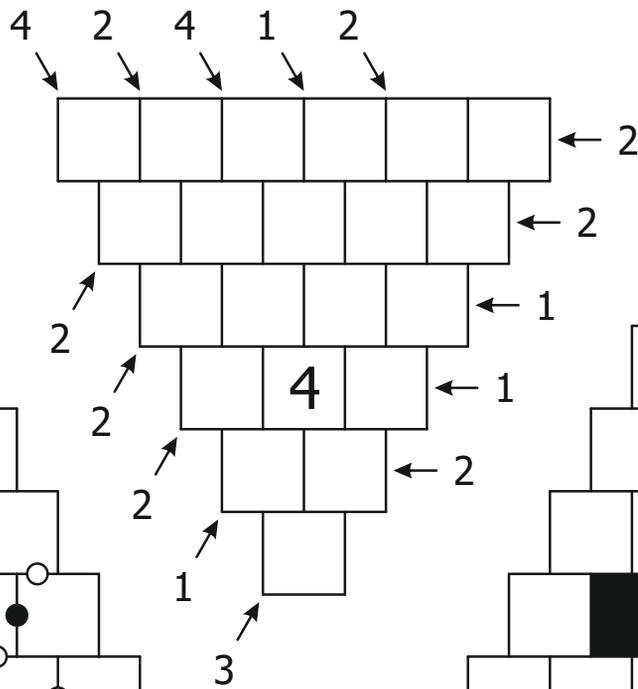
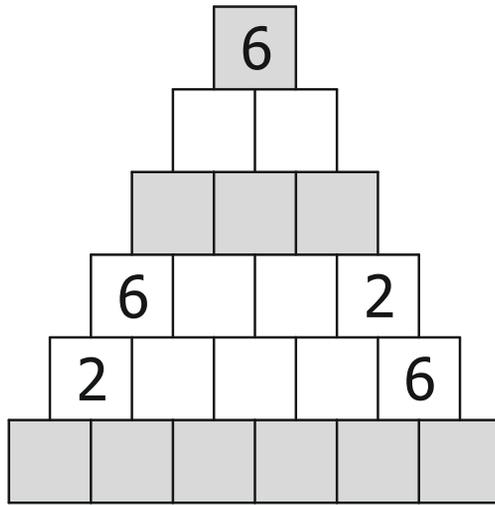
#### Japanese sums

Blacken some of the cells in the diagram and place numbers from 1 to 9 into the other cells, so that they do not repeat in any of the 27 rows in the three directions. The numbers at the borders give the sum of consecutive digits (without black cells in between) in the order. Single digits are also given.

#### Pyramid

Place numbers from 1 to 9 into the cells of the pyramid, so that each number is either the sum or the difference of the two numbers in the cells below. Note, that in gray rows, no number may occur twice, while in white rows at least one number does occur twice.

(Example with smaller grids and numbers 1-6)



```

      6
     3 3
    5 2 1
   6 1 1 2
  2 4 5 4 6
 3 5 1 6 2 4

    3 5 1 6 2 4
     4 6 2 1 3
      3     2 1 3 5     4
       1 4     5 4 6     3 1
        6 5 2     6 2     5 4 2
         4 3 6 5     1     6 2 X 3
          2 1 5 3 6     2 X 4 1 6
           5 6 3 4 2 1     1 5 3 6 2 X
  
```



## Round 5 - Variations

90 minutes

1025 points

1. ABC untouchable .....35 points
2. ABC no first .....5 points
3. ABC no first .....20 points
4. Coral with vertex hints .....5 points
5. Coral with vertex hints .....20 points
6. First seen snake .....20 points
7. Inner coral .....65 points
8. Multiplication kakuro .....100 points
9. Snail odd/even .....55 points
10. Numbered snake .....90 points
11. Semitransparent snake .....20 points
12. Shikaku with obstacles .....5 points
13. Nurikabe Pento .....65 points
14. Nonconsecutive hitori .....35 points
15. Fillomino with given set of numbers .....45 points
16. Fillomino with given set of numbers .....25 points
17. Japanese sums with given set of numbers ....50 points
18. Reduced domino with sums .....20 points
19. Reduced domino with sums .....70 points
20. Condensed domino .....45 points
21. Condensed domino .....45 points
22. Oriented domino .....35 points
23. Irregular math sudoku .....20 points
24. Irregular math sudoku .....20 points
25. Numbers not touching .....50 points
26. Japanese arrows (complete) .....60 points

### 1) ABC untouchable

35 points

Rules: Place letters A,B,C in some cells so that each letter appears exactly once in each row and each column. Cells containing the same letters may not touch each other not even diagonally. The letters around the grid indicate what letter can be seen first from the given viewpoint.

	B	A	B	A	C
A					
B					
A					
C					
C					

	B	A	B	A	C
A		A	B		C
B	B	C		A	
A	A			C	B
C	C	B	A		
C			C	B	A

### 2-3) ABC no first

5, 20 points

Rules: Place letters A,B,C in the grid (no more than 1 letter per cell) so that each letter appears exactly once in each row and column. Some cells will remain empty. The letters around the grid indicate the letters that are **not** first from the given viewpoint.

	A	B	C	
A				
B				
C				
	A	B	C	B

	A	B	C	
C	A	B		
	B	C	A	
A	C		B	
B		A	C	
	A	B	C	B

### 4-5) Coral with vertex hints

5, 20 points

Rules: Blacken some of the cells in the grid to create a coral. All black cells in the coral must be orthogonally connected. There must be no 2x2 squares of black cells. And all white cells must be connected to the edge of the grid. The numbers on the vertices indicate the number of painted cells touching the given vertex.

	3	3	3	3	2
	3	3	1	2	3
	3	3	1	1	2
	3	3	2	1	1
	1	2	3	3	2

	3	3	3	3	2
	3	3	1	2	3
	3	3	1	1	2
	3	3	2	1	1
	1	2	3	3	2

### 6) First seen snake

20 points

Rules: Draw a snake in the grid. The snake goes from cell to cell vertically or horizontally, but not diagonally. The snake does not touch itself, not even diagonally, its head and tail are given. The numbers outside the grid indicate the lengths of the first snake segment in that row or column.

1						
2						
2						
2						

1						
2						
2						
2						

### 7) Inner coral

65 points

Rules: Blacken some of the cells in the grid to create a coral. All black cells in the coral must be orthogonally connected. There must be no 2x2 squares of black cells. And all white cells must be connected to the edge of the grid. Hints in the shaded cells denote the lengths of the first coral segments visible from this cell in the four directions (vertically and horizontally) in no particular order.

3	3					
			1	1		
			2	3		
	1	2				
		2				
				2	3	
				4		
		1	1			
			3			
						1
						1

3	3						
					1	1	
					2	3	
	1	2					
		2					
						2	3
						4	
		1	1				
			3				
							1
							1

### 8) Multiplication kakuro

100 points

Rules: Place a digit from 1 to 9 into each white cell. The numbers in grey cells indicate the product of digits in the adjacent "word" across or down. (Across "words" are to the right of their products, Down "words" are below their products.) Digits may not repeat within a "word."

		2592		40		42	1344
		16			56		
	288						120
	40				60		
					8		
	27				48		
					105		
	90					24	
					24		
	112				12		
		18			28		

		2592		40		42	1344		
		16	2	8		56	7	8	
	288								120
	40	8	1	5		60	3	4	5
						8			
	27	3	9		48	8	2	1	3
						105			
	90	6	3	5	1		24	3	8
						24			
	112	2	8	7		12	6	2	1
		18	6	3		28	4	7	

### 9) Snail odd/even

55 points

Rules: Enter numbers 1-3 in the grid so that the numbers follow the sequence 1,2,3,1,2,3,... from start to end and each number appears in each row or column exactly once.

The cells marked with "E" may contain even numbers only, cells marked with "O" may contain odd numbers only. Some of the marked cells may remain empty. Cells without clue may also contain number.

▶	E	O	O	E	O
	O	E	O	E	O
	O	O	E	O	E
	O	E	E	O	O
	E	E	O	O	E

▶	E	O <sup>1</sup>	O	E <sup>2</sup>	O <sup>3</sup>
	O	E <sup>2</sup>	O <sup>3</sup>	E	O <sup>1</sup>
	O <sup>1</sup>	O <sup>3</sup>	E	O	E <sup>2</sup>
	O <sup>3</sup>	E	E <sup>2</sup>	O <sup>1</sup>	O
	E <sup>2</sup>	E	O <sup>1</sup>	O <sup>3</sup>	E

### 10) Numbered snake

90 points

Rules: Draw a snake in the grid. The snake goes from cell to cell vertically or horizontally, but not diagonally. The snake does not touch itself, not even diagonally. The snake is numbered from head to tail in a sequence from 1 to N where N is the length of the snake. On top and on the left you can find the number of odd and even numbers in every row and column. Head and tail of the snake are not given. You do not need to write the numbers on the snake to score the points.

O	1	3	1	2	1	2
E	2	2	0	2	2	2

3	1					
0	3					
2	1					
2	1					
2	2					
1	2					

O	1	3	1	2	1	2
E	2	2	0	2	2	2

3	1		1		19	18	17
0	3		2		20		16
2	1	4	3				15
2	1	5				13	14
2	2	6	7		11	12	
1	2		8	9	10		

### 11) Semitransparent snake

20 points

Rules: Draw a snake in the grid. The snake goes from cell to cell vertically or horizontally, but not diagonally. The snake does not touch itself, not even diagonally. The numbers outside the grid indicate how many squares are used by the snake in that row or column.

In this puzzle however every time the snake goes 4 or more cells in a straight line (counting from Start) every fourth cell along that line is invisible and is not counted.

	4	2	2	2	1	3
4						
3						
1						
3						
2			F			
1	S					

	4	2	2	2	1	3
4						
3						
1						
3						
2			F			
1	S					

### 12) Shikaku with obstacles

5 points

Rules: Divide the grid into rectangular and square areas so that each area contains exactly one number, each cell is part of one area and the numbers represent the number of cells in the area. No rectangle or square may cover the black cells.

6		■			3
			4	■	
				2	
		6	■		
			4		
2		■			5

6		■			3
			4	■	
				2	
		6	■		
			4		
2		■			5

### 13) Nurikabe Pento

65 points

Rules: Create white areas, surrounded with blackened cells which are linked to a continuous wall. All the white areas form pentominoes. The letters in the grid indicate the shapes of the corresponding white areas. Each area contains exactly one letter. The wall cannot form any 2x2 square. White areas may touch each other only diagonally.

		Y				
				Z		
		F				
			L		P	

■					■	■
■	■	Y	■	■	■	
	■	■	■	Z		
		F	■		■	■
■		■	■	■	■	
■	■	■	L	■	P	
				■		

### 14) Nonconsecutive hitori

35 points

Rules: Paint some cells so that there are no consecutive numbers next to each other (vertically or horizontally). The unpainted cells must form a single orthogonally connected region. Painted cells may not be adjacent.

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

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

### 15-16) Fillomino with given set of numbers

45, 25 points

Rules: Dissect the grid into areas and write a number in every cell. The numbers in one area have to be the same and have to tell the number of cells in that area. Areas of same size may not touch horizontally or vertically, but diagonally. Given numbers may belong to the same area, and it is possible that there are areas, where no number is given. Only the given values may be used for the areas. (Example with values 1,2,3)

1		3		2	1
	2			3	3
3		3			
			1		1
1	3			3	
	2		2		2

1	2	3	2	2	1
3	2	3	1	3	3
3	1	3	2	2	3
3	2	2	1	3	1
1	3	3	2	3	2
2	2	3	2	3	2

### 17) Japanese sums with given set of numbers

50 points

Rules: Blacken some of the cells in the grid and place numbers from the given set into the other cells, so that no number appears more often in any row and column than is given by the set. The numbers at the borders give the sum of consecutive digits (without black cells in between) in the order. Single digits are also given. The set of numbers in the example is 1 1 2 3.

		3				
1	4	1	5	2	4	
3	2	2	2	4	3	

1	3	3					
3	2	1					
2	3	2					
2	1	3					
2	2						
3	3						

		3				
1	4	1	5	2	4	
3	2	2	2	4	3	

1	3	3	1		3		2	1
3	2	1		3		2		1
2	3	2	1	1		3		2
2	1	3	2		1		3	
2	2			2		1	1	
3	3				2	1		3

### 18-19) Reduced domino with sums

20, 70 points

Rules: Place numbers from 1-5 resp. 1-6 in all the cells in the grid so that they do not repeat in any row and column. Then divide the grid into the domino tiles from the given set (omitted double values). The numbers around the grid indicate the sums of the values in the given row and column. The whole set of domino tiles from the given set has to be used. (Example with numbers 1-4 and domino tiles from 12 to 34)

	6	7	8	9	
10		4			
10					
10				2	


	6	7	8	9	
10	2	4	1	3	
10	1	2	3	4	
10	3	1	4	2	

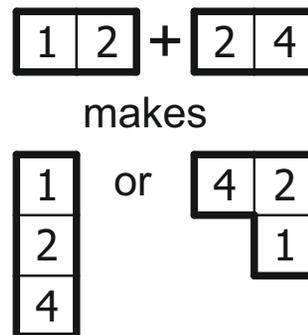

### 20-21) Condensed domino

45, 45 points

Rules: Divide the grid into triminoes where each trimino represents two overlapping domino tiles. The whole set of domino tiles from the given set has to be used. (Example with domino tiles from 11 to 44)

2	2	3	4	2
1	4	4	3	1
1	4	2	3	3

2	2	3	4	2
1	4	4	3	1
1	4	2	3	3



### 22) Oriented domino

35 points

Rules: Divide the grid into 21 different domino tiles. Numbers are represented by dots as in classic domino, so the orientation of the number representation has to be taken into account. (Example with 6 domino tiles)

•	•	•	•	•	•
•	•	•	•	•	•
•	•	•	•	•	•

•	•
•	•
•	•
•	•
•	•
•	•

•	•	•	•	•	•
•	•	•	•	•	•
•	•	•	•	•	•

### 23-24) Irregular math sudoku

20, 20 points

Rules: Place numbers from 1-8 in the grid so that each number appears exactly once in each row, column and outlined region. The numbers on the right and left show the sum of the first 2 resp. 3 numbers in the row from the given side. The numbers on top and bottom show the product of the first 3 resp. 2 numbers in the column from the given side. (Example with numbers 1-7 and 2 numbers both in sum and product)

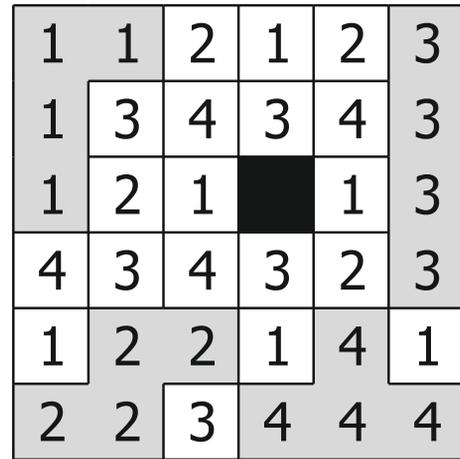
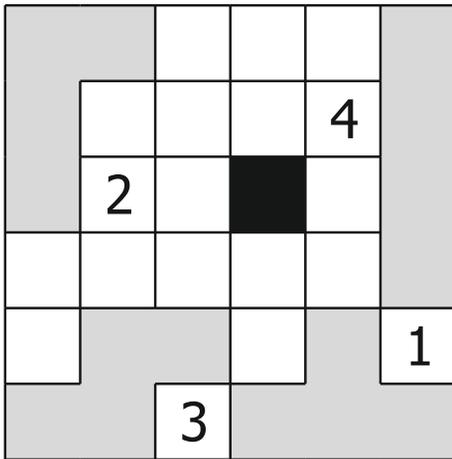
	6	10	7	8	12	35	18	
3								11
11								10
9								6
7								8
11								7
3								7
12								7
	10	7	24	15	14	18	4	

	6	10	7	8	12	35	18		
11	3	1	2	7	4	3	5	6	11
10	11	6	5	1	2	4	7	3	10
6	9	3	6	5	7	1	4	2	6
8	7	4	3	2	6	5	1	7	8
7	11	7	4	3	1	6	2	5	7
7	3	2	1	6	5	7	3	4	7
7	12	5	7	4	3	2	6	1	7
	10	7	24	15	14	18	4		

## 25) Numbers not touching

50 points

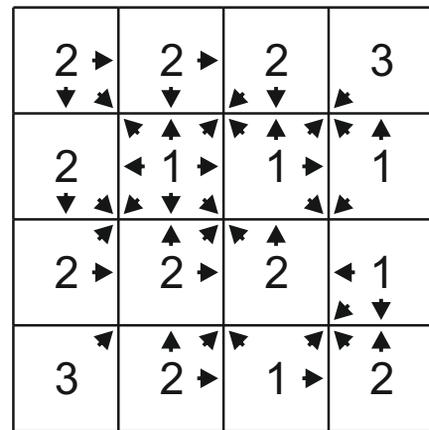
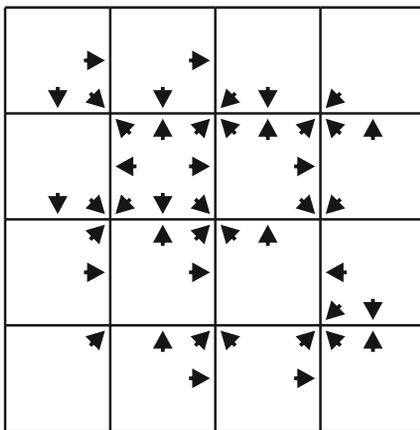
Rules: Place the numbers 1-4 in all the empty cells, one number per cell. The same numbers may not touch each other not even by a corner. The four tetromino cells contain four different numbers.



## 26) Japanese arrows (complete)

60 points

Rules: Enter a digit in every cell in the grid. The arrows indicate all the directions in which the number of different digits is equal to the number in the cell. All possible arrows are given.





## Round 6 – Combinations

90 minutes

930 points

1. Loop around pentominoes .....15 points
2. Loop around snake .....40 points
3. Battleship pills .....35 points
4. Ships and fishermen .....120 points
5. Snail on snake .....55 points
6. Starwacky .....50 points
7. Nurikabe Tapa .....70 points
8. LITS Tapa .....35 points
9. Galaxies and tetrominoes .....90 points
10. Galaxies and pentominoes .....70 points
11. Gaps between battleships .....20 points
12. Gaps between battleships .....95 points
13. Snail End View .....55 points
14. Snail End View Untouchable .....125 points
15. Kakuro domino .....55 points



### 4) Ships and fishermen

120 points

Rules: Locate the given fleet in the grid. The ships cannot touch each other, not even diagonally. The ships may be rotated. The clues outside the grid indicate the number of ship cells in the corresponding directions. Ships may not be placed on the cells with fish.

Each ship contains a fisherman. His position is given, but the ship can be rotated.

Fishermen are fishing the fish in the grid. Each fisherman has caught exactly one fish. The number in the fisherman cell denotes the length of the fishing line (in units of cell size) starting in the center of a cell with the number and finishing in the center of a cell with the fish. The fishing lines travel horizontally and vertically, may not touch or cross each other. All the cells are used either by ships, fish or fishing rods.

1		
5		
5		
3		
6		
6		

2	1	2	2	2	1
3			🐟		🐟
1			🐟		
3					
0		🐟	🐟		
2					
1			🐟		

2	1	2	2	2	1	
3			🐟	3	🐟	6
1	5		🐟			
3			1			
0		🐟	🐟			
2		5				
1			🐟			6

### 5) Snail on snake

55 points

Rules: Draw a snake in the grid passing through all the numbered cells. Head and tail of the snake are marked with darker background. The snake goes from cell to cell vertically or horizontally, but not diagonally. The snake does not touch itself, not even diagonally. The numbers around the grid indicate the number of cells occupied by the snake in the corresponding row/column. Some of the snake cells are numbered. The numbers follow the sequence 123123123... from head to tail (1212.. in the example). Each row and column contains each number exactly once.

5	3	4	4	4	4	3
4			1			
5						
3	1					
4			2			
3		2				
3					2	
5						

5	3	4	4	4	4	3
4			1	2		
5	2					1
3	1					2
4			2		1	
3		2	1			
3				1	2	
5		1	2			

### 6) Starwacky

50 points

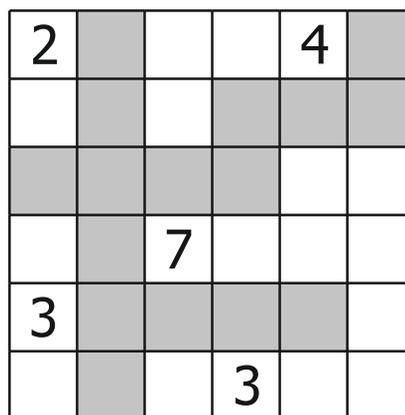
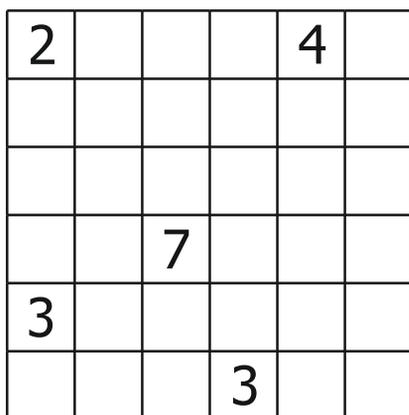
Rules: Blacken some cells in the grid so that each row, each column and each outlined region contains exactly two black cells. Black cells may not touch each other, not even diagonally. Additionally, any single horizontal or vertical line of unpainted cells cannot traverse more than one thick line.



### 7) Nurikabe Tapa

70 points

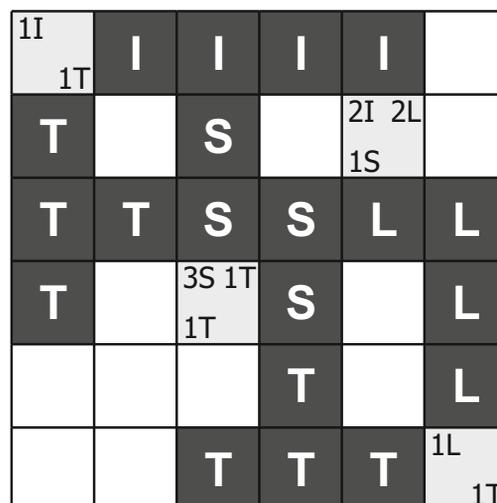
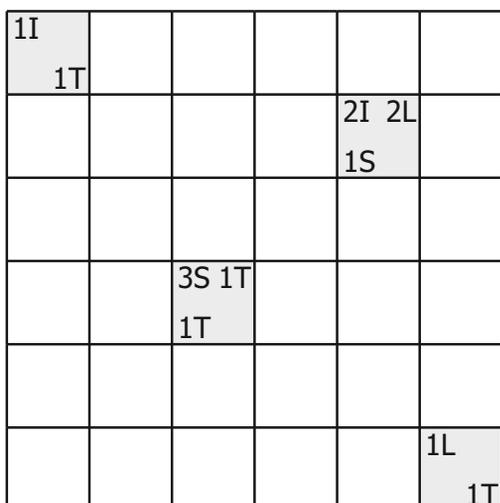
Rules: Blacken some empty cells so that the grid is divided into white areas, each containing exactly one number and with the same area in cells as that number. Moreover, numbers in cells indicate the lengths of the consecutive blackened blocks in the neighboring cells. Two white areas may only touch diagonally. All black cells must be orthogonally connected, but no 2x2 area can be entirely blackened.



### 8) LITS Tapa

35 points

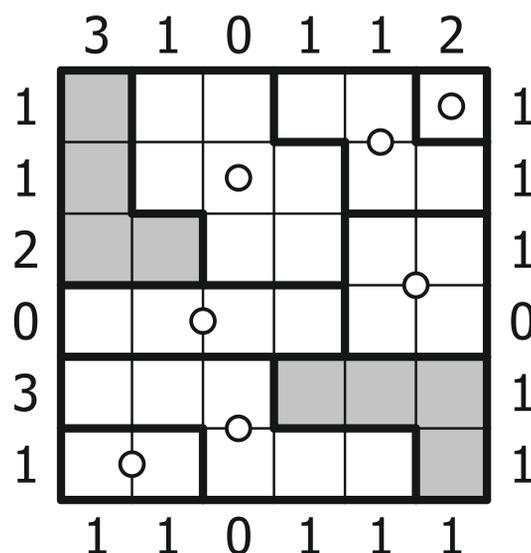
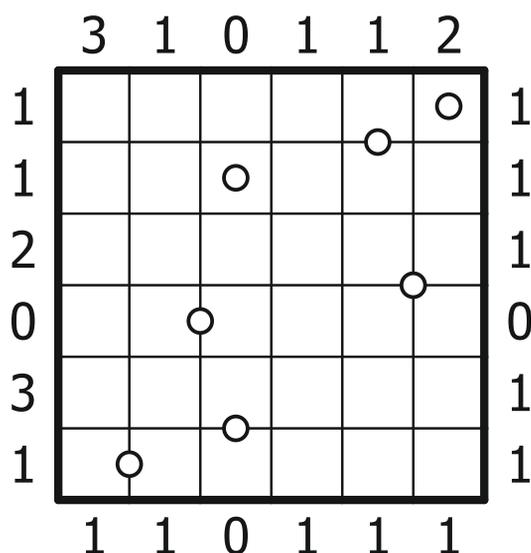
Rules: Place some tetrominoes in the empty cells so that they form a continuous wall with no 2x2 regions. Tetrominoes of the same type cannot touch each other by sides. The hints in some of the cells indicate all the tetromino segments in the surrounding 8 cells in no particular order. Each segment is created by all the adjacent cells of the same tetromino type (rotation or reflection of the tetromino does not change its type). Two segments of the same type must be separated either by an empty cell or by segment of different type.



### 9) Galaxies and tetrominoes

90 points

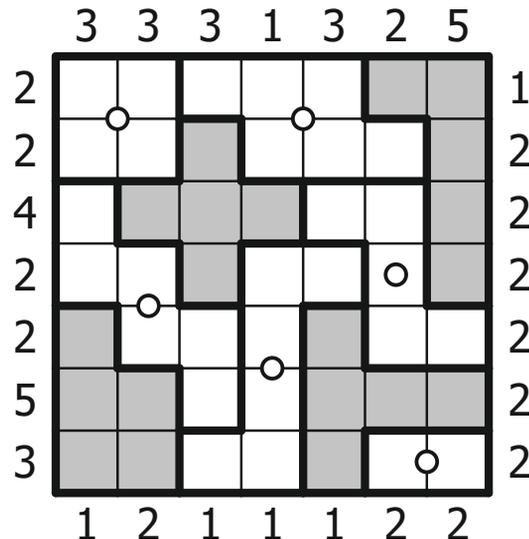
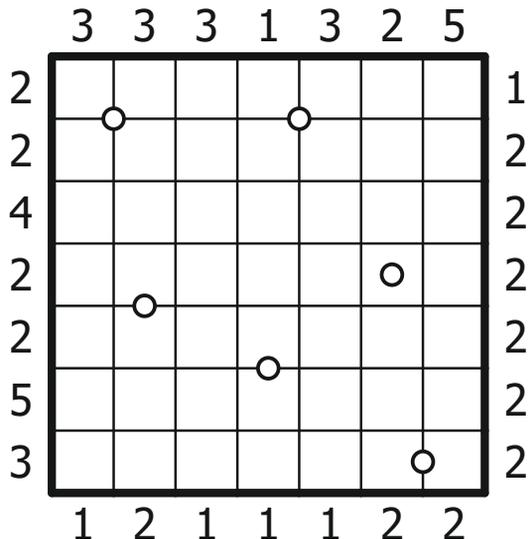
Rules: Place in the grid all 7 different tetrominoes. They can be rotated but not reflected. They may not touch each other not even diagonally. The numbers on the left and on top indicate the number of cells occupied by tetrominoes in the given row/column. The numbers on the right and at the bottom indicate the number of different tetrominoes in the given row/column. Divide the remaining cells in galaxies. Galaxy is a region with central symmetry. The points of symmetry of all the galaxies are already given. (Example with 2 tetrominoes)



### 10) Galaxies and pentominoes

70 points

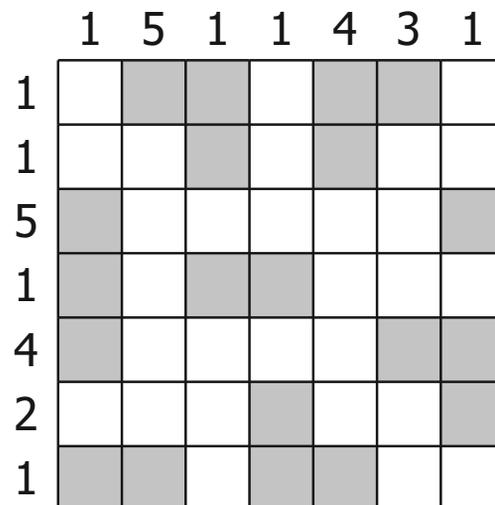
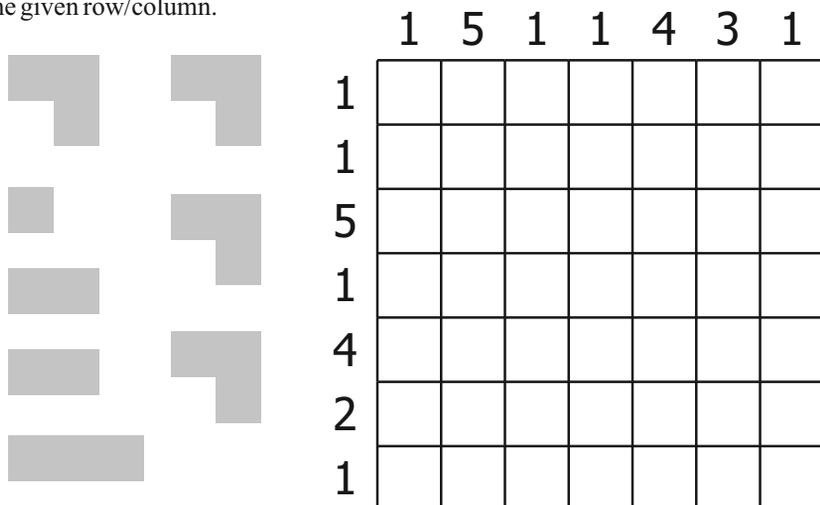
Rules: Place in the grid all 12 different pentominoes. They can be rotated and/or reflected, but they may not touch each other not even diagonally. The numbers on the left and on top indicate the number of cells occupied by pentominoes in the given row/column. The numbers on the right and at the bottom indicate the number of different pentominoes in the given row/column. Divide the remaining cells in galaxies. Galaxy is a region with central symmetry. The points of symmetry of all the galaxies are already given. (Example with 4 pentominoes)



### 11-12) Gaps between battleships

20, 95 points

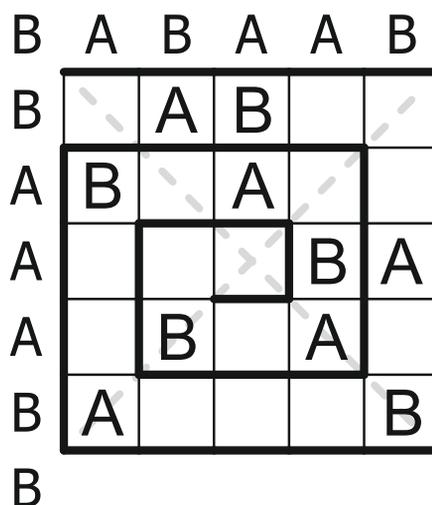
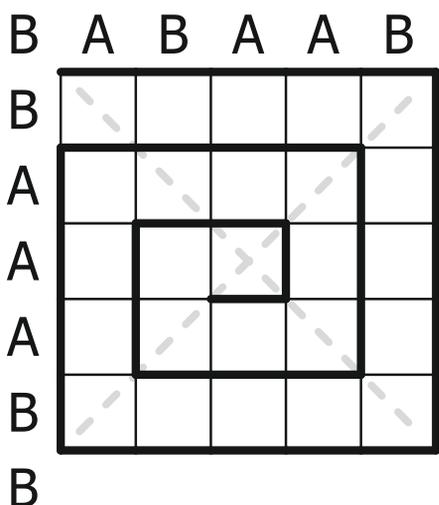
Rules: Place the given battleship fleet in the grid. The ships can be rotated, but may not touch each other not even diagonally. There are exactly 2 ships in each row and column. The numbers on top and at the left indicate the number of the empty cell between the two ships in the given row/column.



### 13) Snail End View

55 points

Rules: Place letters A,B,C in the grid so that each letter appears exactly once in every row, column and main diagonal. The letters have to follow the sequence A,B,C,A,B,C,... starting at the top left corner entrance and going to the center of the snail. The letters around the grid denote the **second** letter visible from the given direction in the given row, column or diagonal. (Example with letters A,B)



### 14) Snail End View Untouchable

125 points

Rules: Place letters A,B,C,D in the grid so that each letters appears exactly once in every row and column. The same letters may not touch each other not even diagonally. Reading the letters from the top left corner entrance and going to the center the same sequence must repeat. The order of the sequence is for you to determine. The letters around the grid denote the **second** letter visible from the given direction in the given row or column. (Example with letters A,B. Cells with X cannot contain letters).

	B	B	A	B	A	A
A						
B						
A					X	
B			X			
A						
B						

	B	B	A	B	A	A
A			B	A		
B	A					B
A	B				X	A
B		A	X		B	
A		B			A	
B			A	B		

### 15) Kakuro domino

55 points

Rules: Divide the grid into domino tiles from the given set (1-2, ..., 5-6). All the domino tiles have to be used. The numbers may not repeat in rows and columns. The hints denote the sums of the numbers to the right or down from the hint cell (before the grid border or next hint cell). (Example with domino tiles 1-2 to 3-4)

- 1-2
- 1-3
- 1-4
- 2-3
- 2-4
- 3-4

	7	6			
4			9		
9					4
7					
		7			

	7	6			
4	1	3	9		
9	4	2	3		4
7	2	1	4		3
		7	2	4	1



# Prague 2018



## Round 7 - Paths

45 minutes

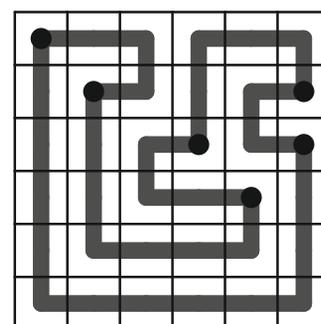
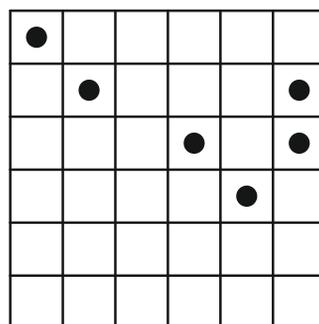
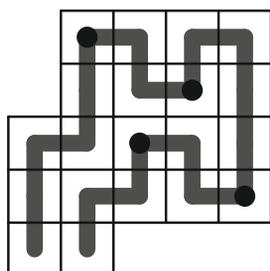
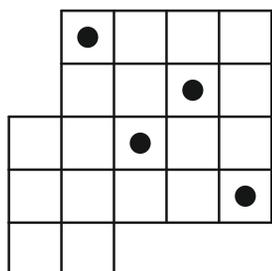
550 points

1. Every third turn path .....60 points
2. Every third turn loop .....15 points
3. Land and sea .....25 points
4. Slitherlink .....100 points
5. Slitherlink .....25 points
6. Snake .....25 points
7. Arukone .....5 points
8. Arukone .....5 points
9. Masyu .....40 points
10. Dutch loop .....25 points
11. Loop with symmetrical segments .....30 points
12. Country road .....50 points
13. Castle wall .....50 points
14. Arrow maze .....45 points
15. Password path .....5 points
16. Yajilin .....45 points

### 1-2) Every third turn path/loop

60, 15 points

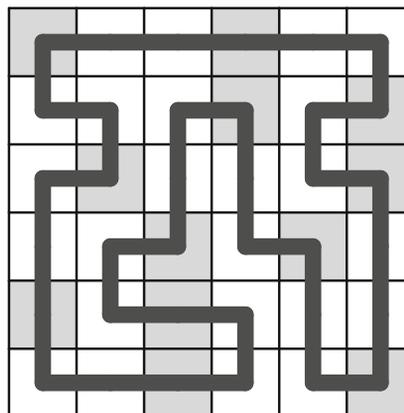
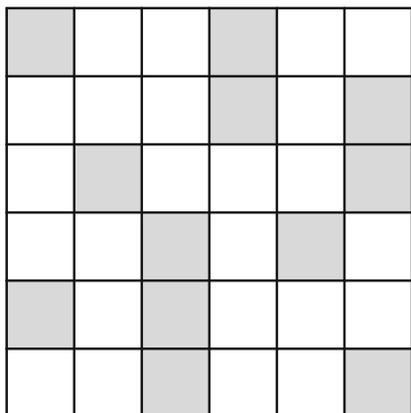
Rules: Draw a single path/loop that travels horizontally and vertically between centers of the adjacent cells. The path/loop visits all the unpainted cells and does not touch or intersect itself. Every third turn of the path (from either side)/loop is marked by a circle.



### 3) Land and sea

25 points

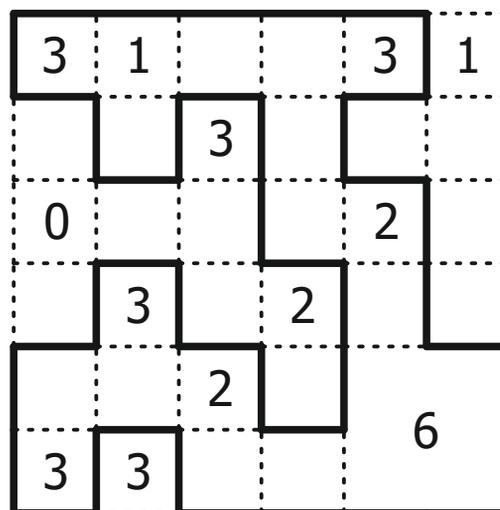
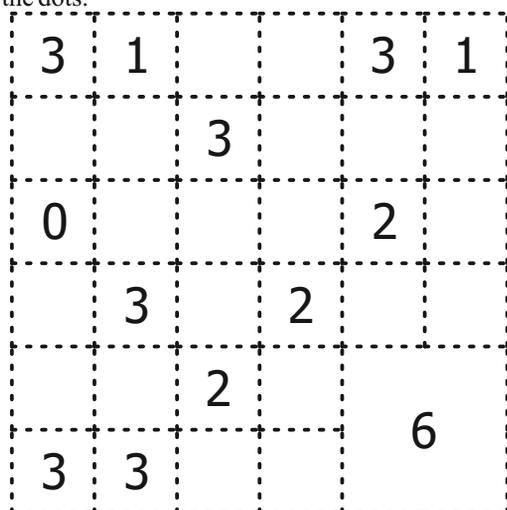
Rules: Draw a single closed loop through all squares in the grid by connecting the centres of cells horizontally and vertically. The loop does not touch or cross itself. The loop does not run through more than 2 white squares consecutively anywhere in the grid.



### 4-5) Slitherlink

25, 100 points

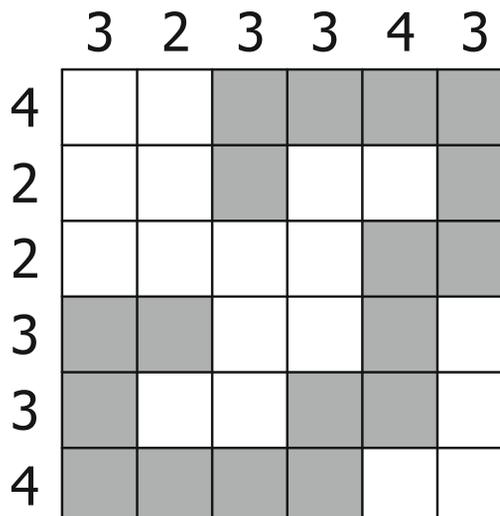
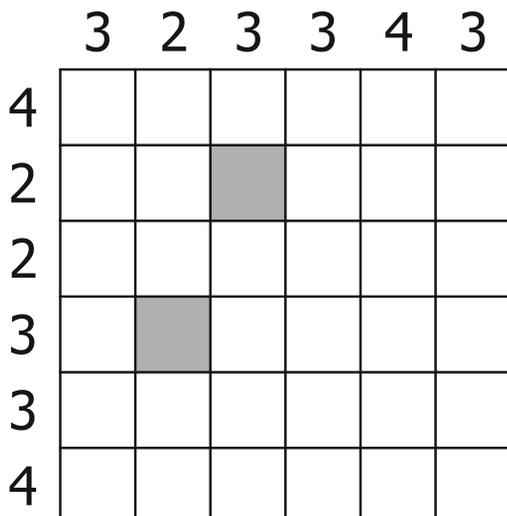
Rules: Draw a single continuous loop by connecting neighboring dots along the dotted lines. The numbers indicate how many edges of a cell are used for the loop. Small cell edges are counted also around bigger cells. The loop may not touch or cross itself, and it does not need to touch all of the dots.



### 6) Snake

25 points

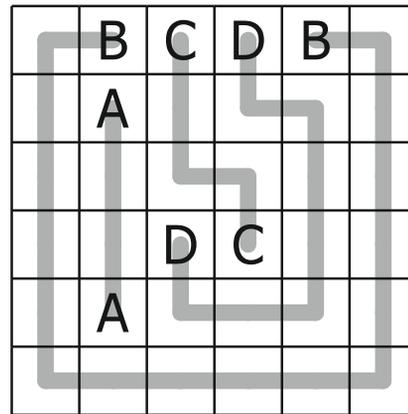
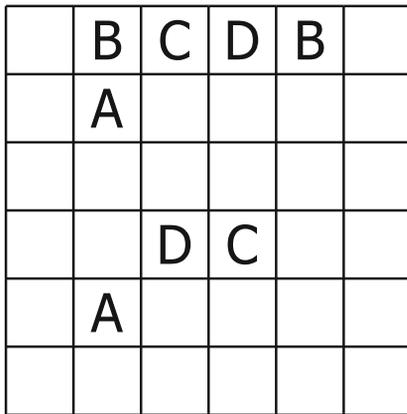
Rules: Draw a snake in the grid. The snake goes from cell to cell vertically or horizontally, but not diagonally. The snake does not touch itself, not even diagonally. The numbers outside the grid indicate how many cells are used by the snake in that row or column. Head and tail of the snake are given.



### 7-8) Arukone

5, 5 points

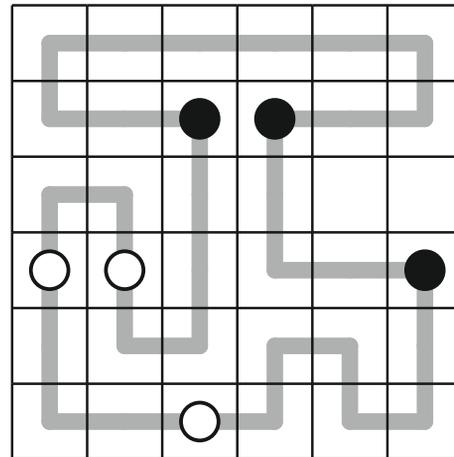
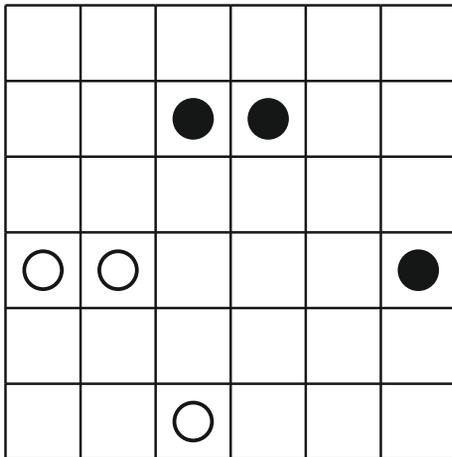
Rules: Connect the same letters with a line going horizontally and vertically from cell to cell. The lines have to avoid the black cells. Every cell can be used once at most.



### 9) Masyu

40 points

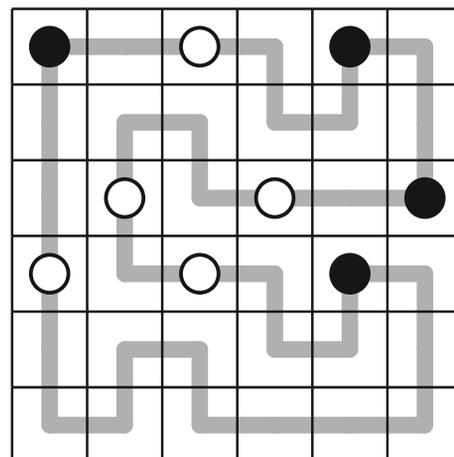
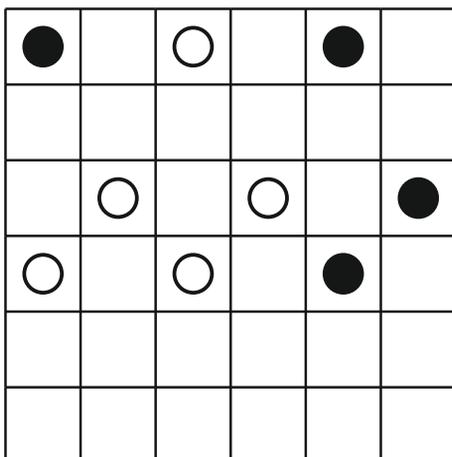
Rules: Draw a single loop that travels horizontally and vertically between centers of some cells such that the loop does not visit any cell more than once. At every cell containing a white circle the loop must pass straight through that circle and make a 90 degree turn in at least one of the cells adjacent to the circle. At every cell containing a black circle the loop must make a 90 degree turn and travel straight through both cells adjacent to the circle. Shaded cells cannot be used by the loop.



### 10) Dutch loop

25 points

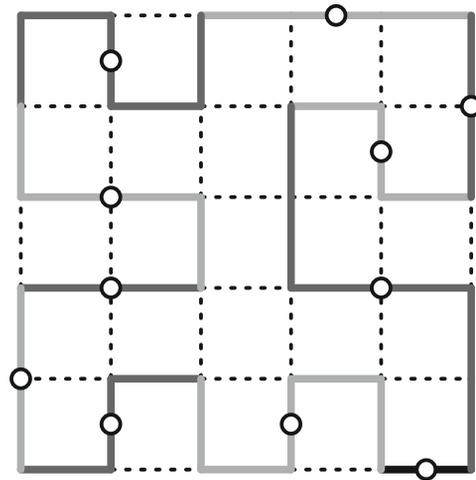
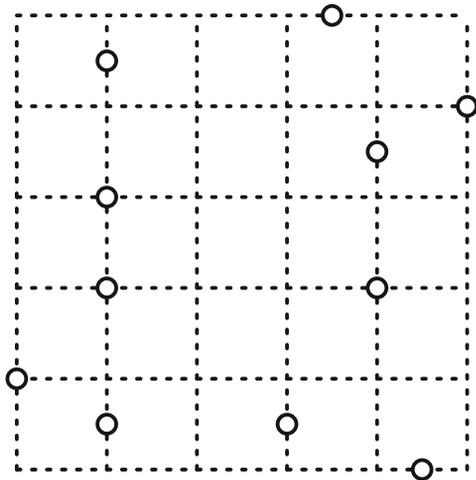
Rules: Draw a single continues loop that travels horizontally and vertically between centers of the cells. The loop visits all the cells, but does not touch or intersect itself. The loop must turn in the cells with black circle and must go straight in cells with white circles.



### 11) Loop with symmetrical segments

30 points

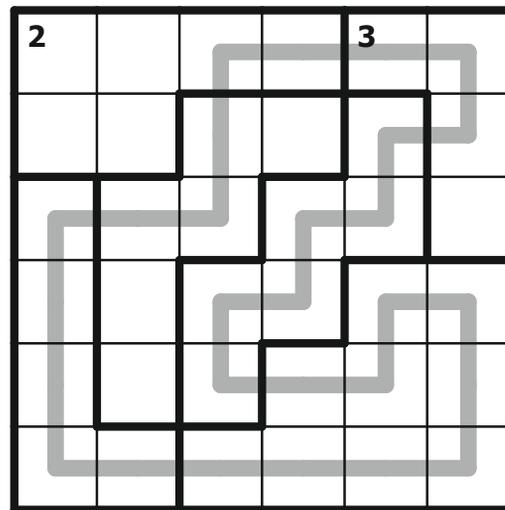
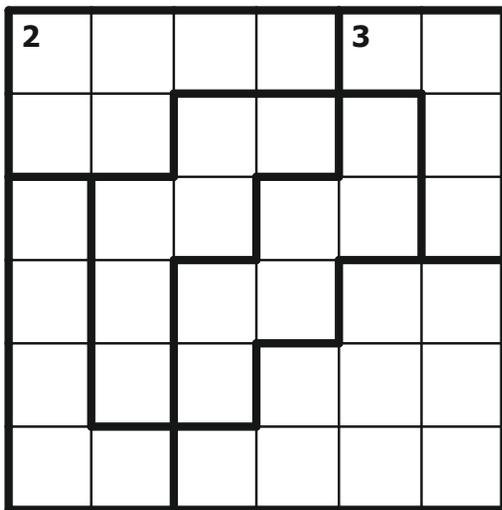
Rules: Draw a single closed loop along the grid lines. The loop visits every vertex of the grid exactly once and consists of segments with central symmetry. The centers of symmetry of all the segments are given. Each segment starts and ends in one of the grid vertices. The segments may not overlap.



### 12) Country road

50 points

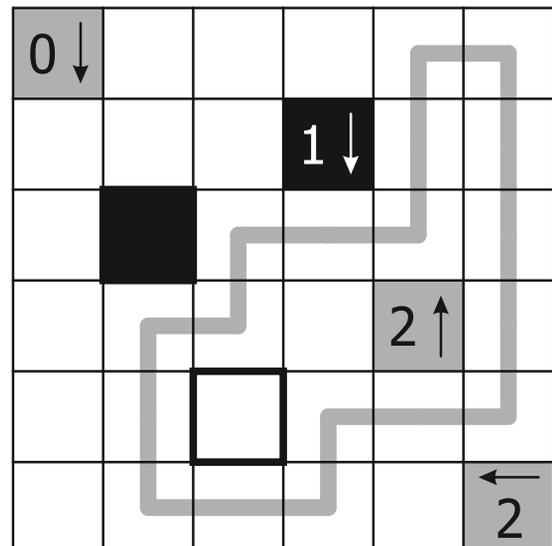
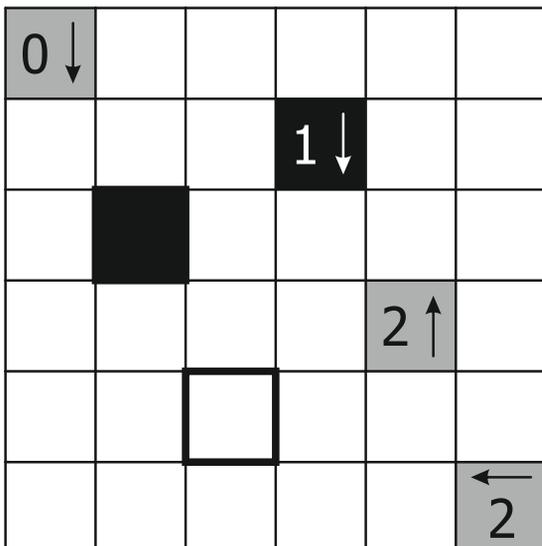
Rules: Draw a closed loop through the grid, connecting the centres of cells horizontally and vertically. The loop runs through all boldly marked areas once (it means that there is a single entry and exit). Two adjacent cells in different areas cannot both be unused by the loop. The numbers in the grid indicate how many cells in that region the loop runs through.



### 13) Castle wall

50 points

Rules: Draw a single closed loop (without intersections or crossings) passing through some empty cells in the grid. The grid contains some bordered or colored cells that cannot be part of the loop. Black cells must be outside the loop; white cells (with heavy borders) must be inside the loop. For grey cells this information is unknown. Numbers and arrows refer to the total sum of the lengths of loop segments in the given direction.



### 14) Arrow maze

45 points

Rules: Find a path through the maze by visiting every cell of the grid exactly once. Start with the cell with number 1, then sort numbers in order in each cell you visit and finish in cell with number 36 (16 in the example). You can jump from one cell to another(not necessarily neighbouring cell) horizontally or vertically but only in the direction of the arrow. Some numbers are already given.

↓ 1		→	↓
→	↑	↑	← 6
→	↓	↓	←
↑	← 12	→	↑

↓ 1	16	→ 8	↓ 9
← 14	↑ 15	↑ 7	← 6
→ 2	↓ 11	↓ 3	← 10
↑ 13	← 12	→ 4	↑ 5

### 15) Password path

5 points

Rules: Draw single path in the grid so that you can read the given password repeatedly along the path. The path travels horizontally, vertically or diagonally between neighbouring cells and does not cross or touch itself. All cells must be visited by a path. The path starts in the upper left corner and ends in the bottom right corner. (Example with password RAMBO)

R	A	R	A	O
M	O	M	B	R
B	M	B	A	A
O	A	M	R	M
R	B	O	B	O

R	A	R	A	O
M	O	M	B	R
B	M	B	A	A
O	A	M	R	M
R	B	O	B	O

### 16) Yajilin

45 points

Rules: Blacken some cells in the grid so that blackened cells do not touch each other from the sides. All remaining cells (except the grey cells) should be traversed by a single continuous loop, moving horizontally and vertically. Clues inside the grid indicate the number of blackened cells in the corresponding directions. There may exist some blackened cells that are not pointed by any arrow.

→ 2				
			← 1	

→ 2	■			■
		■	← 1	
■				



# Prague 2018



## Round 8 - Dissections

45 minutes

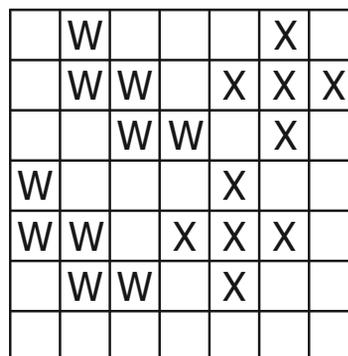
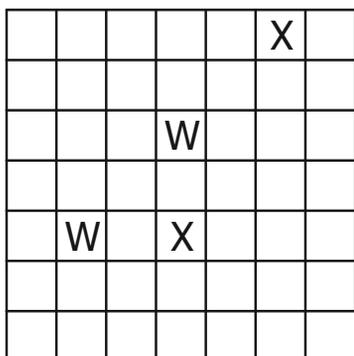
580 points

1. Pentominoes I .....110 points
2. Pentominoes II.....30 points
3. Pentominoes III .....55 points
4. Pentominoes IV .....65 points
5. Square tiling .....20 points
6. Slash pack .....25 points
7. Coddled dissection .....50 points
8. Dissection by vertices .....50 points
9. Galaxies .....30 points
10. Tetrominoes End View .....45 points
11. Burokku .....100 points

### 1) Pentominoes I

110 points

Rules: Place 2 sets of pentominoes in the grid. Two pentominoes may only touch each other diagonally. Empty cells (with no pentominoes) cannot form 2×2 areas inside the grid. A cell with a letter in it must be part of the pentomino shape normally associated with that letter. Every pentomino covers exactly one letter. (Example with the set X W)



## 2) Pentominoes II

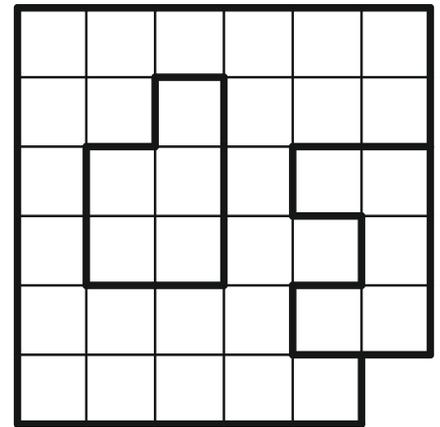
30 points

Rules: Divide the grid into pentominoes (five cell regions) so that no two pentominoes of the same shape (including rotations/reflections) share an edge. Some borders between pentominoes are already drawn.

## 3) Pentominoes III

55 points

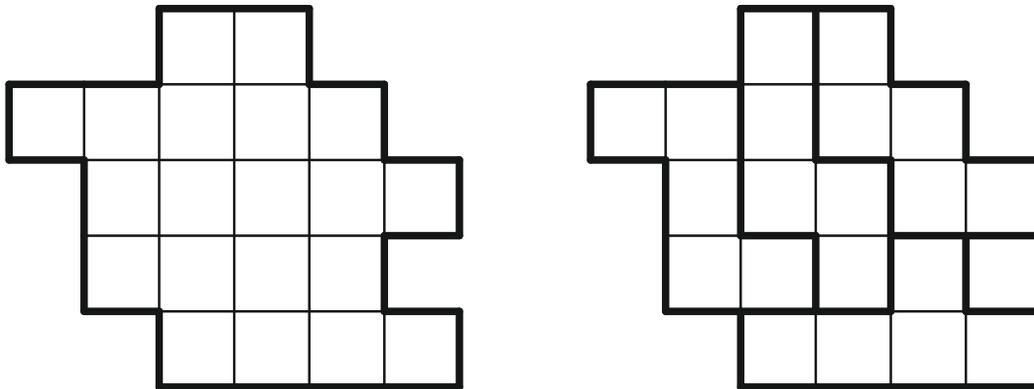
Rules: Divide the grid into pentominoes (five cell regions) so that no two pentominoes of the same shape (including rotations/reflections) share an edge. A cell with a letter in it must be part of the pentomino shape normally associated with that letter. An inventory of the pentominoes is given below the puzzle, but not all the shapes must be used.



## 4) Pentominoes IV

65 points

Rules: Divide the grid into 12 different pentominoes (rotated or reflected pentomino is considered the same). The black cells may not be covered by pentominoes. (Pentominoes N, W, Y and Z are to be used in the example)



## 5) Square tiling

20 points

Rules: Use the given set of square tiles to cover all the unpainted cells.

### 6) Slash pack

25 points

Rules: Divide the grid into regions by adding diagonals into empty cells. Two diagonals cannot cross in one cell, and there can be no loose ends. Each region must contain the numbers 1 to 5 exactly once. (Example with numbers 1 to 4)

3		1			2
	1		4		
			2		1
2					
4			3	4	
		3			

3		1			2
	1		4		
			2		1
2					
4			3	4	
		3			

### 7) Coded dissection

50 points

Rules: Divide the grid into pentominoes. All the pentominoes must be different (rotated or reflected pentomino is considered the same). The numbers next to rows and columns indicate the lengths of the individual pentomino segments in the given row/column. They are ordered in increasing order.

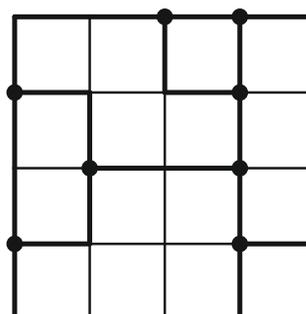
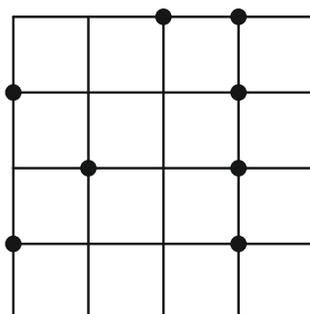
					1	4	
					1	1	3
					1	2	2
					1	2	2
					1	4	
1	1	1	1	2			
2	1	1	1	3			
2	3	1	1				
		2	2				

					1	4	
					1	1	3
					1	2	2
					1	2	2
					1	4	
1	1	1	1	2			
2	1	1	1	3			
2	3	1	1				
		2	2				

### 8) Dissection by vertices

50 points

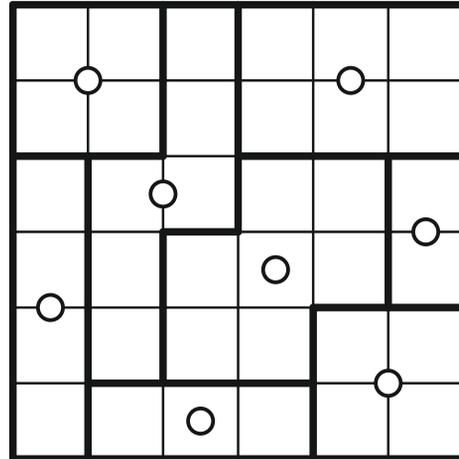
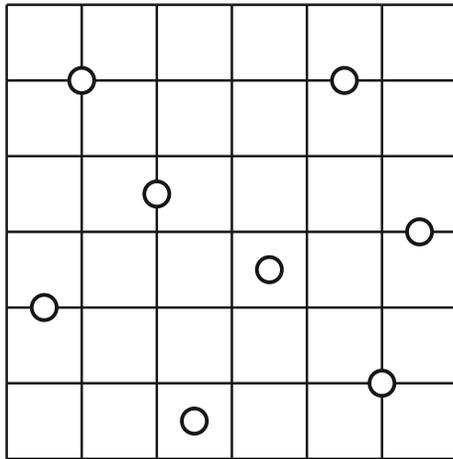
Rules: Divide the grid in 8 regions of different sizes between 1-8. All the vertices where 3 borders of regions meet are given. There are no vertices where 4 borders meet. (Example with sizes 1-5)



### 9) Galaxies

30 points

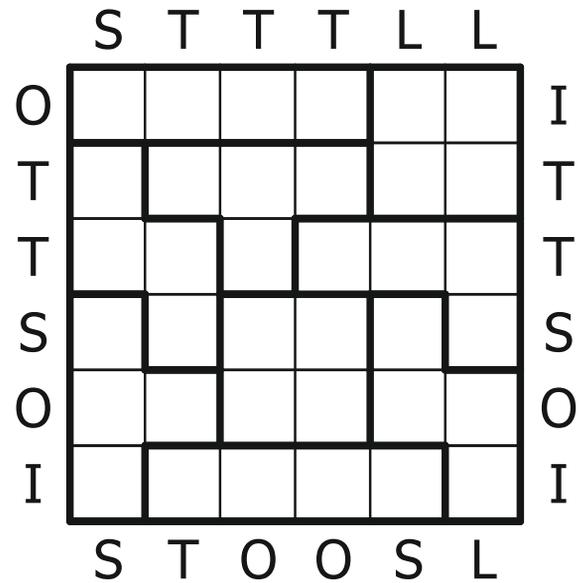
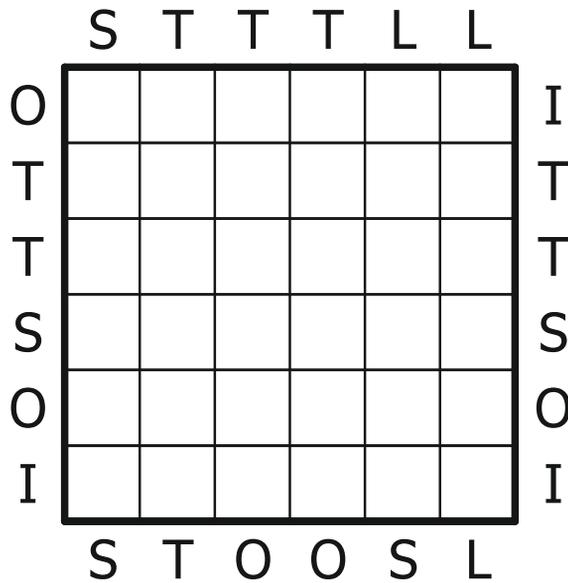
Rules: Divide all the unpainted cells the grid along the grid lines into areas. Each area must contain exactly one circle and be symmetric with respect to this circle.



### 10) Tetrominoes End View

45 points

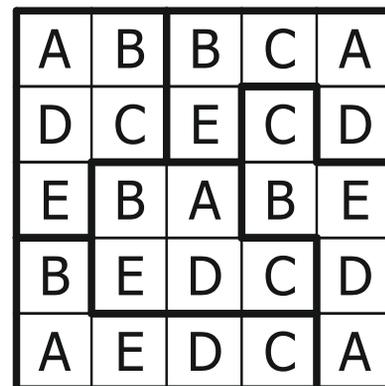
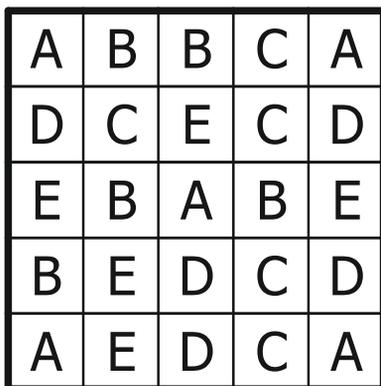
Rules: Divide the grid into tetrominoes so that no two tetrominoes of the same shape (including rotations/reflections) share an edge. The letters around the grid denote the tetrominoes that are **second** in the given row/column from the given side.



### 11) Burokku

100 points

Rules: Divide the grid along the grid lines in 8 non-overlapping regions containing 8 cells each. A region must not contain two cells with the same letter.



## Round 9 - Numbers

60 minutes

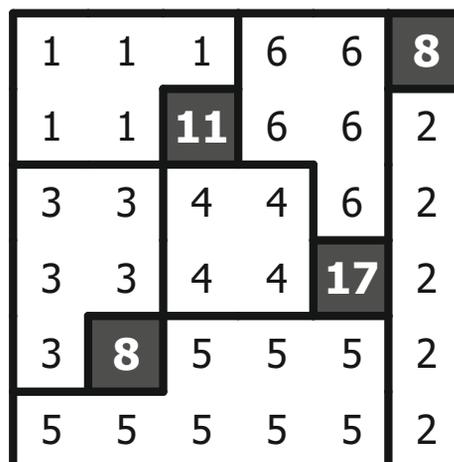
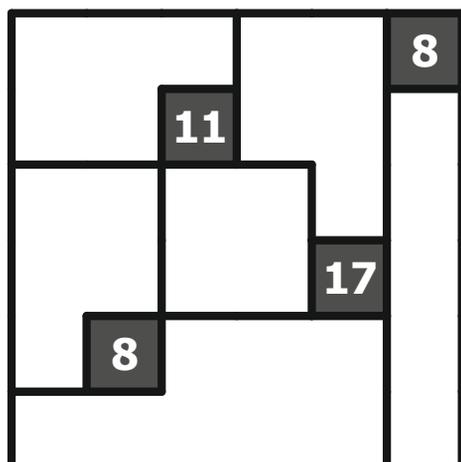
800 points

1. Numbered regions .....85 points
2. Star .....45 points
3. Doubleblock .....55 points
4. Kakuro .....125 points
5. Futoshiki .....25 points
6. Futoshiki .....80 points
7. Sandglass .....25 points
8. Sandglass .....25 points
9. Pyramid .....15 points
10. Pyramid .....65 points
11. Mathrax .....25 points
12. Mathrax .....25 points
13. Tom Tom .....90 points
14. Tom Tom .....35 points
15. Antimagic square .....80 points

### 1) Numbered regions

85 points

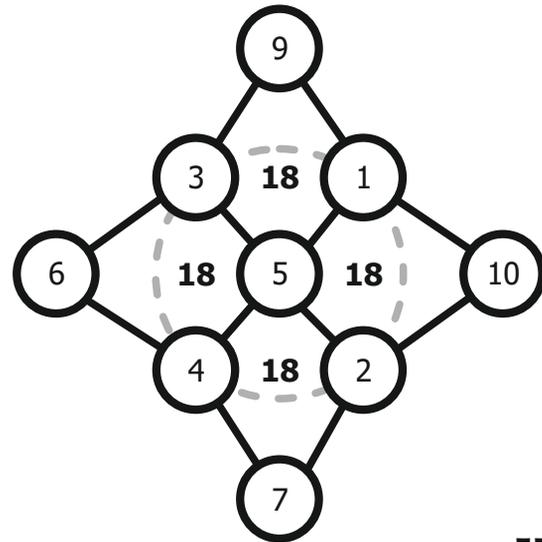
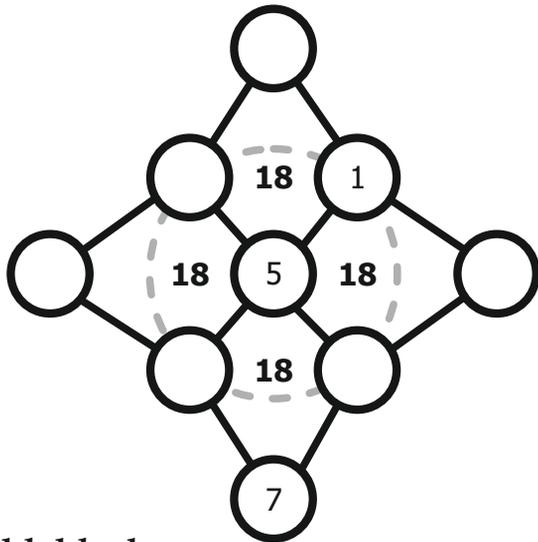
Rules: There are 20 regions outlined in the map. Assign one number from 1 to 20 to each region so that each number is used exactly once. The numbers in the shaded cells indicate the sum of the numbers in regions sharing at least one side with this cell (each region is counted just once in the sum). (Example with 6 regions)



## 2) Star

45 points

Rules: Place all the numbers from 499 to 506 in the empty cells so that the sum of the numbers on the vertices in all five quadrangles is 2018. The core of the star is brighter, so the sum of the 5 numbers on the circle is 20 higher than the sum of the 5 numbers on the outside. (Example with numbers 1-8 and 10 and sum 18, the sum of the numbers on the circle is 22 lower than the sum of the 4 numbers outside.)



## 3) Doubleblock

55 points

Rules: Blacken some cells and enter the numbers from 1 to 5 (1-4 in the example) in the remaining cells so that in each row and each column exactly two cells are blacked out and each number occurs exactly once. The numbers on the edge indicate the sum of the numbers that are between the two black cells.

	1	9	1	6	5	6
2						
0						
4						
4						
4						
3						

	1	9	1	6	5	6
2	4	1	3		2	
0			4	2	3	1
4	1	2		4		3
4		3	1		4	2
4	2	4		3	1	
3	3		2	1		

## 4) Kakuro

125 points

Rules: Place a digit from 1 to 9 into each white cell. The numbers in grey cells indicate the sum of digits in the adjacent "word" across or down. (Across "words" are to the right of their sums, Down "words" are below their sums.) Digits may not repeat within a "word."

/	6	18	/	28	8
4			7		
15			9		
/	23				9
18					
11			15		

/	6	18	/	28	8
4	1	3	7	2	5
15	5	1	2	4	3
/	23	8	6	9	9
18	6	4	1	5	2
11	9	2	15	8	7

### 5-6) Futoshiki

25, 80 points

Rules: Fill the grid with digits 1-6 resp. 1-9 so that each digit appears exactly once in every row and column. Clues inside the grid represent the relations between the digits in the neighbouring cells. (Example with numbers 1-4)

□	□	□	□	1	2	4	3
^				^			
□	□	□	<	2	1	3	<
^		v		^		v	
□	□	□	□	4	3	2	1
	^				^		
□	□	□	<	3	4	1	<

### 7-8) Sandglass

25, 25 points

Rules: Place numbers in all the empty cells so that no number is repeated in the sandglass. Sum of two adjacent numbers in a row is written in the next row closer to the center of the sandglass in the cell placed next to both numbers.

□	□	4
□	□	
	20	
□	□	
5	□	□

2	7	4
9	11	
	20	
6	14	
5	1	13

### 9-10) Pyramid

15, 65 points

Rules: Enter numbers from 1 to 9 into the cells of the pyramid, so that each number is either the sum or the difference of the two numbers in the cells below. Note, that in gray rows, no number may occur twice, while in white rows at least one number does occur twice.

6			
□		□	
□		□	
5		3	

6			
3		3	
1		5	
5		3	

### 11-12) Mathrax

25, 25 points

Rules: Place numbers from 1-7 resp. 1-8 in the grid so that every row, every column, and both main diagonals contain each number exactly once. The number with an operator in a circle means that the number comes out as a result of this operation applied to each of the couples of diagonally opposite cells underneath the circle. (Example with numbers 1-5)

		4×		
		7+		
			5+	
				1-

5	2	1	3	4
1	4	2	5	3
4	5	3	1	2
3	1	4	2	5
2	3	5	4	1

### 13-14) Tom Tom

90, 35 points

Rules: Place a digit from 1 to 9 resp. 1 to 6 (1-6 in example) into each cell so that no digit repeats in any row or column. Also, the number in the upper-left corner of each bold cage indicates the value of a mathematical operation (addition, subtraction, multiplication, division) applied successively to all digits in the cage, starting with the largest digit for subtraction and division (e.g. 1,2,4 with subtraction is a 1-clue as  $4-2-1=1$ ). The operation may or may not be given in the cage, but at least one of the four operations must apply. If only an operation is given (not number), the result of the operation must be a whole number greater or equal to 0. Digits can repeat within a cage.

11		3÷		200	
		4+			
10×					24×
			7+		
17				0	
		8+			

11	3	3÷	2	200	5
1	3	6	2	4	5
3	4	4+	6	5	2
3	4	1	6	5	2
10×	1	2	4	3	24×
5	1	2	4	3	6
2	6	3	7+	1	4
2	6	3	5	1	4
17	6	4	1	0	2
6	5	4	1	2	3
4	2	8+	3	6	1
4	2	5	3	6	1

### 15) Antimagic square

80 points

Rules: Place numbers from 1 to 12 into all the cells so that there are exactly two numbers in each row, column and main diagonal. The sums of the two numbers are shown around the grid. (Example with numbers 1-8)

5    4    10    15    7    9

5    4    10    15    7    9

3			
11			
8			
14			

3	1		2
11		4	7
8	3		5
14		6	8

Prague  
2018



13<sup>th</sup> WSC  
27<sup>th</sup> WPC

# Prague 2018



## Round 10 – Double trouble

45 minutes

450 points

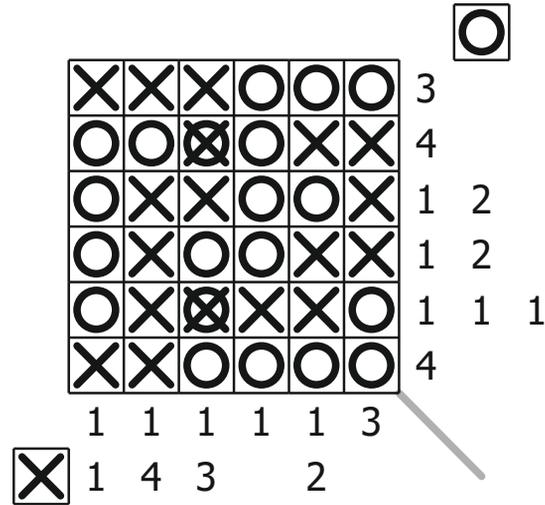
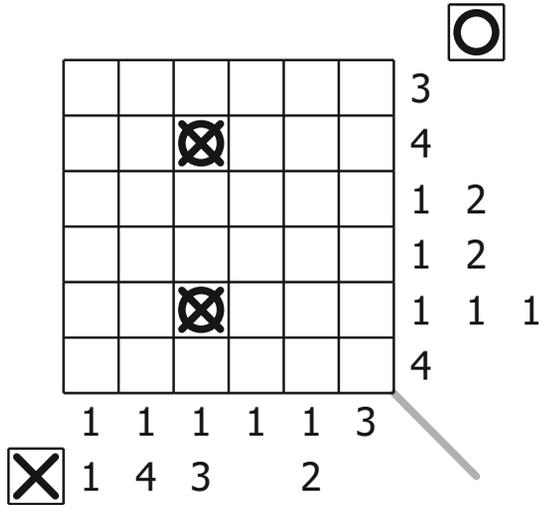
1. Double coral .....35 points
2. Double snake .....30 points
3. Double skyscrapers .....55 points
4. Double skyscrapers .....75 points
5. Double latin square .....10 points
6. Double latin square .....15 points
7. Double nurikabe .....60 points
8. Double domino .....20 points
9. Double doubleblock .....60 points
10. Double shikaku .....90 points

# 1) Double coral

35 points

Rules: Place two corals in the grid. Use X and O to mark the fields occupied by the two corals.

Coral is orthogonally connected, contains no 2x2 areas and all the cells that do not belong to coral must be connected to the edge of the grid. The numbers on the edge indicate the lengths of successive blocks of coral cells, but not necessarily in the correct order. There must be at least one other cell between two blocks. All the cells must be filled by at least one of the corals. All the cells where the corals overlap are marked. Hints on the right belong to one of the corals, hints below belong to the other one.



# 2) Double snake

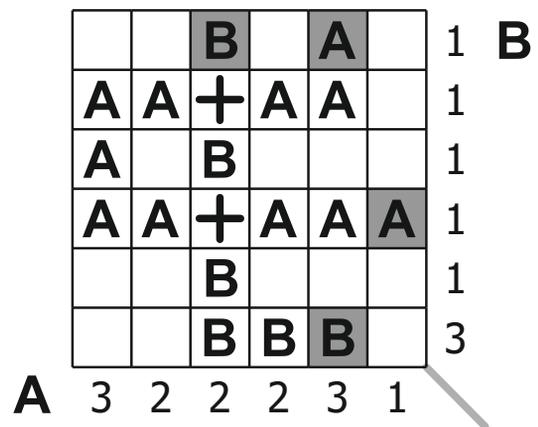
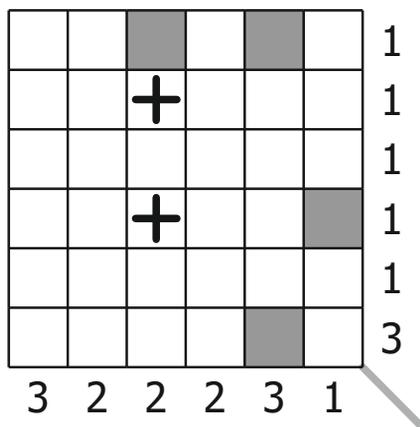
30 points

Rules: Draw 2 snakes in the grid.

The snake goes from cell to cell vertically or horizontally, but not diagonally. The snake does not touch itself, not even diagonally. The numbers outside the grid indicate how many squares are used by the snake in that row or column. The two snakes cannot touch each other not even diagonally except for the crossings. At the crossings both snakes must go straight (cross each other).

The heads and tails are marked, but you have to learn their pairing. All the crossings between the two snakes are marked as well.

The numbers on the right indicate the number of cells occupied by one snake. The numbers below indicate the number of cells occupied by the other snake.



# 3-4) Double skyscrapers

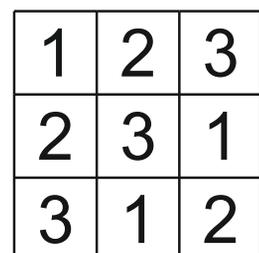
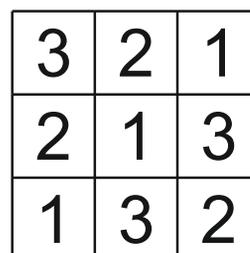
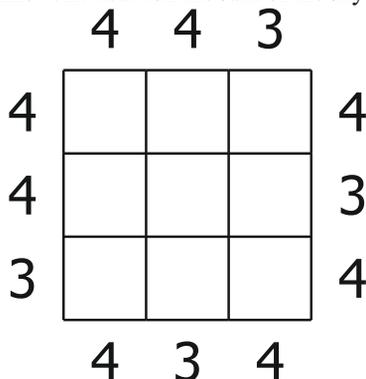
55, 75 points

Rules: Solve two skyscrapers puzzles.

Place numbers from 1-4 resp. 1-5 (1-3 in the example) in all the empty cells so that they do not repeat in rows and columns. These numbers represent heights of the buildings. The numbers around the grid indicate the number of buildings you can see from the given viewpoint. The building is visible only when it is higher than all the buildings in front of it.

The hints around the grid represent sums of the corresponding hints from both puzzles.

In puzzle 4: In addition the sum of the skyscraper heights in the corresponding cells is always 6.



### 5-6) Double latin square

10, 15 points

Rules: You are given a sum of two latin squares (cell by cell). In latin square every row and column contains each of the numbers from 1-4(5) exactly once. Find the two original latin squares. (Example with numbers 1-3)

4	5	3
4	2	6
4	5	3

3	2	1
2	1	3
1	3	2

1	3	2
2	1	3
3	2	1

### 7) Double nurikabe

60 points

Rules: Nurikabe: Shade some empty cells black so that the grid is divided into white areas, each containing exactly one number and with the same area in cells as that number. Two white areas may only touch diagonally. All black cells must be connected with each other, but no 2x2 group of cells can be entirely shaded black.

In the grid below half of the numbers belong to one Nurikabe and the other half to the other Nurikabe. Decide which hint belongs to which puzzle and solve the two Nurikabe puzzles.

4	3				
6	4				
				3	7
				2	7

4					
	4				
			3		
					7

	3				
6					
					7
				2	

### 8) Double domino

20 points

Rules: Divide the grid in domino tiles. Two sets of domino are used. It means that every tile can be found in exactly two places in the grid.

11 12 13  
22 23  
33  
11 12 13  
22 23  
33

		3	2		
	3	3	1	2	
1	2	2	3	3	1
1	3	3	1	2	1
	2	3	1	2	
		2	1		

		3	2		
	3	3	1	2	
1	2	2	3	3	1
1	3	3	1	2	1
	2	3	1	2	
		2	1		

### 9) Double doubleblock

60 points

Rules: Two doubleblock puzzles are superimposed in the grid.

For each puzzle blacken some cells and enter the numbers from 1-4 (1-3 in the example) in the remaining cells so that in each row and each column exactly two cells are blacked out and each number occurs exactly once. The numbers on the edge indicate the sum of the numbers that are between the two black cells. The numbers around the upper grid show the hints for both puzzles in increasing order. You have to decide which one belongs to which puzzle. Also in the grid all the cells where the blocks from both puzzles overlap are marked.

		1	1	0	1	3
		2	5	5	6	5
0	2					
2	6					
2	2					
1	4					
3	4					

3		2		1
1	3		2	
	2		1	3
2		1	3	
	1	3		2

2	3			1
	2	3	1	
1		2		3
	1		3	2
3		1	2	

### 10) Double shikaku

90 points

Rules: Shikaku: Divide the grid into rectangular and square areas so that each area contains exactly one number that represents the number of the cells in this area.

Two shikaku puzzles overlap in the grid below.

From each pair of adjacent numbers one belongs to one puzzle and the other one to the other puzzle.

9	10			12	6
		12	6		
		9	8		

9				12	
			6		
		9			

	10				6
		12			
			8		



## Round 11 - Regional

45 minutes

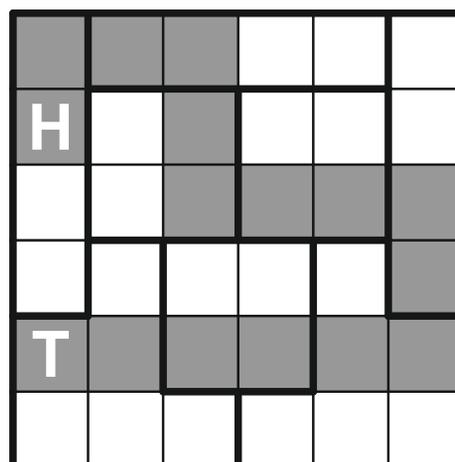
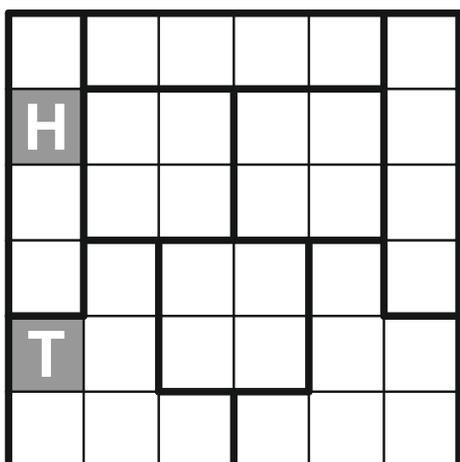
590 points

1. Regional snake .....20 points
2. Regional tetrominoes .....30 points
3. Regional pentominoes .....105 points
4. Regional masyu .....40 points
5. Regional yajilin .....95 points
6. Regional fillomino .....65 points
7. ABC-Sky with regional match .....45 points
8. Skyscrapers with regional match .....50 points
9. Tapa with regional match .....45 points
10. Regional akari .....40 points
11. Regional coral .....55 points

### 1) Regional snake

20 points

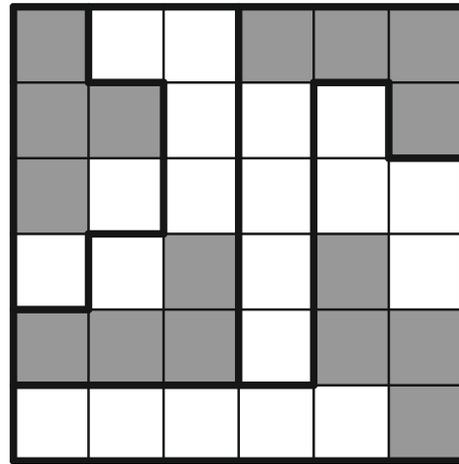
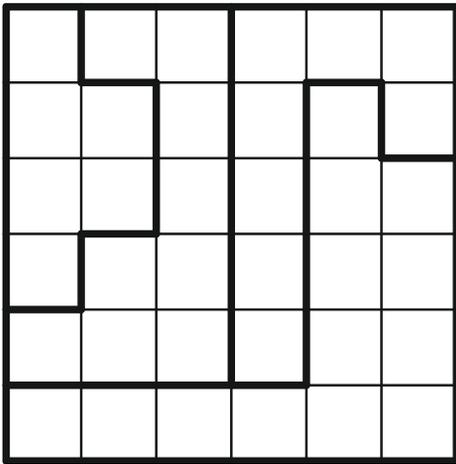
Rules: Draw a snake in the grid. The snake goes from cell to cell vertically or horizontally, but not diagonally. The snake does not touch itself, not even diagonally. Head and tail are already given. Each region contains the same number of cells occupied by snake.



## 2) Regional tetrominoes

30 points

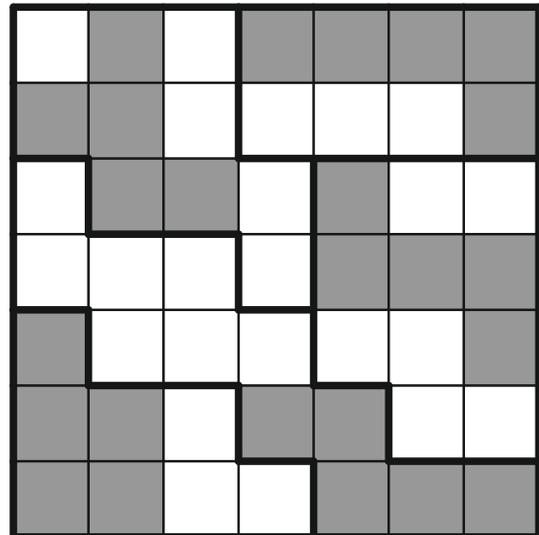
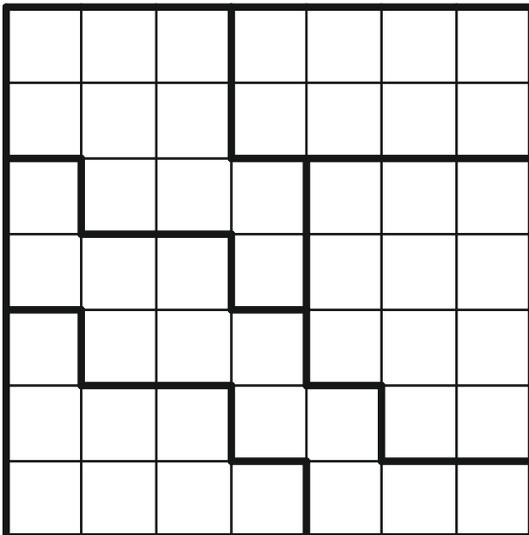
Rules: Place all 7 tetrominoes in the grid. They may be rotated but not reflected. There is exactly one tetromino in each region. Tetrominoes may not touch each other not even diagonally. (Example with tetrominoes L, J, S and T only.)



## 3) Regional pentominoes

105 points

Rules: Place all 12 pentominoes in the grid. They may be rotated and/or reflected. There is exactly one pentomino in each region. Pentominoes may not touch each other not even diagonally. (Example with pentominoes F, L, N, P and Z only.)

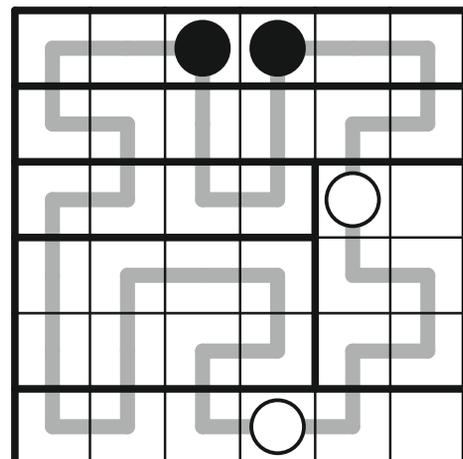
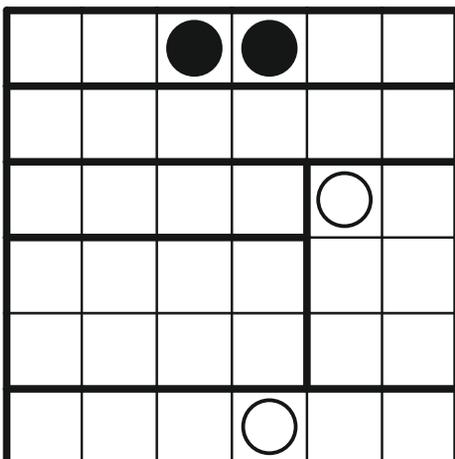


## 4) Regional masyu

40 points

Rules: Draw a single loop using only horizontal and vertical lines between the centers of some cells such that the loop does not visit any cell more than once. At every cell containing a white circle the loop must pass straight through that circle and make a 90 degree turn in at least one of the cells adjacent to the circle. At every cell containing a black circle the loop must make a 90 degree turn and travel straight through both cells adjacent to the circle.

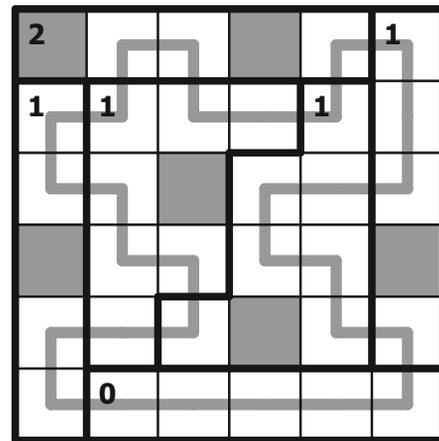
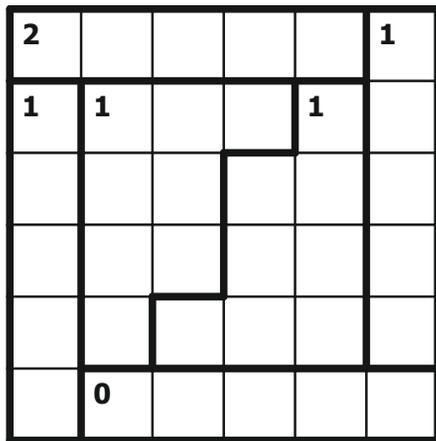
Each outlined region contains exactly 4 turns of the loop.



### 5) Regional yajilin

95 points

Rules: Blacken as many cells in each region as indicated by the number in the upper left corner of the region. The cells may not touch each other by sides. Then draw a closed loop travelling between the centers of adjacent cells horizontally or vertically and going through all the unpainted cells in the grid.



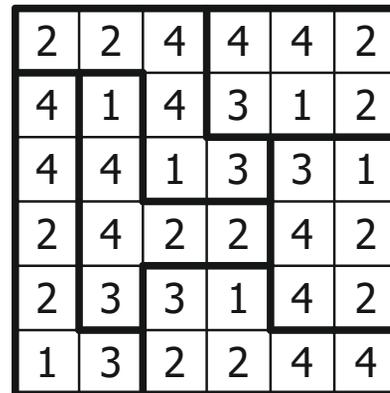
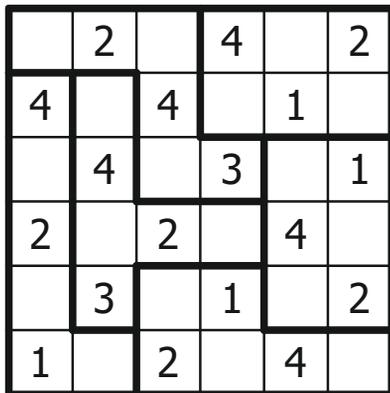
### 6) Regional fillomino

65 points

Rules: Dissect the grid into areas and write a number in every cell. The numbers in one area have to be the same and have to tell the number of cells in that area. Areas of same size may not touch horizontally or vertically, but can touch diagonally.

Given numbers may belong to the same area, and it's possible that there are areas, where no number is given.

In addition each outlined region contains the same set of numbers. It means the same numbers in the same number of copies



### 7) ABC-Sky with regional match

45 points

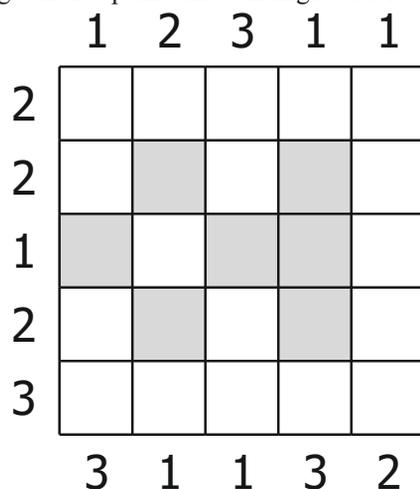
Rules: Solve two puzzles - As Easy as ABC and Skyscrapers with parks. Both puzzles use numbers in the range 1-4 (1-3 in the example), two cells remain empty in each row/column. The grey regions are identical. No information is given on the white regions (the cells may or may not be identical).

As Easy as ABC (left grid)

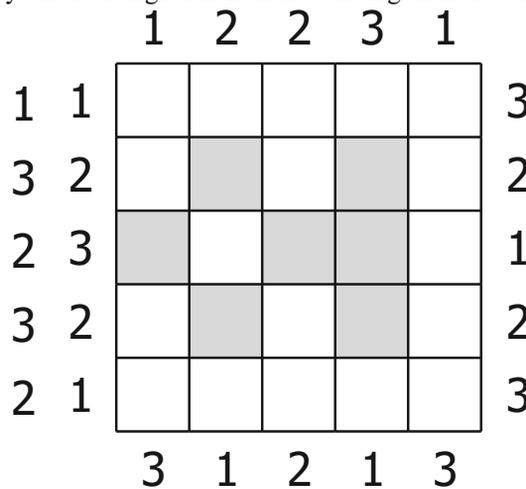
Enter the numbers 1 to 4 into the diagram, so that in every row and every column every number occurs exactly once; in every row and every column two cells remain empty. The numbers at the borders indicate the number that comes first from the given viewpoint.

Skyscrapers with parks (right grid)

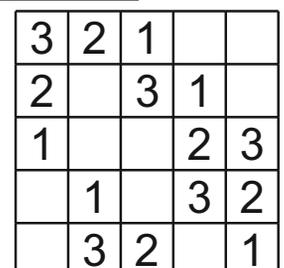
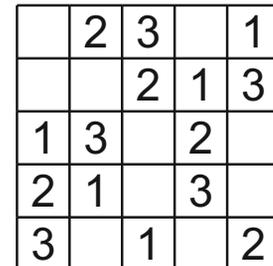
Place numbers from 1-4 in some of the cells so that they do not repeat in rows and columns. Two cells in each row and column remain empty. The numbers represent heights of the buildings. The numbers around the grid indicate the number of buildings you can see from the given viewpoint. The building is visible only when it is higher than all the buildings in front of it.



As Easy As ABC



Skyscrapers



### 8) Skyscrapers with regional match

50 points

Rules: Solve two skyscraper puzzles. All the identical numbers inside and outside the grid are shaded. The unshaded cells and hints must be different between the two puzzles. You do not need to fill all the hints around the grids to score the points.

3 3 1

1				2
				3
2	1			

1 2 2

2				1
1	3			

3	2	1	4
4	1	2	3
1	3	4	2
2	4	3	1

1	4	3	2
3	1	2	4
2	3	4	1
4	2	1	3

### 9) Tapa with regional match

45 points

Rules: Solve two tapa puzzles. Cells marked with equality sign have identical solution in both grids. The other cells are different. Tapa = Blacken some empty cells in a way that all black cells are orthogonally connected and no 2x2 area is completely black. The numbers in the cells give hints on how to blacken the surrounding cells (even diagonally): Each number represents a group of horizontally or vertically adjacent cells; groups around a hint-cell have to be separated by at least one white cell. The order of the numbers is unimportant.

=				=	
=		5		=	
=	1 <sub>3</sub>			=	4
=		=			2
=	=	2 <sub>3</sub>	=		=
=	=	=	1 <sub>1</sub>	=	=

=		2		=	
=			4	=	
1 <sub>2</sub>	=		=		
=	2 <sub>3</sub>	=		4	
=	=		4		=
=	=	=		=	=

●	●	●	●		
●			●		
			●		
●	●	●	●	●	
●				●	
●	●	●			

●					●
●	●	●			●
		●	●	●	●
●		●			●
●		●			
●	●	●	●		

### 10) Regional akari

40 points

Rules: Place lightbulbs in some cells (one lightbulb per cell) so that all cells in the grid are lightened. Lightbulbs can give light in straight lines until the rays meet a black cell or the edge of the grid. Lightbulbs should not lighten each other. All the regions contain the same number of lightbulbs.

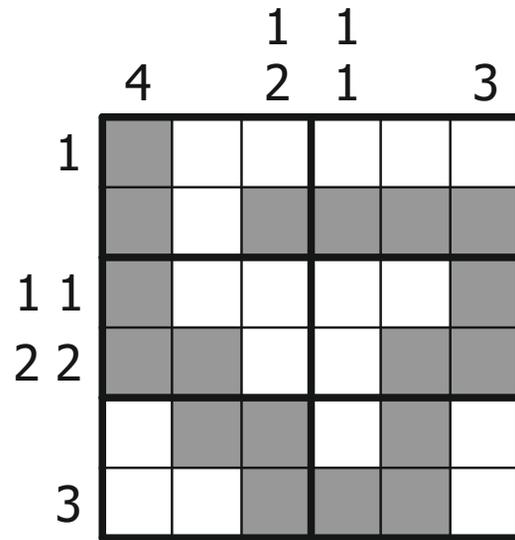
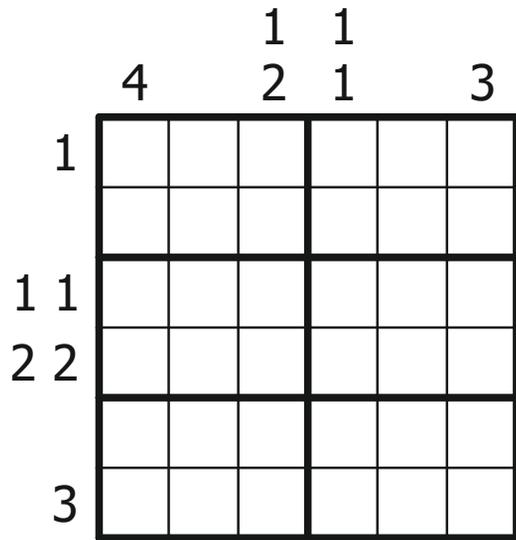
			■	■	
	■				
			■		■
■		■			
■			■		■

○			■	■	○
	■		○		
		○	■		■
■	○	■			○
■		○	■	○	■
○					

# 11) Regional coral

55 points

Rules: Blacken some of the cells in the grid to create a coral. All black cells in the coral must be orthogonally connected. There must be no 2x2 squares of black cells. And all white cells must be connected to the edge of the grid. The numbers on the edge indicate the lengths of successive blocks of coral cells, but not necessarily in the correct order. There must be at least one blank cell between two blocks. All the regions contain the same number of black cells.





# Prague 2018



## Round 12 - Innovative

60 minutes

690 points

1. ABC letter groups .....5 points
2. ABC letter groups .....20 points
3. ABC letter groups .....20 points
4. Stalagtites and stalagmites .....45 points
5. Mirror labyrinth .....45 points
6. Coral with letters .....60 points
7. Inner ABC .....40 points
8. Inner ABC .....40 points
9. ILX .....35 points
10. Point to numbers .....15 points
11. Point to numbers .....15 points
12. Single block .....20 points
13. Single block untouchable .....40 points
14. Worms .....35 points
15. Worms .....30 points
16. Labyrinth .....30 points
17. Labyrinth .....35 points
18. Labyrinth with obstacles .....45 points
19. Labyrinth with obstacles .....80 points
20. Labyrinth with obstacles .....35 points



### 6) Coral with letters

60 points

Rules: Blacken some of the cells in the grid to create a coral. All black cells in the coral must be orthogonally connected. There must be no 2x2 squares of black cells. And all white cells must be connected to the edge of the grid. Then place letters A,B,C (letters A,B in the example) in the painted cells so that each letter appears exactly once in each row and column. The hints around the grid show all the letters that can be found on the first coral segment from the given side, in correct order (from top to bottom resp. from left to right). Dash means there is no letter on the first segment.

	A	B	B	AB	-	
AB						-
BA						BA
BA						BA
BA						-
AB						AB
	B	A	A	-	AB	

	A	B	B	AB	-	
AB	A	B				-
BA			B	A		BA
BA				B	A	BA
BA	B	A				-
AB			A		B	AB
	B	A	A	-	AB	

### 7-8) Inner ABC

40, 40 points

Rules: Place letters A, B, C in the white cells in the grid, so that in every row and every column every letter occurs exactly once (not counting the letters in grey cells); in every row and every column some cells remain empty. The letters in grey cells indicate only the letters that are visible from the given cell both horizontally and vertically. You can see only the first letter in each of the 4 directions. Grey cells are considered invisible.

	B			
			A	
-		AC		
	C			
				-

	B	B	A	C
C	B	A	A	
-	A	AC	C	B
B	C	C		A
A	C		B	-

### 9) ILX

35 points

Rules: Place letters I, L and X in the grid (maximum one letter per cell) so that each letter appears exactly ones in each row and column. Then draw a single closed loop travelling vertically and horizontally between centers of the adjacent cells. The loop cannot visit painted cells and the cells containing letter X and has to visit all the other cells exactly ones. The loop has to make right turn in cells with letter L and has to go straight in cells with letters I. The hints around the grid show the order in which the letters appear in the given row and column (from left to right resp. top to bottom). To score the point you have to both draw the loop and place the letters in the grid.

	LIX	LXI	XLI	LIX	ILX	XLI	ILX	XLI	IXL
XLI									
LXI									
XIL									
LXI									
ILX									
IXL									
ILX									
XLI									
XIL									

	LIX	LXI	XLI	LIX	ILX	XLI	ILX	XLI	IXL
XLI			X	L	I				
LXI		L				X	I		
XIL		X		I			L		
LXI	L			X					I
ILX		I	L					X	
IXL	I					X	L		
ILX			I	L				X	
XLI				X	L	I			
XIL	X				I			L	

### 10-11) Point to numbers

15, 15 points

Rules: Place numbers 1-N in the grid so that each number appears exactly once in each row and column. Some cells will remain empty. If there is an arrow pointing from the cell, it means that the number of digits in this direction corresponds to the number in the cell. Not all possible arrows are given. (Example with numbers 1-3)

↓	↑		
			←

2	3		1
↓	↑		
	1	2	3
1	2	3	
3		1	→
			2

### 12) Single block

20 points

Rules: Place numbers from 1-6 in the grid so that each numbers appears exactly once in every row, column and main diagonal (one cell remaining empty). The numbers around the grid show the sum of all the numbers before the empty cell from the given direction in the given row, column or main diagonal. (Same example as puzzle 13.)

### 13) Single block untouchable

40 points

Rules: Place numbers from 1-7 (1-4 in the example) in the grid so that each numbers appears exactly once in every row, column and main diagonal (one cell remaining empty). The numbers around the grid show the sum of all the numbers before the empty cell from the given direction in the given row, column or main diagonal.  
The same numbers may not touch each other not even diagonally.

	7	10	8
4			
		*	
1			

	7	10	8
4	3	1	
	4	2	3
1	1		4
	2	3	1

### 14-15) Worms

35, 30 points

Rules: Place numbers from 1-6 resp. 1-7 in all the empty cells in the grid so that the numbers do not repeat in any outlined region and along the four grey lines. The numbers in each region must follow the worm rule of alternating higher and lower values. The same numbers may not touch each other not even diagonally.

		3			
1					
	6		5		
		2		2	
					4
			6		

2	6	3	4	5	1
1	4	2	1	3	2
5	6	3	5	4	6
3	1	2	6	2	3
6	5	4	5	1	4
4	2	1	6	3	5

### 16-17) Labyrinth

30, 35 points

Rules: Place numbers from 1-6 resp. 1-7 (1-4 in the example) in all the cells in the grid so that the numbers do not repeat in any row and column. Then draw a closed loop that travels horizontally and vertically between the centers of adjacent cells and visits every cell exactly once. The numbers along the loop must follow the worm rule of alternating higher and lower values. The numbers on the left show the sums of the numbers on the loop segments in the given row (in the correct order). You only need to fill the numbers to score the points.

4	6				
4	4	2			
2	5	3			
5	5				

4	6	1	3	2	4	
4	4	2	4	1	3	2
2	5	3	2	4	1	3
5	5	3	2	4	1	

### 18-20) Labyrinth with obstacles

45, 80, 35 points

Rules: Paint the given number of cells to create obstacles in the grid. Maximum one obstacle in each row and column is allowed. Place numbers from 1-7 in all the remaining cells in the grid so that the numbers do not repeat in any row and column. Then draw a closed loop that travels horizontally and vertically between the centers of adjacent cells and visits every cell not occupied by obstacle exactly once. The numbers along the loop must follow the worm rule of alternating higher and lower values. The numbers on the left show the sums of the numbers on the loop segments in the given row (in the correct order).

The number of obstacles will be given next to each puzzle. (Example with 1 obstacle and numbers 1-5)  
You only need to fill the numbers to score the points.

6	9					
3	5	7				
4	6					
7	4	4				
11	4					

6	9	2	4	1	5	3	
3	5	7	3	1	4	2	5
4	6	1	3		4	2	
7	4	4	5	2	3	1	4
11	4	4	5	2	3	1	



# Prague 2018



## Round 13 - Twisted

90 minutes

810 points

1. ABC-box .....20 points
2. Coral with questionmarks .....15 points
3. Tapa with questionmarks .....40 points
4. Tents with no hints .....10 points
5. Coded doubleblock .....60 points
6. Coded skyscrapers .....60 points
7. Coded coral .....85 points
8. Coded arrows .....95 points
9. Coded laser .....80 points
10. Liar diagonal slitherlink .....55 points
11. Liar masyu .....55 points
12. Pinochio fillomino .....20 points
13. Polygraph .....35 points
14. Wrong doubleblock .....85 points
15. Wrong snake .....25 points
16. Wrong shikaku .....30 points
17. Wrong products .....40 points

### 1) ABC-box

20 points

Rules: Place one of the letters A, B, C in each cell of the grid. The letters on the edge indicate the letters in the appropriate row or column in the correct order. The same consecutive letters are given only once. For a question mark and for numbers at the edge it is unknown which letter stands at this point. However, the number still indicates how often the letter succeeds one another at the corresponding place.

	?			
	?	?	?	
	?	2	B	?
	C	?	?	?
A ? C				
B ? ?				
? ? ? ?				
? A ?				

	?			
	?	?	?	
	?	2	B	?
	C	?	?	?
A ? C	A	B	C	C
B ? ?	B	C	B	B
? ? ? ?	A	C	A	B
? A ?	C	A	A	B

### 2) Coral with questionmarks

15 points

Rules: Blacken some of the cells in the grid to create a coral. All black cells in the coral must be orthogonally connected. There must be no 2x2 squares of black cells. And all white cells must be connected to the edge of the grid. The numbers on the edge indicate the lengths of successive blocks of coral fields. In this puzzle they are **in the correct order**. There must be at least one blank cell between two blocks. All numbers 2 are shown. Questionmarks are used for all the other numbers (1, 3 and more)

								?	2
								?	?
								?	2 ?
								?	?
								?	?
								?	?
								?	2
?	2	2	2	?	?				
		?	?		?	?			

								?	2
								?	?
								?	2 ?
								?	?
								?	?
								?	2
?	2	2	2	?	?				
		?	?		?	?			

### 3) Tapa with questionmarks

40 points

Rules: Blacken some empty cells in a way that all black cells are connected horizontally and vertically and no 2x2 area is completely black. The numbers in the cells give hints on how to blacken the surrounding cells (even diagonally): The numbers give the number of directly connected black cells. Each number represents a group of horizontally or vertically adjacent cells; groups around a hint-cell have to be separated by at least one white cell. The order of the numbers is unimportant. All the hints are replaced by questionmarks, each questionmark represents one number.

??					?
		??			
				?	
	??				
			?		
??					?

??					?
		??			
				?	
	??				
			?		
??					?

#### 4) Tents with no hints

10 points

Rules: Place tents into some of the fields, so that every tree belongs to exactly one tent, that is horizontally or vertically adjacent. Tents do not touch each other, not even diagonally. No other hints are given.

			🌲		🌲
	🌲	🌲		🌲	
		🌲			
	🌲		🌲		

		●	🌲	●	🌲
●	🌲	🌲		🌲	
		●		●	
		🌲			
		●			
●	🌲		🌲	●	

#### 5) Coded doubleblock

60 points

Rules: Blacken some of the empty cells and enter the numbers from 1 to 5 (1-3 in the example) in the remaining cells so that in each row and each column exactly two cells are blacked out and each number occurs exactly once. The numbers on the edge indicate the sum of the numbers that are between the two black cells.

However, some of the numbers have been replaced by letters. Same numbers by the same letters and different numbers by different letters.

	1	2	3	4	2
A					
B				E	
C					
D					
B		E			

	1	2	3	4	2
A	2		3		1
B		2		1	3
C	1		2	3	
D		3	1		2
B	3	1		2	

A=3  
B=2  
C=5  
D=4  
E=1

#### 6) Coded skyscrapers

60 points

Rules: Place numbers from 1-6 (1-4 in the example) in all the empty cell so that they do not repeat in rows and columns. These numbers represent heights of the buildings. The numbers around the grid indicate the number of buildings you can see from the given viewpoint. The building is visible only when it is higher than all the buildings in front of it.

The numbers have been replaced by letters. Same numbers by the same letters and different numbers by different letters.

	H	I	P	
H				
O				
O				
P				

	H	I	P	
H	4	1	3	2
O	1	2	4	3
O	2	3	1	4
P	3	4	2	1

H=1  
I=4  
O=3  
P=2



### 10) Liar diagonal slitherlink

55 points

Rules: Draw a single continuous loop by connecting neighboring dots along the dotted lines or cell diagonals. The loop may not touch or cross itself, and it does not need to touch all of the dots.

The numbers indicate how many edges of a cell are used for the loop. In each row and column there is exactly one number that breaks this rule. In such cell the loop has to go diagonally. The loop cannot travel diagonally in any other cell.

0	3	2	1
1	3	1	0
3	1	1	2
3	2	1	1

0	3	2	1
1	3	1	0
3	1	1	2
3	2	1	1

### 11) Liar masyu

55 points

Rules: Draw a single loop that travels horizontally and vertically between centers of some cells such that the loop does not visit any cell more than once. At every cell containing a white circle the loop must pass straight through that circle and make a 90 degree turn in at least one of the cells adjacent to the circle. At every cell containing a black circle the loop must make a 90 degree turn and travel straight through both cells adjacent to the circle.

The circles are not in their correct positions however. To be able to solve the puzzle you have to move every circle to a horizontally or vertically adjacent cell first. The circles may not overlap after they are all shifted. But the circle can move to a position previously occupied by another circle. To score the points only the loop is required.

	○		●
○	●	○	


	○		●
○			
●	○		

### 12) Pinochio fillomino

20 points

Rules: Dissect the grid into areas and write a number in every cell. The numbers in one area have to be the same and have to tell the number of cells in that area. Areas of same size may not touch horizontally or vertically, but may touch diagonally. Given numbers may belong to the same area, and it is possible that there are areas, where no number is given - even with larger numbers than the ones shown.

The numbers are grouped into triples of the same value. Exactly one of the numbers in each triple is wrong.

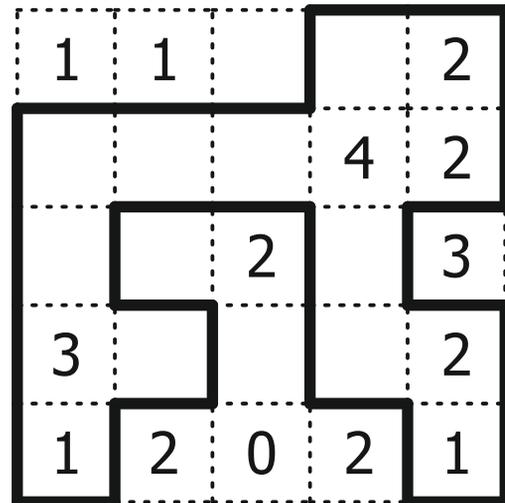
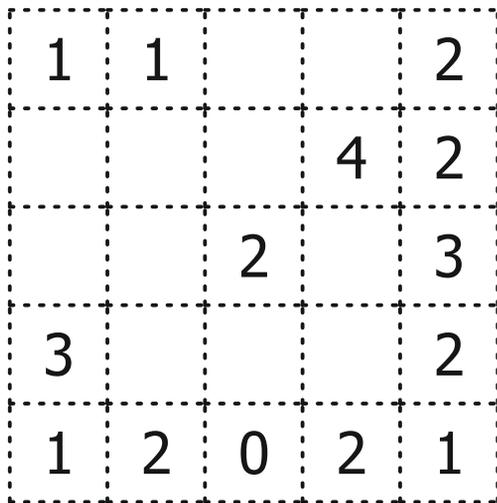
3	2	2	2	4
3	3	1	4	4
2	2	1	3	
	2	1	3	3

1	2	2	4	1
3	3	1	4	4
3	2	3	3	4
1	2	1	3	1

### 13) Polygraph

35 points

Rules: Draw a single closed loop along the grid lines. The numbers that are outside the loop indicate the number of cell sides used by the loop. The numbers that are inside the loop indicate the number of the cell sides unused by the loop.

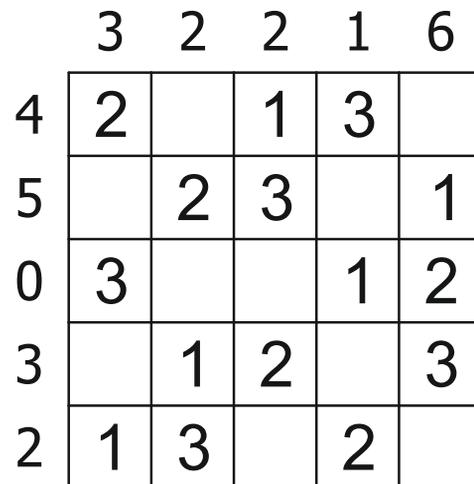
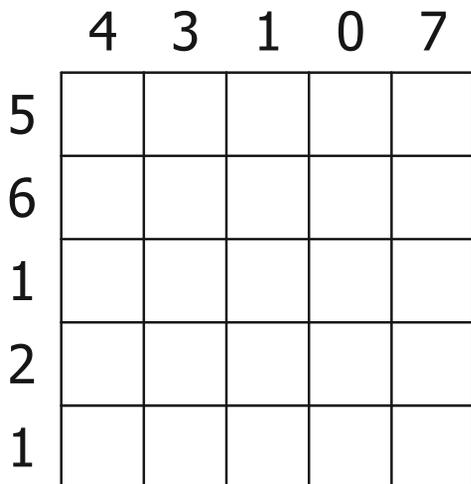


### 14) Wrong doubleblock

85 points

Rules: Blacken some of the empty cells and enter the numbers from 1 to 4 (1-3 in the example) in the remaining cells so that in each row and each column exactly two cells are blacked out and each number occurs exactly once. The numbers on the edge indicate the sum of the numbers that are between the two black cells.

The hints around the grid are all wrong however and are either one more or one less than the correct hints.

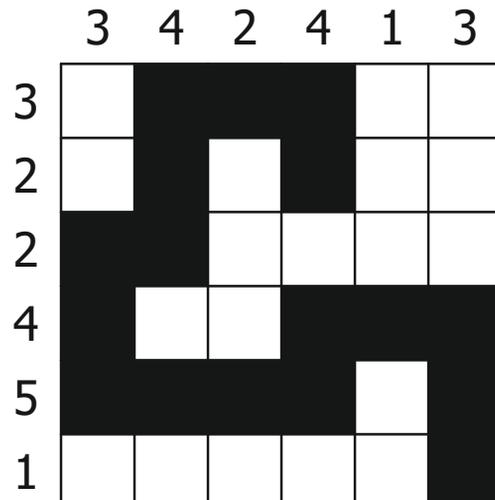
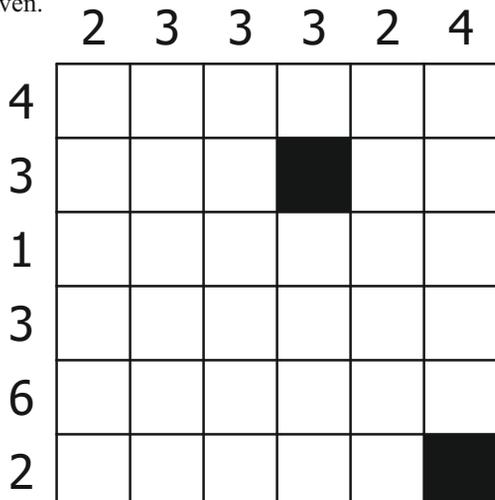


### 15) Wrong snake

25 points

Rules: Draw a snake in the grid. The snake goes from cell to cell vertically or horizontally, but not diagonally. The snake does not touch itself, not even diagonally. The numbers outside the grid indicate how many squares are used by the snake in that row or column.

The hints around the grid are all wrong however and are either one more or one less than the correct hints. Head and tail of the snake are already given.



### 16) Wrong shikaku

30 points

Rules: Divide the grid into rectangular and square areas so that each area contains exactly one number, that each cell is part of one area and that the numbers represent the number of cells of the area.

The hints in the grid are all wrong however and are either one more or one less than the correct hints.

4					4
	7			3	
		7			
	5			4	
5					6

3					3
	6			2	
		6			
	4			3	
4					5

### 17) Wrong products

40 points

Rules: Place all the numbers between 1 - 12 (1-8 in the example) in the grid so that each row and columns contains exactly 2 different numbers. Numbers outside the grid show the products of the two numbers in the given row/column.

The hints around the grid are all wrong however and are either one more or one less than the correct hints.

	20	5	19	15
6				
7				
16				
47				

	21	6	20	16
7	7	1		
8			4	2
15	3		5	
48		6		8



# Prague 2018



## Team Round 1 - Combined

30 minutes

1800 points

36 sectors .....á 50 points

### Combined puzzle

36×50 points

**Rules:**

There is a closed snake in the grid and a full set of pentominoes.

The pentominoes do not touch each other not even diagonally and do not overlap with the snake. They can be rotated and/or reflected.

Place numbers from 1 to 9 to all the other cells (not occupied by snake or pentominoes] so that they do not repeat in rows and columns.

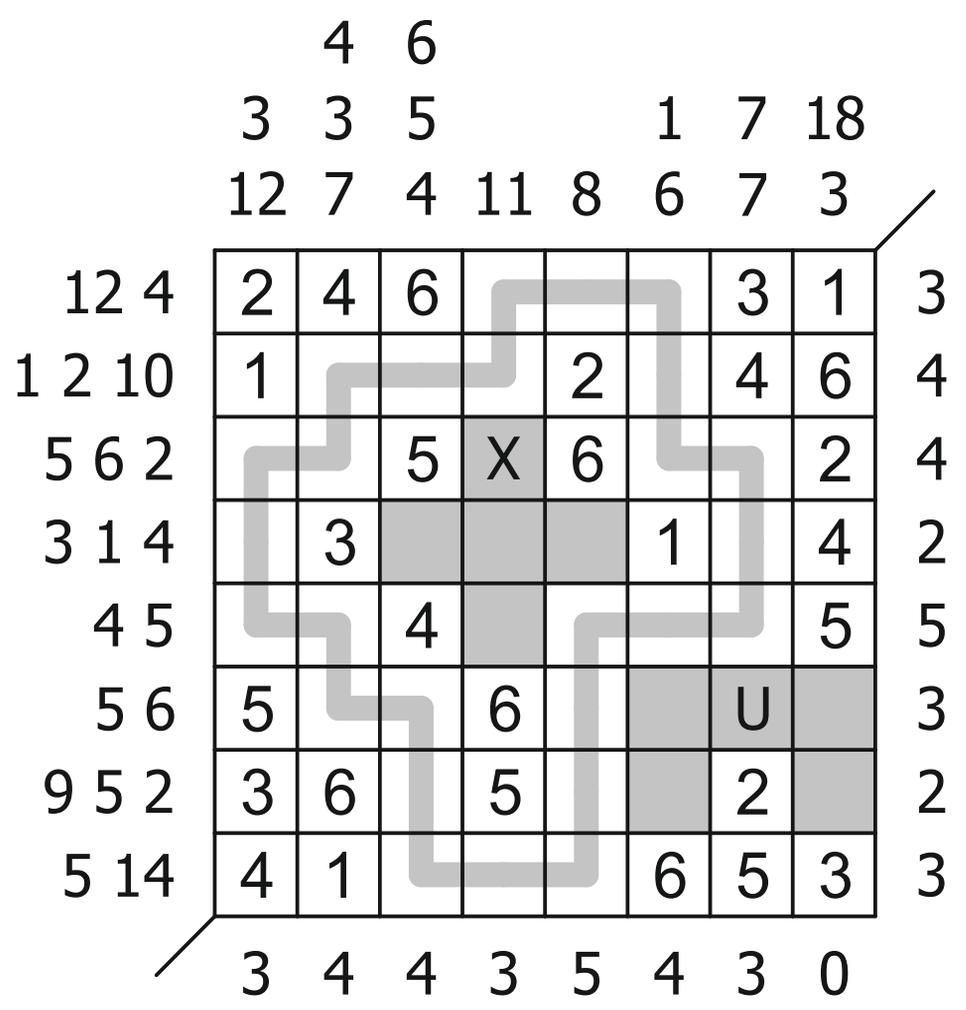
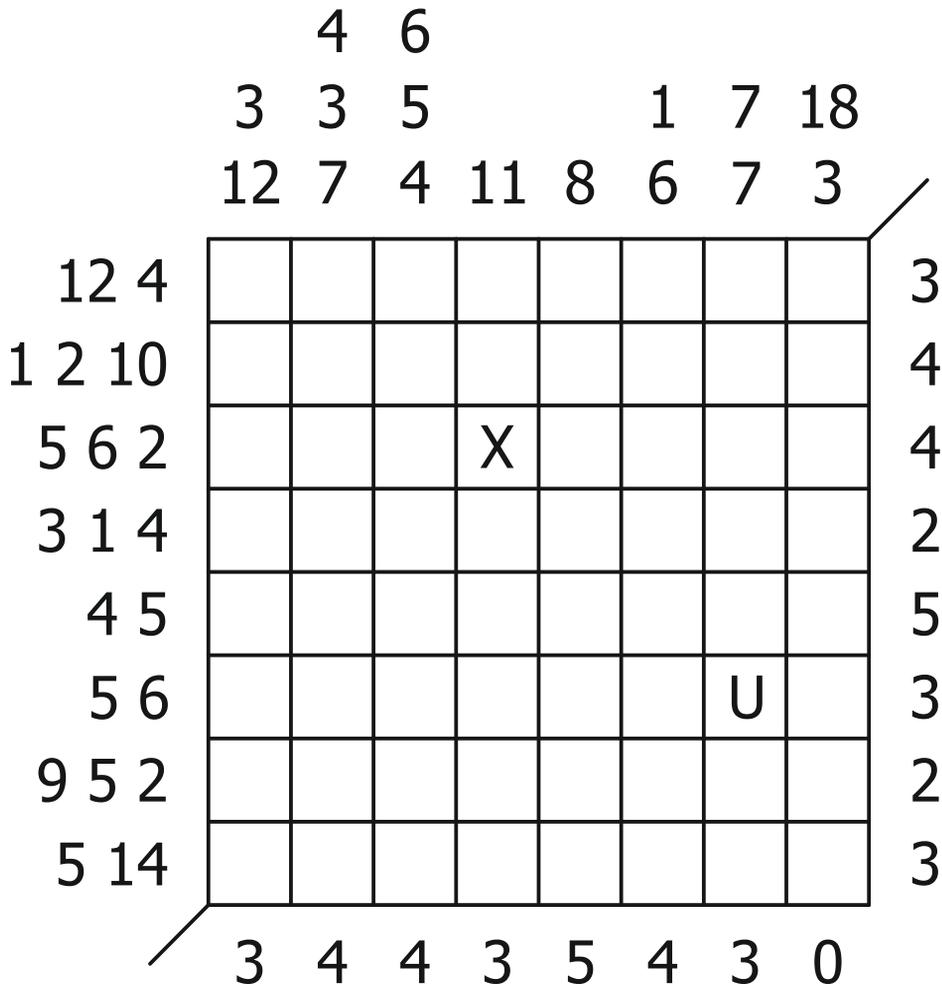
The hints on top and on the left are Japanese sum hints. They represent sums of the groups of numbers that are separated by snake and/or pentominoes.

The hints at the bottom and at the right represent the number of snake cells in the given row or column.

One cell from each pentomino is already given and indicated by the corresponding letter in the cell.

**Scoring:**

The grid is divided into 36 sectors outlined with thicker lines. These sectors are used for scoring purposes only. Each correctly filled sector will bring you 50 point.





# Prague 2018



## Team Round 2 - Hexa

**45 minutes**

**3000 points**

Hex 1 - letters .....	250 points
Hex 1 - coral .....	250 points
Hex 2 - letters .....	250 points
Hex 2 - coral .....	250 points
Hex 3 - letters .....	250 points
Hex 3 - coral .....	250 points
Hex 4 - letters .....	250 points
Hex 4 - coral .....	250 points
Hex 5 - letters .....	250 points
Hex 5 - coral .....	250 points
Hex 6 - letters .....	250 points
Hex 6 - coral .....	250 points

### Hexa ABC with coral loop

**6×2×250 points**

**Rules:**

The puzzle consists of 6 partially overlapping hexagons. Each hexagon represents puzzle As Easy as ABC. It means that each row (horizontal or slanted in one of the two directions) contains letters A,B,C exactly ones. The letters around the grid indicate the first letter visible from the given direction.

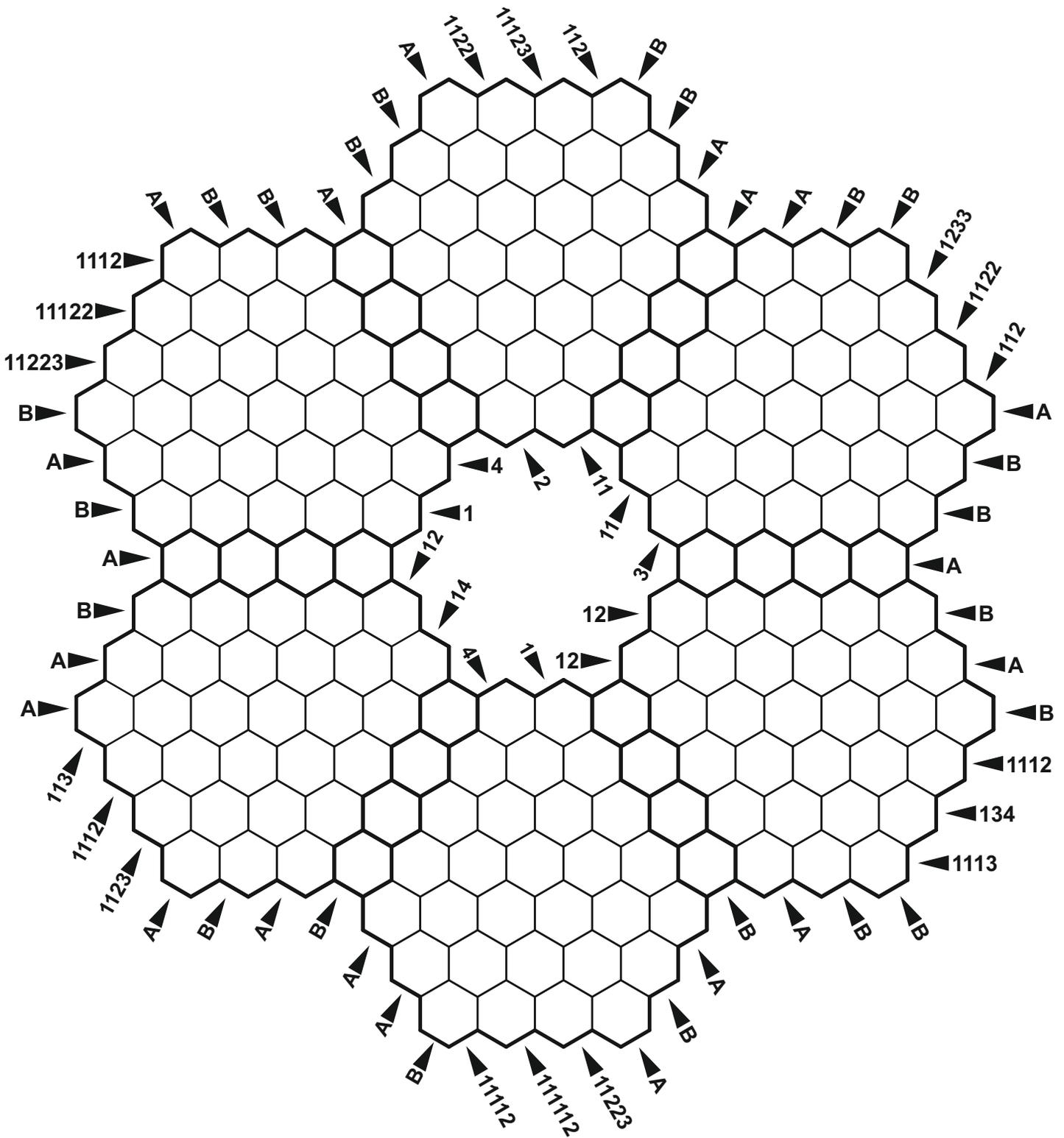
Paint some of the cells not occupied by letters to create a coral like closed path. It means that the painted cells create a single closed loop going through all 6 hexagonal puzzles. The path can branch off but may not create any additional loops. In other words all the cells not belonging to the coral can be connected to either internal or external border of the puzzle. No three coral cells may share common vertex. Numbers around the grid indicate the lengths of the coral segments along the given row (ordered by size).

Some cells may remain empty, not occupied by letter nor coral.

Cells marked with 'x' may not contain any letter or coral.

**Scoring:**

The grid is divided into 6 hexagons outlined with thicker lines. Each correctly filled hexagon in terms of letters will bring you 250 point. Each correctly filled hexagon in terms of coral will bring you another 250 point.







# Prague 2018



## Team Round 3 - Ariadne's thread

**90 minutes**

**4800 points**

Puzzle placement .....	300 points
Puzzle 1 .....	500 points
Puzzle 2 .....	500 points
Puzzle 3 .....	500 points
Puzzle 4 .....	500 points
Puzzle 5 .....	500 points
Puzzle 6 .....	500 points
Puzzle 7 .....	500 points
Puzzle 8 .....	500 points
Puzzle 9 .....	500 points

### Linked paths

**300+9×500 points**

Rules:

The puzzle consists of 9 individual puzzles listed below.

The puzzles are interconnected in the following way. If you arrange the puzzles properly in the grid below (each puzzle covers exactly one of the regions 10x10) you can find a single closed loop (Ariadne's thread) going through all the 9 puzzles. Each puzzle contains one or two pieces of the thread in the form of a line/path/road depending on the character of the puzzle. The loop may cross any border between two adjacent puzzles at most twice.

The individual puzzles may have multiple solutions. But there is only one solution of each puzzle that allows you to create the Ariadne's thread.

The two directional puzzles - Railroad and Password - define the direction of the loop that is valid through the entire puzzle.

You do not need to place the puzzles physically in the central grid. But if you want to, you can bring the scissors with you. There will be 2 copies of each puzzle.

To claim the points for placing puzzles, just mark clearly their placement in the central grid

To claim the points for each individual puzzle, return the solved puzzle including clearly marked entries and exits of the loop. The entries and exits must correspond to the global solution.

## Railroad

Draw a one or two paths in the puzzle that run horizontally and vertically from field center to field center and pass through all fields. At the marked places, the path crosses itself, but nowhere else. Through the fields with numbers, the path must go straight ahead. The numbers are to be traversed along the route in ascending order.

## Tents

Place 17 tents in some of the empty cells so that every tree belongs to exactly one tent, that is located horizontally or vertically adjacent. Tents do not touch each other, not even diagonally. The numbers at the borders give the number of tents in that row or column. Then draw one or two paths traveling horizontally and vertically through all the remaining empty cells.

## Yajilin

Blacken some cells in the grid so that blackened cells do not touch each other from the sides. All remaining cells (except the grey cells) should be traversed by one or two continuous paths, moving horizontally and vertically. Clues inside the grid indicate the number of blackened cells in the corresponding directions. There may exist some blackened cells that are not pointed by any arrow.

## Battleships

Locate the given fleet in the grid. The ships cannot touch each other, not even diagonally. The ships may be rotated. The clues outside the grid indicate the number of ship cells in the corresponding directions. The marked water cells cannot contain any ship. Then draw one or two paths traveling horizontally and vertically through all the cells not occupied by ships.

## Country road+

Draw a one or two paths in the puzzle that run horizontally and vertically from field center to field center. The grid is divide into regions. Each region is visited by the path **at most once** (it means that if the region is visited there is a single entry and exit). The number in the region indicates the number of cells used by the path. In addition there may not be two orthogonally adjacent empty cells from different regions.

## Password path

Draw one or two paths in the grid so that you can read the given password repeatedly along the path. The path travels horizontally, vertically or diagonally between neighbouring cells and does not cross or touch itself. All cells must be visited by a path. Each path must start with the first letter of the password and end with the last letter of the password.

The connections to Ariadne's thread in the neighbouring puzzles are always horizontal or vertical.

## Snake

Draw one or two snakes in the grid. The snake goes from cell to cell vertically or horizontally, but not diagonally. The snake does not touch itself, not even diagonally. The same applies to touching of the snakes between each other.

The numbers outside the grid indicate how many squares are used by the snake in that row or column.

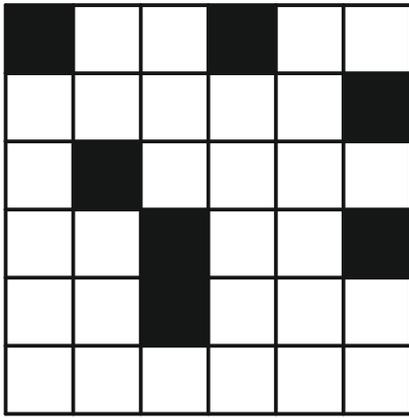
## Bosnian snake

Draw one or two snakes in the grid. The snake goes from cell to cell vertically or horizontally, but not diagonally. The snake does not touch itself, not even diagonally. The same applies to touching of the snakes between each other. The numbers inside the grid indicate how many 8 surrounding squares are used by the snake. The cells with numbers may not be visited by a snake.

## Simple path

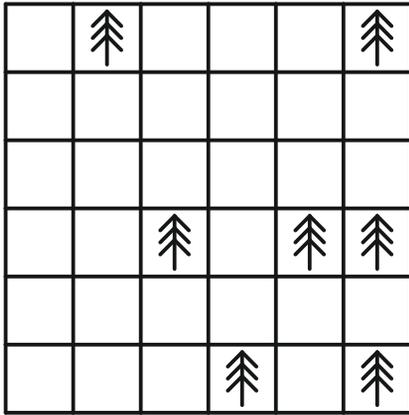
Draw a one or two paths in the puzzle that run horizontally and vertically from field center to field center and pass through all the empty fields. Painted cell may not be visited by a path.

Simple path

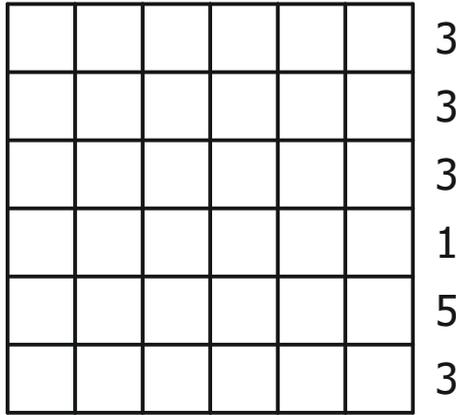


Password path

P	Z	Z	L	E	P
U	L	E	L	Z	U
E	Z	P	Z	L	E
E	P	Z	U	Z	P
Z	L	U	E	Z	U
Z	U	P	L	Z	Z

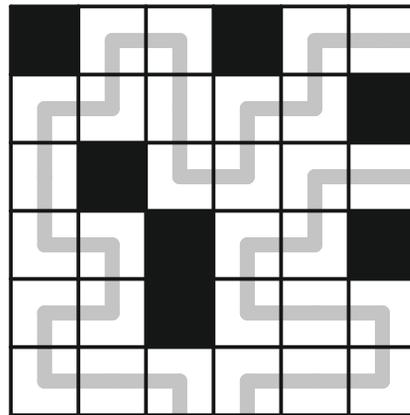


Tents

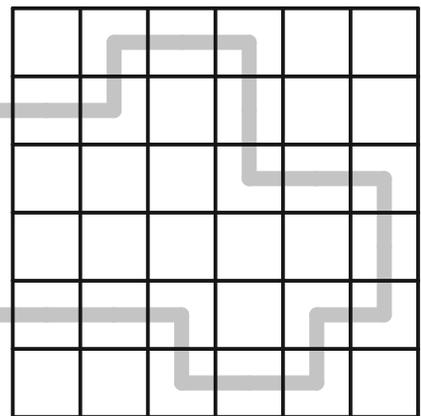
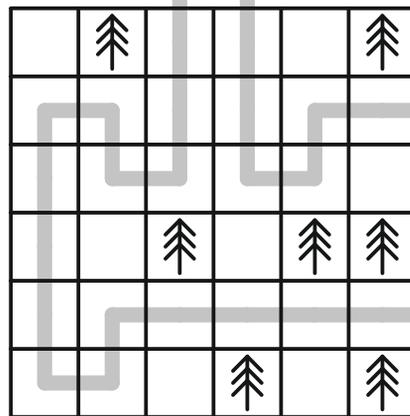


2 3 3 4 3 3

Snake



P	Z	Z	L	E	P
U	L	E	L	Z	U
E	Z	P	Z	L	R
E	P	Z	U	Z	P
Z	L	U	E	Z	U
Z	U	P	L	Z	Z



2 3 3 4 3 3