

# Instructions Booklet



26th WPC  
INDIA 2017

## Final version

### THURSDAY, 19th OCTOBER

#### Session 1

|                       |               |     |            |            |
|-----------------------|---------------|-----|------------|------------|
| 1. Road To Bangalore  | 9:00 - 9:40   | 40m | 450 points | Individual |
| 2. Indian Puzzle Land | 9:50 - 10:50  | 60m | 600 points | Individual |
| 3. Evergreens         | 11:05 - 12:30 | 85m | 900 points | Individual |

#### Session 2

|                      |               |     |             |            |
|----------------------|---------------|-----|-------------|------------|
| 4. Twist             | 14:00 - 15:00 | 60m | 600 points  | Individual |
| 5. Hexed And Remixed | 15:10 - 15:50 | 40m | 400 points  | Individual |
| 6. TVC               | 16:00 - 16:45 | 45m | 450 points  | Individual |
| 7. Deception         | 17:05 - 17:40 | 35m | 1400 points | Team       |
| 8. Kashmir Carpet    | 17:50 - 18:30 | 40m | 1600 points | Team       |

### FRIDAY, 20th OCTOBER

#### Session 3

|                       |               |      |             |            |
|-----------------------|---------------|------|-------------|------------|
| 9. Marathon           | 9:00 - 10:50  | 110m | 1100 points | Individual |
| 10. Parallel Universe | 11:05 - 12:05 | 60m  | 650 points  | Individual |
| 11. SVC               | 12:15 - 12:40 | 25m  | 250 points  | Individual |

#### Session 4

|                      |               |     |             |            |
|----------------------|---------------|-----|-------------|------------|
| 12. 123 GO           | 14:10 - 14:50 | 40m | 450 points  | Individual |
| 13. No Numbers       | 15:00 - 15:40 | 40m | 400 points  | Individual |
| 14. Fillomino-Fillia | 15:50 - 16:20 | 30m | 300 points  | Individual |
| 15. Loop Pool        | 16:50 - 17:40 | 50m | 2500 points | Team       |
| 16. Sampler Platter  | 17:50 - 18:25 | 35m | 1400 points | Team       |

### SATURDAY, 21st OCTOBER

#### Session 5

|              |               |     |             |            |
|--------------|---------------|-----|-------------|------------|
| 17. FAST     | 9:00 - 10:00  | 60m | 600 points  | Individual |
| 18. PIC      | 10:10 - 11:30 | 80m | 1000 points | Individual |
| 19. Logidoku | 11:45 - 12:25 | 40m | 500 points  | Individual |

#### Session 6

|                   |               |     |             |            |
|-------------------|---------------|-----|-------------|------------|
| 20. Puzzle Fusion | 13:55 - 14:25 | 30m | 350 points  | Individual |
| 21. Broken Pieces | 14:35 - 14:50 | 15m | 160 points  | Individual |
| 22. DWBH          | 15:15 - 15:55 | 40m | 1600 points | Team       |
| 23. Word Show     | 16:10 - 17:00 | 50m | 2500 points | Team       |

1. Each competitor has to sit at any of the pre-allocated desks of their respective teams in individual rounds. Teams have to work at their pre-allocated desks 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 must clearly write their name, team and registration number on the front page 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.
4. Competitors must not open their booklets/envelopes before the official start of the round. When the signal for the start of the round has been given, competitors may open their booklets/envelopes and begin solving the puzzles.
5. During each individual round, competitors have to remain silent, unless declaring completion of a round.
6. During team rounds, team members may talk to each other, unless it is stated otherwise in the round's note, but should do this with respect to other teams.
7. To declare a round complete, a competitor must close the competition booklet, clearly state 'finished' and raise an arm with the booklet. The competitor's arm must be raised until the booklet is collected. The same rules apply for the team rounds.
8. Competitors or teams who complete a round more than five minutes in advance, are allowed to leave the competition hall quietly. Competitors or teams who complete a round with five minutes or less left are not allowed to leave their desks to not cause unnecessary disruption to fellow competitors.
9. Competitors who leave the competition hall for any reason will be not allowed to continue in that round.
10. When the signal to finish a 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.
11. At the end of a round, competitors have to remain seated until all booklets have been collected.
12. Mobile phones and electronic devices are not permitted to be used in the competition hall during the rounds. The devices have to be turned off and must not be placed on the competitor's desk.
13. 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.
14. Competitors may not use cameras or other recording devices during rounds. Only 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.
15. 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.
16. Puzzles can be completed in any order within a round, unless it is stated otherwise in the round's note. 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.
17. The boxes above each puzzle are reserved for markers' notes. Competitors must not write in the boxes.
18. Permitted items which can be used in the competition hall, unless stated otherwise, are: pens, pencils, pencil sharpeners, erasers, rulers, scales, blank papers and instruction booklets annotated with notes regarding puzzle instructions and preparation notes.
19. Drinks and snacks are permitted as long as they do not disturb other competitors with a strong smell or rustling packet.
20. It is strictly forbidden to use electronic devices such as music players or headphones or any type of calculator. Use of such equipment may lead to the disqualification of the competitor.
21. 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.
22. When a round has been evaluated, fully marked booklets are returned to a team member of the respective country.

23. In case of any query after a booklet has been returned to a competitor, the query must be raised within the specified time. The booklet should be left with the organizers for investigation.
24. Puzzles may be photographed during the marking phase in order to prevent subsequent interventions.
25. Team captains are responsible for ensuring that any information given to them related to the competition is effectively relayed to their team.
26. 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 schedule, or by not rewarding any points for it to any of the competitors.
27. The official competition booklets will not contain examples given in the instruction booklet. Therefore, we recommend to bring the Instruction Booklet, which contains an example of every puzzle type that will be part of the championship.
28. In the team rounds, the official competition booklets may not contain the instructions of puzzles, only the names. It is advised to bring at least one Instruction Booklet for a team for these rounds.
29. In any case of inconsistency between the instruction booklet and the official competition booklets, e.g. instructions or points, the information in the final version of the instruction booklet will be considered valid.
30. In the competition hall, a timer counting down to the end of the round will be visible for all the competitors.

## Scoring and Bonuses

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1. Points will be awarded only for fully and correctly solved puzzles. In general, there is no partial points unless it is stated otherwise in the round's note.
2. In individual rounds, the bonus points for a round for each full remaining minute will be awarded to any competitor who correctly solves all the puzzles in the round.
3. In team rounds, the bonus points for a round for each full remaining minute will be awarded to any team who correctly solves all the puzzles in the round.
4. At the judge's discretion, 0.8x bonus, rounded to the closest integer, will be awarded in the case of a single minor mistake in no more than one Puzzle. A minor mistake is considered as at most two incorrectly represented cells in at most one of the Puzzles. Any variance from this is noted in individual round notes.

All examples in the instruction booklet were made by the organizing team. As exceptions, some examples have been taken from the Puzzle Innovation Contest on the WSPC website. They cannot be commercially used. All rights have been reserved.

We would like to thank UKPA (United Kingdom Puzzle Association), the organizers of WSC & WPC 2014, who kindly let us use parts of the Competition Rules from the Instruction Booklet published for the aforementioned event.

Any breach of the rules in this document may lead to a competitor or team being disqualified from the round or competition.

The decision of the tournament directors is final.

## Glossary

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### Odd and Even

Odd digits are 1, 3, 5, 7, 9.

Even digits are 2, 4, 6, 8.

### Adjacent and Neighbouring

Cells sharing an edge are adjacent. A cell can have a maximum of four adjacent cells, unless the grid structure is different. Cells sharing an edge or a corner are neighbouring. A cell can have a maximum of eight neighbouring cells.

### MxN region/grid

A MxN region/grid is a region/grid with 'M' rows and 'N' columns.

### Touching

Cells that share an edge or a corner touch each other, and this applies to any contents placed in those cells.

## **Queens**

A Queen, as in chess, can move in a straight line in any of the eight directions, Top, Top-Right, Right, Bottom-Right, Bottom, Bottom Left, Left and Top-Left, in a straight line of cells, starting from the first cell touching the queen cell in that direction. Queens can move for any length unless certain things mentioned in the rules block the movement.

## **Single connected area**

This phrase is used repeatedly in puzzles with either shading or white cells that must adhere to the phrase. The phrase means that from any cell in the group described, it must be possible to visit any other cell in the group just by traveling along grid edges through other cells in the group.

## **Loops**

In most loops, the following line is used – ‘Draw a closed loop passing through the centres of cells horizontally and vertically’. In all such cases the loop passes through grid-edges via the centres of cells. Unless explicitly mentioned, the following rules are inclusive of a loop that does not cross, overlap or intersect itself. In general, if these behaviours are not mentioned, they are not allowed. A slight variation to the above has ‘Draw a closed loop passing through the centres of **all** cells horizontally and vertically’, and this means all cells the loop can visit within the rules provided, must be visited. This is not necessarily the case when the word ‘all’ is not given, but it can happen then too as part of solving.

For Round 15, the only information given is that a loop visits all cells, so every other characteristic a loop may have may or may not be allowed.

## **Consecutive**

Two digits are consecutive if their difference is 1. If the word is used in the context of cells, it is a series of cells in the same row or column sharing grid edges at all points across the series.

## **2x2 group/area of cells**

This phrase is used to describe the four cells immediately touching any given point in a typical square grid. If there are substitutions for the same in irregular grids, they are explicitly explained in individual puzzles.

## **Checkerboard**

A checkerboard pattern is a 2x2 area of cells where the top-left and bottom-right cells are of one type and the top-right and bottom-left cells are of another type.

## **Dividing the grid into regions**

Unless explicitly mentioned, wherever this kind of phrasing comes up, the regions must contain full cells within them, and not partial cells. Also, there will not be a requirement for any unnecessary bold lines that do not connect to close up a region.

## **Rotation and reflection are allowed**

This phrase is usually used in puzzles where a given list of shapes or objects including words and numbers are required to be placed into the grid. It means that even the rotated version or the reflected version of the given shape is considered to be the shape itself replicated in the grid, so it satisfies the instance of that shape appearing in the bank.

## **Across or down**

This phrase is used generally in word puzzles and it means that a word must only be placed in such a way that it can be read, as it is read in the given list, from left to right or top to bottom. For instance, a word ‘Puzzle’ cannot be placed in the grid as ‘elzzuP’ if this phrase is used.

## **Corresponding row or column**

This phrase is generally used in puzzles with outside clues. For a clue outside the left of the grid, the row must be used to satisfy it, and if order/direction is specified then it has to be satisfied from left to right, if not, it can be satisfied from right to left too. Similarly, for a clue outside the top (or bottom) of the grid, the column must be used to satisfy it.

## **Visibility/looking/etc.**

A lot of puzzles have a characteristic of ‘visibility’, and the rules may say that certain conditions must be met when ‘looking from’ a point, or some other variation of this phrase. In all cases, it means that if an observer was viewing the cells in that direction in a straight line (row and/or column), the observer’s vision would capture the given conditions. In some cases where counting is involved, this comes with the phrase ‘including the cell itself’, and in such cases the observer is placed in a cell and can observe in horizontal and vertical directions till the specified vision blockers, and can of course observe their own cell too, so all such cells get added to the count for the observer.

## **Round Notes**

Round notes are for notations, scoring details, paper details and other meta details of the round.

## **Partial Points**

For Puzzles with partial points, the points will be awarded only if it is part of the overall solution, unless an exception is mentioned in the individual round notes.

# 01 ROAD TO BANGALORE

450 Points

40 Minutes

10x Bonus

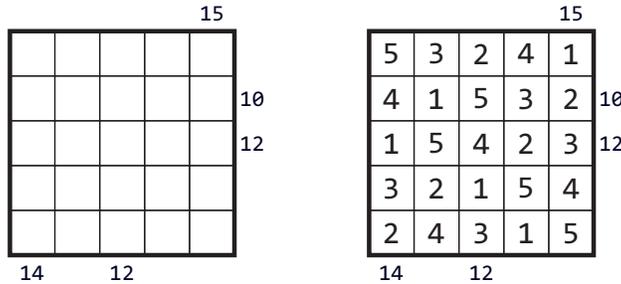
Individual

Round note: This round contains 11 puzzles across 11 different types, including popular classics and assorted variations.

## 1. Sum Skyscrapers

90 Points

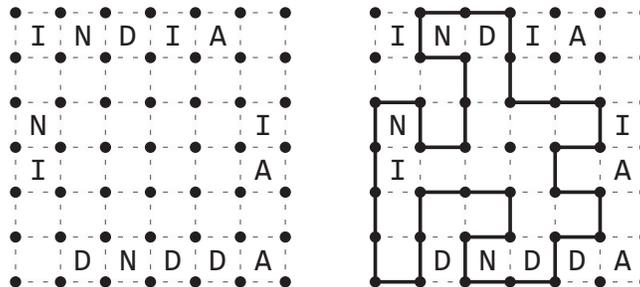
Place a digit from 1 to N, in an NxN grid, into each of the empty cells so that each digit appears exactly once in each row and column. Each digit inside the grid represents the height of the skyscraper in that cell. Each number outside the grid represents the sum of heights of skyscrapers that can be seen in the corresponding row or column. Taller skyscrapers hide shorter ones.



## 2. Coded Slitherlink

40 Points

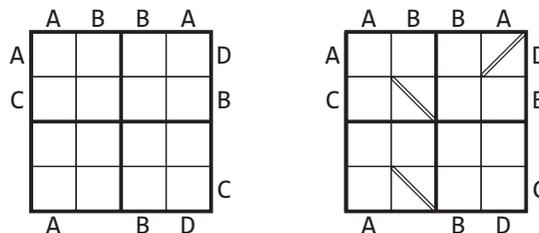
Draw a closed loop by connecting dots along the dashed lines. The loop can't touch or cross itself. A number in a cell indicates the number of segments used by the loop around that cell. All numbers are replaced by letters. All instances of the same letter must become the same number and different letters must become different numbers.



## 3. Bangalore Mirror

25 Points

Place mirrors in the grid, at most one per thick-outlined region such that no two cells containing mirrors touch each other, even diagonally. Lasers enter the grid from each marked row/column and turn 90-deg at mirrors and finally exit the grid. Some entry-exit pairs of lasers are marked by alphabets. If there are multiple pairs of the same alphabet, it is part of solving to identify the right pairs.





Divide the grid into several regions along the grid-lines. Each region has the letters of the given word, exactly as many times as they appear in the word. Each letter must be part of exactly one region.

EVENS

|   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|
| V | S | E | E | V | S | E | N | E | E |
| V | N | N | E | E | E | N | N | S | S |
| S | S | E | E | E | S | N | E | V | V |
| E | S | E | E | N | N | E | E | E | E |
| E | E | N | N | S | V | V | V | S | S |
| N | V | V | V | S | E | V | N | E | E |

|   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|
| V | S | E | E | V | S | E | N | E | E |
| V | N | N | E | E | E | N | N | S | S |
| S | S | E | E | E | S | N | E | V | V |
| E | S | E | E | N | N | E | E | E | E |
| E | E | N | N | S | V | V | V | S | S |
| N | V | V | V | S | E | V | N | E | E |

9. Pentomino Selection

Place the given Pentominos in grid. Pentominos do not touch each other, even diagonally. Rotations and reflections are considered the same shape. Pentominos cannot be placed in shaded cells. The numbers outside the grid indicate the number of cells occupied by pentominos in the corresponding row or column.

**I**   **P**   **U**

4                      3

|  |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

0

4                      3

|   |   |   |   |   |
|---|---|---|---|---|
| U | U |   | P | P |
| U |   |   | P | P |
| U | U |   | P |   |
|   |   |   |   |   |
| I | I | I | I | I |

0

10. Coded Shikaku

Divide the grid into rectangles, each containing only one given number or letter showing the number of cells in the rectangle. Letters can take up values from 1 to 10 including those already given in other cells. All instances of the same letter must become the same number and different letters must become different numbers.

|   |   |   |  |
|---|---|---|--|
|   | 2 | 3 |  |
|   |   | 3 |  |
|   |   |   |  |
|   |   |   |  |
| T | W | O |  |

|   |   |   |  |
|---|---|---|--|
|   | 2 | 3 |  |
|   |   | 3 |  |
|   |   |   |  |
|   |   |   |  |
| T | W | O |  |

11. Yin Yang

Fill in the grid with white and black circles such that all white circles and all black circles form a single connected area. No 2x2 region can contain circles of the same colour.

|   |   |   |   |   |
|---|---|---|---|---|
| ○ |   |   |   |   |
|   | ○ |   | ○ |   |
|   |   | ○ |   |   |
|   |   |   | ○ |   |
|   | ● |   | ○ |   |
|   |   |   |   | ● |

|   |   |   |   |   |
|---|---|---|---|---|
| ○ | ● | ● | ● | ● |
| ○ | ○ | ○ | ○ | ○ |
| ○ | ● | ○ | ● | ● |
| ○ | ● | ○ | ○ | ○ |
| ○ | ● | ● | ● | ○ |
| ○ | ○ | ○ | ● | ● |

# 02 INDIAN PUZZLE LAND

600 Points

60 Minutes

10x Bonus

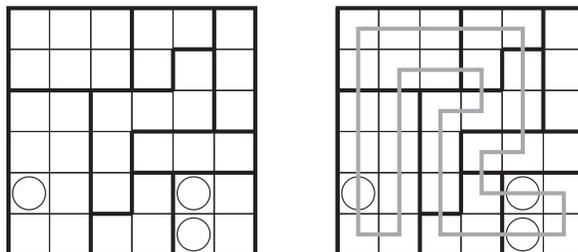
Individual

Round note: This round contains 16 puzzles across 8 different types. All types in this round were originated by Indian authors.

## 1.2. Regional Loop

35 + 65 Points

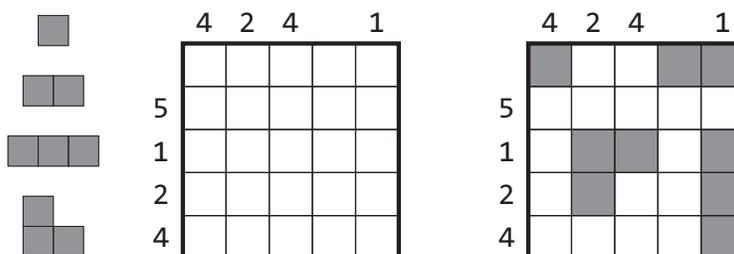
Draw a closed loop passing through centres of cells horizontally or vertically. The loop passes straight through all circled cells. The loop may or may not visit a region. The number of turns the loop makes in every visited region is constant across the grid.



## 3.4. Place by Product

30 + 70 Points

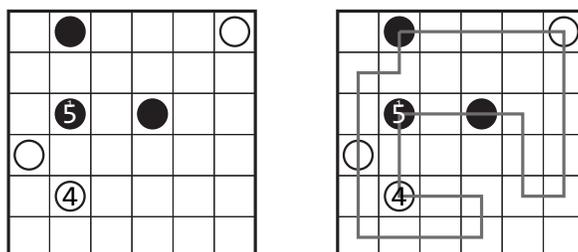
Place the given set of shapes into the grid. Shapes do not touch each other, even diagonally. Rotations and reflections are considered the same shape. The shapes divide rows and columns into groups of adjacent unoccupied cells. The numbers outside the grid indicate the multiplicative product of the sizes of the unoccupied groups in the corresponding row or column.



## 5.6. Balance Loop

50 + 45 Points

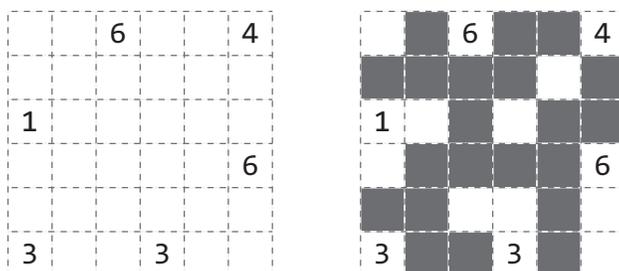
Draw a closed loop passing through centres of cells horizontally or vertically. All white circles must have equal segment lengths on both sides of the circle before turning. All black circles must have unequal segment lengths on both sides of the circle before turning. Numbers indicate the sum of the segment lengths on both sides of the circle.



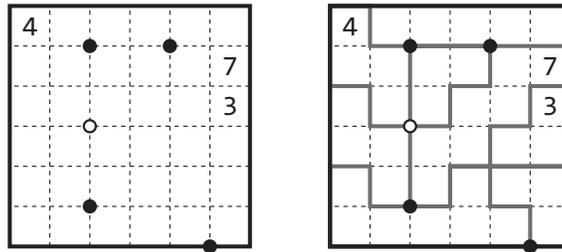
## 7.8. Canal View

10 + 25 Points

Shade some empty cells to create a single connected group. Cells with numbers cannot be shaded, and the shaded cells cannot form a 2x2 square anywhere in the grid. Each numbered cell indicates the total number of shaded cells connected vertically and horizontally to that numbered cell, in a straight line till the next numbered/unoccupied cell, or the edge of the grid.

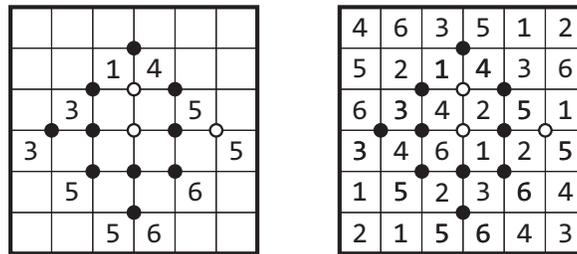


Draw vertical/horizontal lines along the dashed lines to divide the grid into regions. A region may contain at most one number, equal to the area of the region. No region may cover a 2x2 area. Some dots are "heavy" and have 3 or 4 lines connected to them. Black dots indicate heavy dots with exactly three lines; white dots indicate heavy dots with exactly four lines. Not all heavy dots are given, but there can be no heavy dots one cell-edge away from the indicated ones.



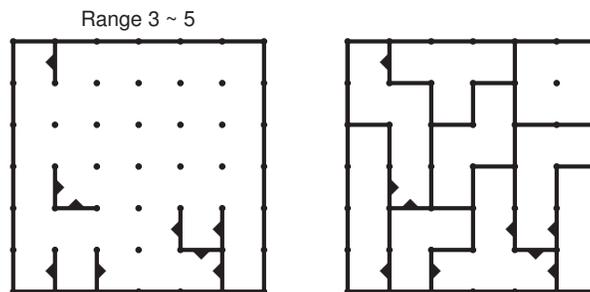
11,12. Consecutive Quads

Place a digit from 1 to N, in an NxN grid, into each of the empty cells so that each digit appears exactly once in each row and column. White dots indicate that the 2x2 area around them contain exactly one consecutive pair of digits. Black dots indicate that the 2x2 area around them contain at least two consecutive pairs of digits. Not all dots are given. Repeats are allowed, e.g., 2-4-5-6 is valid with 4-5 and 5-6, and so is 2-5-6-5.



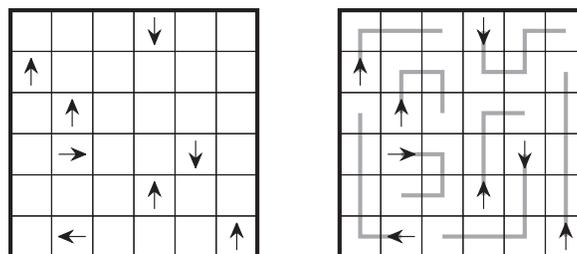
13,14. Heterocut

Draw vertical/horizontal lines between the dots to divide the grid into regions. All regions have different shapes, that is, no two shapes can be the same after rotation and/or reflection. All region sizes are in the range given above the puzzle. Arrows always point from a smaller to a larger region.



15,16. Reachability

Draw paths from each each arrow such that all cells of the grid are visited by paths. A path can move only into the cell that is pointed at by the arrow, and then moving through the centres of cells horizontally or vertically. A path can visit either four or five cells including the cell with the arrow.



# 03 EVERGREENS

900 Points

85 Minutes

10x Bonus

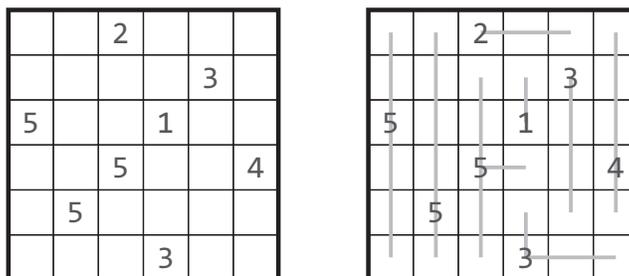
Individual

Round note: This round contains 32 puzzles across 16 different types. All types in this round are familiar to WPC regulars and have stayed the course in popularity over the years.

## 1,2. Four Winds

10 + 35 Points

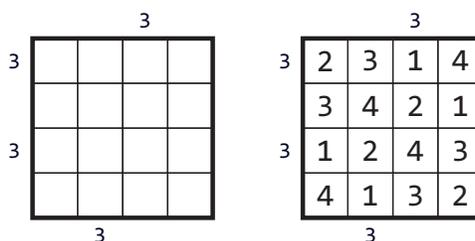
Draw one or more horizontal or vertical lines from each numbered cell. The lines cannot cross other numbered cells. Each number indicates the total number of cells connected by its lines, the numbered cells themselves are not counted. No lines overlap or intersect each other. Each empty cell is visited by exactly one line.



## 3,4. Skyscrapers

10 + 25 Points

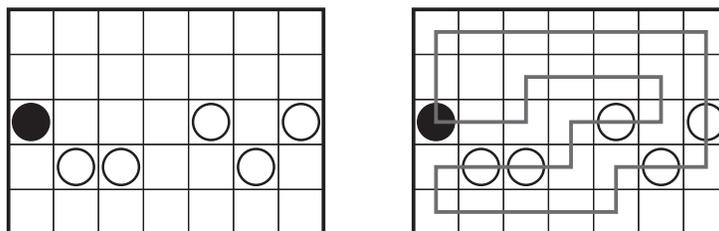
Place a digit from 1 to N, in an NxN grid, into each of the empty cells so that each digit appears exactly once in each row and column. Each digit inside the grid represents the height of the skyscraper in that cell. Each number outside the grid represents the number of skyscrapers that can be seen in the corresponding row or column. Taller skyscrapers hide shorter ones.



## 5,6. Masyu

10 + 15 Points

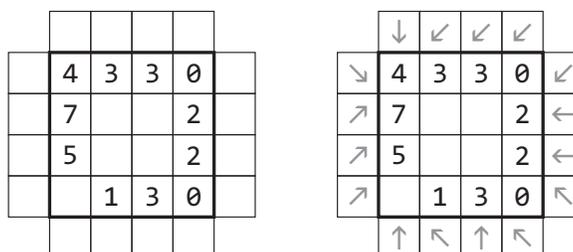
Draw a closed loop passing through centres of cells horizontally or vertically, passing through all circles. The loop must go straight through the cells with white circles, with a turn in at least one of the cells immediately before/after each white circle. The loop must make a turn in all the black circles, but must go straight in both cells immediately before/after each black circle.



## 7,8. Arrows

30 + 15 Points

Draw arrows in the cells around the boldly outlined grid, one arrow per cell. Each arrow points to at least one cell in the grid. The numbers inside the grid show the total number of arrows pointing towards them.



Place magnetic and non-magnetic plates in the grid. Each magnetic plate has 2 halves: one positive (+) and one negative (-). Halves with the same polarity can't touch each other by a side. The numbers outside the grid indicate the number of magnetic halves with the indicated polarity in the corresponding row or column.

|   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
|   |   |   |   |   |   | 2 | 2 |
|   |   |   |   |   |   | 2 | 2 |
|   |   |   |   |   |   | 3 | 2 |
|   |   |   |   |   |   | 2 | 3 |
|   |   |   |   |   |   | 2 | 2 |
|   |   |   |   |   |   | 3 | 3 |
| 2 | 3 | 3 | 1 | 2 | 3 | + |   |
| 3 | 2 | 2 | 3 | 1 | 3 |   | - |

|   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
| - | + | - |   |   | + | 2 | 2 |
|   |   | + | - | + | - | 2 | 2 |
| - | + | - | + |   | + | 3 | 2 |
| + | - | + | - |   | - | 2 | 3 |
| - | + |   |   | - | + | 2 | 2 |
| + | - | + | - | + | - | 3 | 3 |
| 2 | 3 | 3 | 1 | 2 | 3 | + |   |
| 3 | 2 | 2 | 3 | 1 | 3 |   | - |

11,12. Star Battle

Place stars in some cells such that each row, column, and boldly outlined region contain the indicated number of stars. Stars cannot touch each other, even diagonally.

|  |  |  |  |  |  |
|--|--|--|--|--|--|
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

|   |   |   |   |   |   |
|---|---|---|---|---|---|
|   |   |   | ★ |   |   |
| ★ |   |   |   |   |   |
|   |   |   |   | ★ |   |
|   | ★ |   |   |   |   |
|   |   |   |   |   | ★ |
|   |   | ★ |   |   |   |



13,14. Akari

Place light bulbs in some white cells in the grid so that every white cell is illuminated. A cell is illuminated by a light bulb if they are in the same row or column, and if there are no black cells between them. No light bulb may illuminate another light bulb. A number in a black cell indicates the number of light bulbs sharing an edge with that cell.

|  |   |   |   |  |  |   |   |
|--|---|---|---|--|--|---|---|
|  |   |   | 1 |  |  |   |   |
|  | 2 |   |   |  |  |   |   |
|  |   | 3 |   |  |  | 3 |   |
|  |   |   |   |  |  |   | 3 |
|  |   |   |   |  |  |   | 1 |

|   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
|   |   | ● | 1 |   |   |   | ● |
| ● | 2 |   |   |   |   | ● |   |
|   | ● | 3 | ● |   |   | 3 | ● |
|   |   | ● |   |   |   | ● | 3 |
|   |   |   |   | ● | 1 |   | ● |

15,16. Tents

Place one distinct tent next to each tree horizontally or vertically. Tents do not touch each other, even diagonally. The numbers outside the grid indicate the number of tents in the corresponding row or column.

|   |   |  |   |  |   |
|---|---|--|---|--|---|
|   | 🌴 |  |   |  | 2 |
|   |   |  | 🌴 |  |   |
|   | 🌴 |  |   |  |   |
|   |   |  | 🌴 |  | 🌴 |
| 🌴 | 🌴 |  |   |  |   |
|   |   |  | 🌴 |  | 2 |
| 3 |   |  |   |  | 1 |

|   |   |   |   |  |   |   |
|---|---|---|---|--|---|---|
| 🌴 | 🌴 |   | 🌴 |  |   | 2 |
|   |   |   | 🌴 |  |   |   |
| 🌴 | 🌴 |   | 🌴 |  | 🌴 |   |
|   |   |   | 🌴 |  | 🌴 |   |
| 🌴 | 🌴 | 🌴 |   |  |   |   |
| 🌴 |   |   | 🌴 |  | 🌴 | 2 |
| 3 |   |   |   |  |   | 1 |

Find out the correct series of digits with the help of the information given by the black and white dots. Black dots imply correct digits in the correct position while white dots imply correct digits in the wrong position. Digits are not repeated and 0 is not used.

|             |              |
|-------------|--------------|
| 9 8 1 3 ●●  | 9 8 1 3 ●●   |
| 4 5 6 7 ○   | 4 5 6 7 ○    |
| 2 8 9 5 ●●○ | 2 8 9 5 ●●○  |
| ○○○○ ●●●●   | 2 8 5 3 ●●●● |

19,20. Yajilin

Blacken some white cells and draw a closed loop passing through centres of all remaining white cells horizontally or vertically. Blackened cells cannot share an edge with each other. Some cells are outlined and in grey and cannot be part of the loop. Numbered arrows in such cells indicate the total number of blackened cells in the direction pointed at by the arrow.

21,22. Cave

Shade some cells to leave behind a single connected group — the cave. All shaded cells must be connected horizontally or vertically through other shaded cells to an edge of the grid. All numbered cells must be a part of the cave, with each number indicating the total number of cells connected vertically and horizontally to the numbered cell, including the cell itself.

|   |   |  |   |
|---|---|--|---|
|   | 3 |  | 2 |
| 2 |   |  | 3 |
|   |   |  |   |
|   | 3 |  | 2 |
| 3 |   |  | 4 |

|   |   |  |   |
|---|---|--|---|
|   | 3 |  | 2 |
| 2 |   |  | 3 |
|   |   |  |   |
|   | 3 |  | 2 |
| 3 |   |  | 4 |

23,24. Battleships

Place the given fleet of ships with the shapes of the ships as shown. The numbers outside the grid indicate the number of cells occupied by a ship segment in that row or column. Ships cannot touch each other, even diagonally. Some cells are known to be water unoccupied by ships, and are indicated by waves.

|   |   |   |   |   |  |   |
|---|---|---|---|---|--|---|
|   |   |   |   |   |  | 2 |
|   |   |   |   |   |  | 4 |
|   |   |   |   |   |  | 2 |
|   |   |   |   |   |  | 0 |
|   |   |   |   |   |  | 4 |
|   |   |   |   |   |  | 3 |
|   |   |   |   |   |  | 3 |
|   |   |   |   |   |  | 2 |
| 5 | 3 | 3 | 2 | 2 |  | 5 |

|   |   |   |   |   |  |   |
|---|---|---|---|---|--|---|
|   |   |   |   |   |  | 2 |
|   |   |   |   |   |  | 4 |
|   |   |   |   |   |  | 2 |
|   |   |   |   |   |  | 0 |
|   |   |   |   |   |  | 4 |
|   |   |   |   |   |  | 3 |
|   |   |   |   |   |  | 3 |
|   |   |   |   |   |  | 2 |
| 5 | 3 | 3 | 2 | 2 |  | 5 |

Shade some cells to leave behind a single connected group — the Coral. No 2x2 area may be fully covered by the coral. All empty cells must be connected horizontally or vertically through other empty cells to an edge of the grid. Numbers outside the grid indicate the lengths of consecutive parts of the coral in the corresponding row or column. Numbers belonging to the same row or column are in increasing order and not necessarily in the order they appear.

|   |   |   |   |   |   |
|---|---|---|---|---|---|
|   |   |   | 1 |   |   |
|   | 5 |   | 3 | 1 | 5 |
| 2 | 2 | 2 |   |   |   |
|   |   |   |   |   |   |
| 1 | 6 |   |   |   |   |
|   |   |   |   |   |   |
| 2 | 3 |   |   |   |   |

|   |   |   |   |   |   |
|---|---|---|---|---|---|
|   |   |   | 1 |   |   |
|   | 5 |   | 3 | 1 | 5 |
| 2 | 2 | 2 |   |   |   |
|   |   |   |   |   |   |
| 1 | 6 |   |   |   |   |
|   |   |   |   |   |   |
| 2 | 3 |   |   |   |   |

27,28. Doppelblock

Place a digit from 1 to (N-2), in an NxN grid, into each of the empty cells so that each digit appears exactly once in each row and column. Shade the remaining two cells in each row and column. The numbers outside indicate the sum of the digits in between the two shaded cells in the corresponding row or column.

|    |  |   |   |   |   |   |   |
|----|--|---|---|---|---|---|---|
|    |  | 1 | 2 | 0 | 4 | 6 | 9 |
| 10 |  |   |   |   |   |   |   |
| 0  |  |   |   |   |   |   |   |
| 1  |  |   |   |   |   |   |   |
| 0  |  |   |   |   |   |   |   |
| 1  |  |   |   |   |   |   |   |
| 7  |  |   |   |   |   |   |   |

|    |   |   |   |   |   |   |   |
|----|---|---|---|---|---|---|---|
|    |   | 1 | 2 | 0 | 4 | 6 | 9 |
| 10 |   | 3 | 1 | 2 | 4 |   |   |
| 0  | 1 | 4 | 2 |   |   |   | 3 |
| 1  |   | 1 |   | 3 | 2 | 4 |   |
| 0  | 4 |   |   | 1 | 3 | 2 |   |
| 1  | 3 | 2 | 4 |   | 1 |   |   |
| 7  | 2 |   | 3 | 4 |   | 1 |   |

29,30. Different Neighbours

Place a digit from 1 to 4 into each of the empty cells so that identical digits do not touch each other, even diagonally. Some cells span across a larger area than others.

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

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

31,32. Cross Number

Place a digit in each of the white cells, so that all the given numbers are found in the grid, either in left-to-right or in top-to-bottom directions. Black cells separate different numbers.

|    |     |      |
|----|-----|------|
| 14 | 338 | 2365 |
| 21 | 651 | 3469 |
| 31 | 653 |      |
| 51 | 673 |      |
| 62 | 725 |      |
| 63 | 891 |      |
| 77 |     |      |

|  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

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

# 04 TWIST

600 Points

60 Minutes

10x Bonus

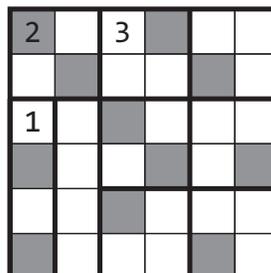
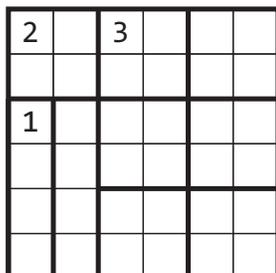
Individual

Round note: This round contains 16 puzzles across 11 different types. All types in this round are interesting variations introduced by Indian authors to popular Classic puzzle types.

## 1. Akichiwake

30 Points

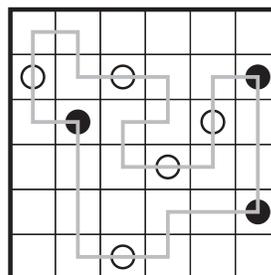
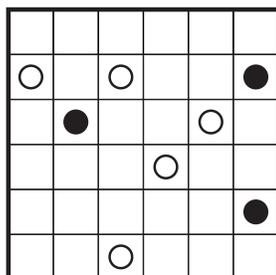
Shade some cells. Shaded cells can't touch each other by a side. The remaining white area has to be connected. The white area can't span over two consecutive thick boundaries in a single row or column. The numbers indicate the maximum possible continuous white area within a region. There need not be an area equal to this value; the only restriction is there can be no continuous area larger than the value.



## 2. Syuma

20 Points

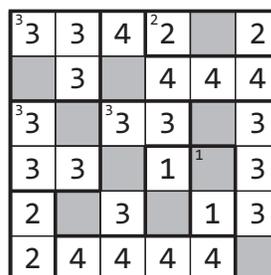
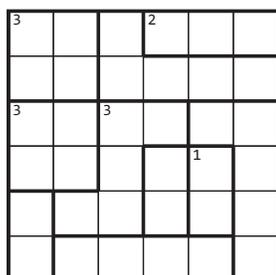
Draw a closed loop passing through centres of cells horizontally or vertically, passing through all circles. The loop must go straight through the cells with white circles, with a turn in both cells immediately before/after each white circle. The loop must make a turn in all the black circles, but must go straight in at least one of the cells immediately before/after each black circle.



## 3,4. Nanro (Signpost)

15 + 55 Points

Label some cells with numbers to form a single connected group of labeled cells. No 2x2 group of cells may be fully labeled. Each number must be equal to the total number of labeled cells in that bold region, and all bold regions contain at least one labeled cell. The given numbers indicate how many cells are labeled in that region, but not necessarily which cells are labeled. For two labeled cells touching by a side across a thick boundary, the numbers must be different.



Place a letter from the given range in each cell, so that each letter appears exactly once in each rows and column. Some cells will remain empty in each row and column. The letter outside the grid indicates the first letter or the last letter seen from that direction in the corresponding row or column.

A~C

|   |   |   |   |   |   |
|---|---|---|---|---|---|
|   | C | B | C | B |   |
| A |   |   |   |   | B |
| A |   |   |   |   | B |
| B |   |   |   |   | C |
| A |   |   |   |   | C |
|   | A | A | A | A |   |

|   |   |   |   |   |   |
|---|---|---|---|---|---|
|   | C | B | C | B |   |
| A |   | A | C | B | B |
| A | A | C | B |   | B |
| B | B |   | A | C | C |
| A | C | B |   | A | C |
|   | A | A | A | A |   |

7,8. Regional Hitori

Black out some of the digits in the grid so that each row, each column and each thickly outlined region contains distinct digits. Black cells can't touch each other by a side. All white cells must form a single connected area.

|   |   |   |   |   |   |
|---|---|---|---|---|---|
| 2 | 2 | 3 | 6 | 4 | 7 |
| 1 | 5 | 2 | 5 | 3 | 6 |
| 3 | 1 | 4 | 5 | 7 | 2 |
| 2 | 3 | 6 | 7 | 1 | 5 |
| 5 | 4 | 7 | 2 | 6 | 4 |
| 3 | 4 | 6 | 3 | 7 | 7 |

|   |   |   |   |   |   |
|---|---|---|---|---|---|
| 2 | 2 | 3 | 6 | 4 | 7 |
| 1 | 5 | 2 | 5 | 3 | 6 |
| 3 | 1 | 4 | 5 | 7 | 2 |
| 2 | 3 | 6 | 7 | 1 | 5 |
| 5 | 4 | 7 | 2 | 6 | 4 |
| 3 | 4 | 6 | 3 | 7 | 7 |

9,10. Transparent Yailin

Blacken some white cells and draw a closed loop passing through centres of all remaining white cells horizontally or vertically. Blackened cells cannot share an edge with each other. The loop can pass through clue cells, and clue cells that are not passed through must be blackened. Numbered arrows in white cells indicate the total number of blackened cells in the direction pointed at by the arrow. Numbers in blackened clue cells do not necessarily have to be satisfied.

|    |    |    |    |    |
|----|----|----|----|----|
|    |    |    |    |    |
|    |    |    | ←2 | 2↓ |
|    |    |    |    | ↑1 |
|    | →1 |    |    |    |
| 0↓ |    | ←1 |    |    |
|    |    |    |    |    |

|    |    |    |    |    |
|----|----|----|----|----|
|    |    |    |    |    |
|    |    |    | ←2 | 2↓ |
|    |    |    |    | ↑1 |
|    | →1 |    |    |    |
| 0↓ |    | ←1 |    |    |
|    |    |    |    |    |

11. Inside Skyscrapers

Place a digit from 1 to N, in an NxN grid, into each of the empty cells so that each digit appears exactly once in each row and column. Each digit inside the grid represents the height of the skyscraper in that cell. The clues on the edges between some cells indicate the number of skyscrapers visible in corresponding row or column from that point. Taller skyscrapers hide shorter ones.

|  |   |   |   |  |
|--|---|---|---|--|
|  | 4 |   |   |  |
|  | 4 |   |   |  |
|  |   | 4 | 3 |  |
|  |   |   |   |  |
|  |   |   |   |  |

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

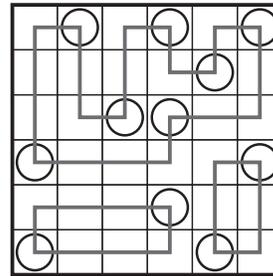
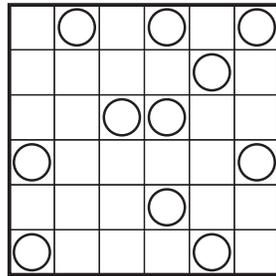
Black out some of the digits in the grid so that each row and each column contains distinct digits. All white cells must form a single connected area. Every row and every column must contain at least one white cell.

|   |   |   |   |
|---|---|---|---|
| 4 | 2 | 4 | 8 |
| 8 | 6 | 6 | 8 |
| 4 | 2 | 6 | 6 |
| 2 | 2 | 6 | 6 |

|   |   |   |   |
|---|---|---|---|
| 4 | 2 | 4 | 8 |
| 8 | 6 | 6 | 8 |
| 4 | 2 | 6 | 6 |
| 2 | 2 | 6 | 6 |

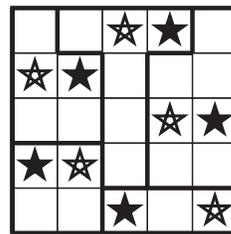
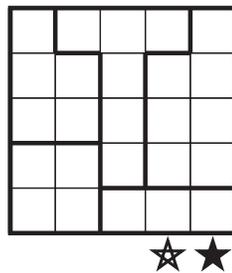
13,14. Multi ESB

Draw several closed loops in the grid passing through centres of cells horizontally and vertically, so that each cell is visited by exactly one loop. The loops must turn at breakpoints, i.e., cells with circles. Additionally, for each loop, there must be exactly one turn between two breakpoints that the loop visits. A loop cannot cross or overlap other loops.



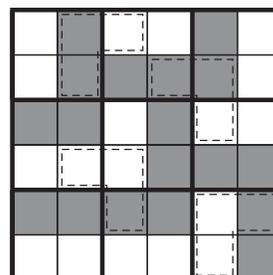
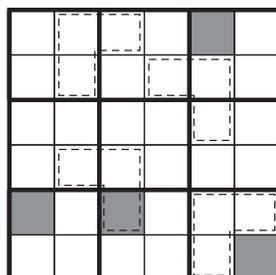
15. Coloured Star Battle

Place stars in some cells such that each row, column, and boldly outlined region contain the indicated number of different types of stars. Identical stars cannot touch each other, even diagonally. Different stars can touch each other, even orthogonally. Any two different notations can be used to represent the two stars, as long as consistency is maintained through the grid. The usage of black and white stars to indicate the number of stars is arbitrary and can be completely switched within the solution.



16. Windows Windows

Shade exactly two cells in each of the thickly outlined 2x2 regions, i.e. the Windows. Shaded cells must form a single connected area. All white cells must be connected horizontally or vertically through other white cells to an edge of the grid. No 2x2 area can contain all shaded cells or all white cells. Also, there are dotted areas, i.e. the other windows. Two such dotted areas forming the same shape without rotation/reflection form a 'pair'. For cells in the same position in a pair, exactly one of the cells must be shaded and the other must be left white.



# 05 HEXED & REMIXED

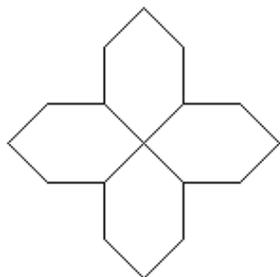
400 Points

40 Minutes

10x Bonus

Individual

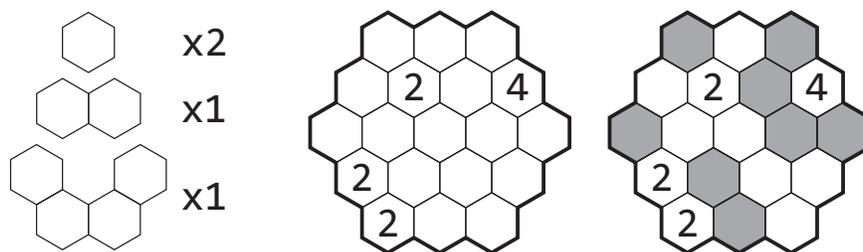
Round note: This round contains 8 puzzles across 8 different types. This round provides a contrast to the traditional square grids. Note that the competition puzzles may have a different grid structure which allows for solely diagonal touching of cells, for instance like the below image:



## 1. Polyominos

65 Points

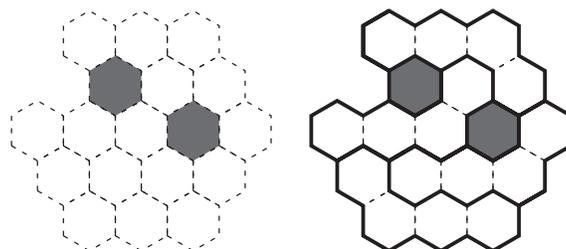
Place the given shapes into empty cells of the grid such that the number in a cell indicates the number of cells sharing a side with it that contain a part of a shape. Different shapes can't touch each other by a side but may touch by a corner.



## 2. Dissection

20 Points

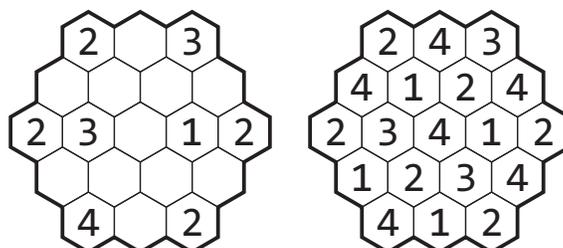
Divide the grid into regions of four cells each. Each region must have the same shape with reflection and / or rotation. Shaded cells are not part of any region.



## 3. Different Neighbours

45 Points

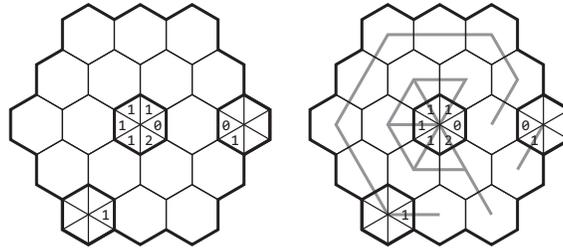
Place the digits 1 through 4 into the empty cells in the grid so that identical digits do not touch each other, not even diagonally. Some cells span across a larger area than others.



#### 4. Simple Kompass

40 Points

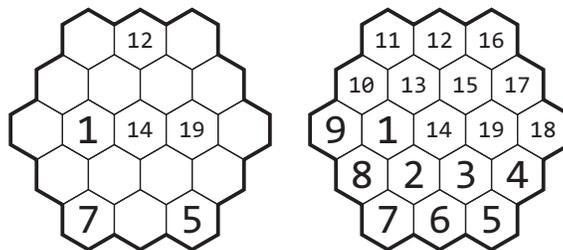
Each cell divided into triangles indicates a different connected region. Numbers indicate the number of cells occupied by the region in the corresponding direction.



#### 5. Hidato

30 Points

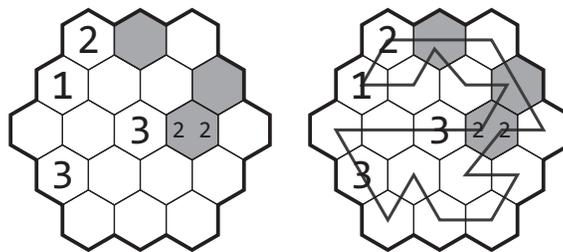
Place all remaining numbers from 1 to N, where N is the number of cells in the grid, into each of the empty cells. Every two consecutive numbers must be placed in cells sharing sides or sharing corners. For the competition puzzle, N is given in the rules.



#### 6. Adjacency Loop

50 Points

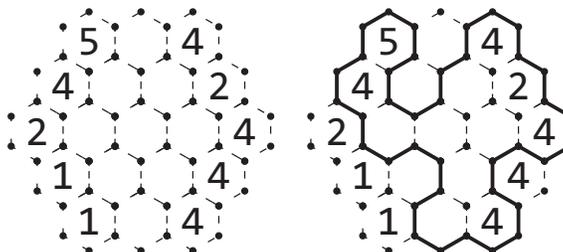
Draw a loop that passes through all cells of the grid. The loop cannot cross, intersect or overlap itself. All cells that the loop passes through more than once are shaded. Each number in a cell indicates the distance between the edge through which the loop enters that cell and the edge through which the loop exits that cell. The distance is measured along the edges. In any cell with clues, the numbers cover all instances of the loop visiting that cell.



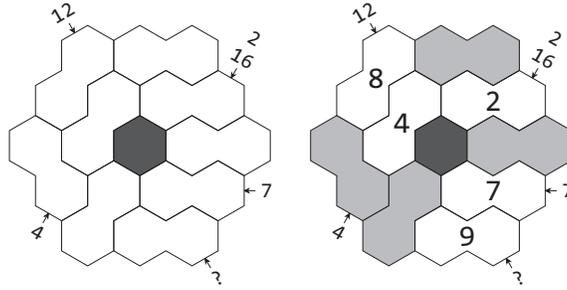
#### 7. Slitherlink

85 Points

Draw a closed loop by connecting dots along the dashed lines. The loop can't touch or cross itself. A number in a cell indicates the number of segments used by the loop around that cell.



Place a digit from 1 to 9 into each of the empty cells so that each digit appears at most once in each direction for hex cells. The hex cells are doubled. In the example, a number in a cell eliminates itself from a total of five directions. Shade some cells in the grid such that the numbers outside the grid indicate sums of digits in white cells in the corresponding direction. If there is more than one sum, the given order is valid and there must be at least one shaded cell between the sums. A question mark (?) can be replaced by any non-zero number. Given black cells are separators for the relevant directions.



# 06 TVC

450 Points

45 Minutes

10x Bonus

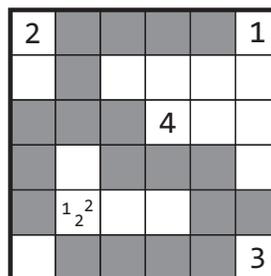
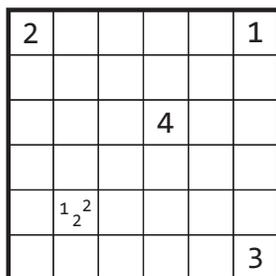
Individual

Round note: This is a single-type round that contains 15 puzzles featuring 13 variations of the Tapa puzzle type along with two Classic Tapa puzzles.

## 1,2. Tapa

15 + 15 Points

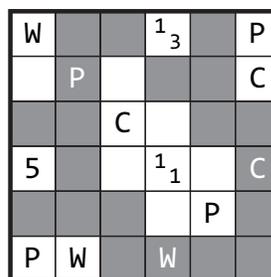
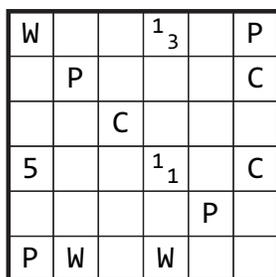
Shade some cells to form a continuous wall. Number/s in a cell indicate the length of shaded cell blocks on its neighbouring eight cells. If there is more than one number in a cell, there must be at least one white cell between the shaded cell blocks. Shaded cells cannot form a 2x2 area. There are no wall segments on cells containing numbers.



## 3. Alternative Tapa

70 Points

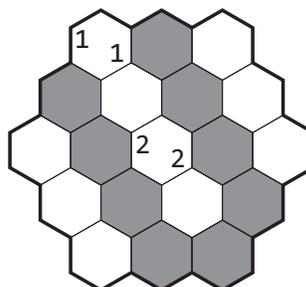
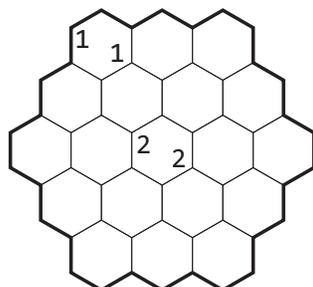
Apply Tapa rules. Additionally, for each set of identical letters, exactly one is visited by the wall and the others are not.



## 4. Hexa Tapa

30 Points

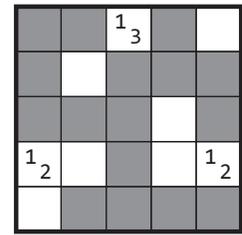
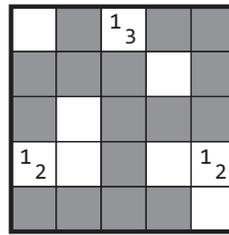
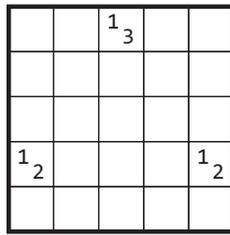
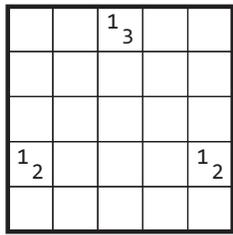
Shade some cells to form a continuous wall. Number/s in a cell indicate the length of shaded cell blocks on its neighbouring six cells. If there is more than one number in a cell, there must be at least one white cell between the shaded cell blocks. Shaded cells cannot form three hexagons meeting at a point. There are no wall segments on cells containing numbers.



### 5. Twopa

30 Points

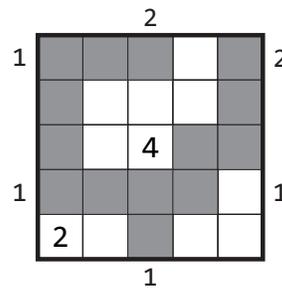
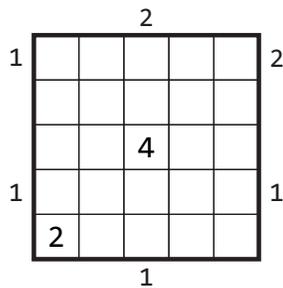
Apply Tapa rules. The Tapa grid has multiple solutions, but if two iterations of it are solved together, each of them has a unique solution. In each solution, every clue must behave at least a little bit differently. This means, in a multi-digit clue, some of the digits can have the same behavior, but not all.



### 6. Tapa Skyscrapers

15 Points

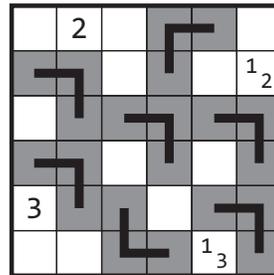
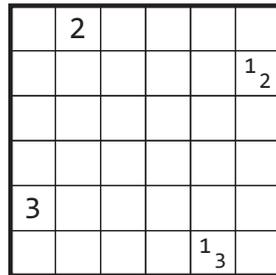
Apply Tapa rules. Additionally, numbers outside the grid show the number of separate wall segments visible in that direction. A segment of length N, is considered as a skyscraper of height N. Skyscrapers of length N block visibility of other skyscrapers of length N and below.



### 7. Tapa Trimino

20 Points

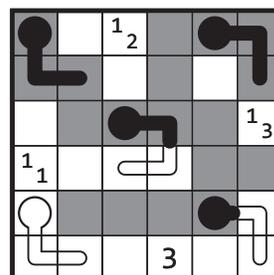
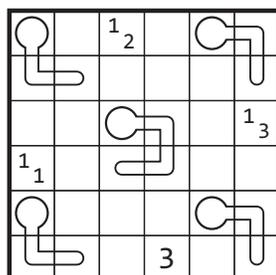
Apply Tapa rules. Additionally, the tapa wall must only be made up of the given triminoes. Triminoes may be rotated and / or mirrored, but cannot overlap. It is not necessary to complete the Trimino tiling to get credit for a solved puzzle, as long as the Tapa wall is consistent with the solution.



### 8. Thermometer Tapa

20 Points

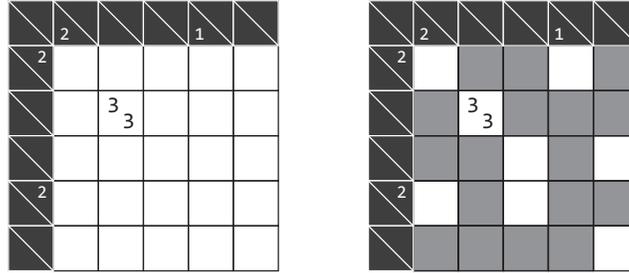
Apply Tapa rules. Additionally, the grid contains thermometers which can be completely used, partially used or completely unused. If any cell on a thermometer shape is shaded, the shape must be shaded up to the bulb from that cell, along the shape.



9. Kakuro-Style Tapa

35 Points

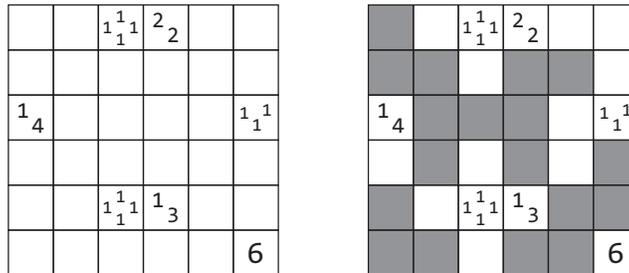
Apply Tapa rules. Additionally, clues in black cells represent the number of separate shaded blocks in the corresponding directions. For any direction provided with a clue, the separate blocks must be of different lengths.



10. Toroidal Tapa

60 Points

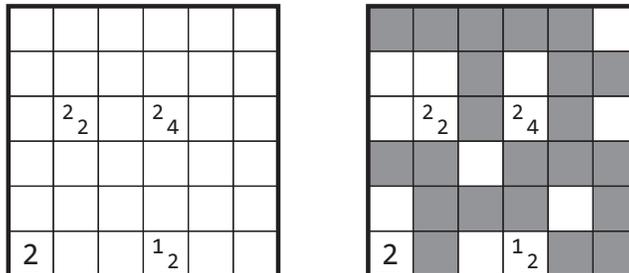
Apply Tapa rules. The tapa wall can wrap around all four edges.



11. Disguised Knights Tapa

50 Points

Apply Tapa rules. Additionally, the tapa clues also describe the 8 cells that are a knight step away from them, in the same spacing considerations as the usual 8 cells, including the fact that the cells going out of the grid do not factor in the spacing.



12. Instructionless Tapa

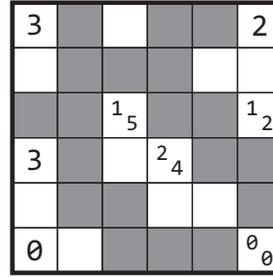
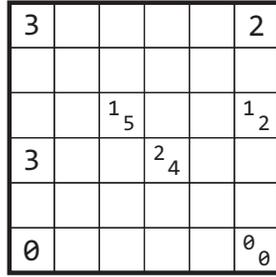
15 Points

This is a Tapa variations puzzle. Instead of instructions, an example will be given, with its correct solution. An invalid solution will also be given and marked so. It is part of solving to determine what the variant rules are and then solve the Tapa. It is not required to describe the rules. There are no points for determining the rule correctly, but not solving the Tapa (or solving incorrectly).

13. Knapp Daneben Tapa

25 Points

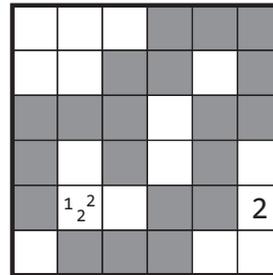
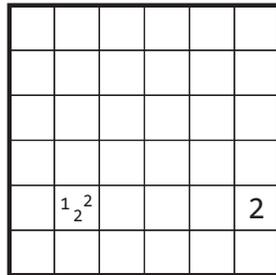
Apply Tapa rules. However, all given numbers are wrong. The correct number is either 1 higher or 1 lower, meaning a 1 can possibly turn into a zero.



14. Tapa Line

25 Points

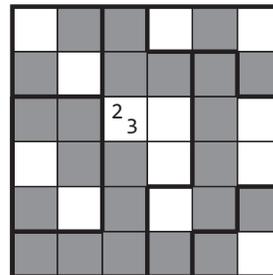
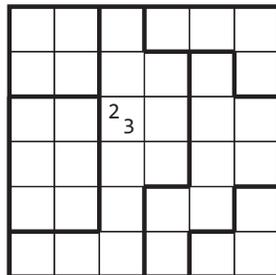
Apply Tapa rules. Additionally, there may not be four consecutive shaded cells in any row or column.



15. Tapa Double Back

25 Points

Apply Tapa rules. Additionally, each region must be occupied by two separate segments of the tapa wall.



# 07 DECEPTION

1400 Points

35 Minutes

40x Bonus

Team

Round note: This is a team round containing 16 puzzles across 16 puzzle types. The puzzles are categorized into sets. Each set has four puzzles that are liars in four separate ways. It is a part of solving to determine the particular way each puzzle of a set is lying, and use the liars' constraints to solve that puzzle. The puzzles will be given in four A3 sheets, one per set. Along with the four puzzles, on each sheet, a helper grid will be provided to link R1-4 to A1-4/B1-4/C1-4/D1-4.

Points for individual puzzles will be awarded only if the solution matches the global solution of the set.

R1: One puzzle is **lying altogether about its name**, and is actually another puzzle from within the set (i.e. a classic version of one of the 3 other puzzles). There has to be one such puzzle that becomes another one.

R2: One puzzle has clues that are **one above or one below** the correct value they take in the solution – all clues behave in one of these two ways for this puzzle.

R3: One puzzle has exactly one row OR one column, containing digits, where **all digits are false, i.e., cannot be the given value**.

R4: One puzzle has one joker, and all instances of the **joker can be replaced** by any value, including zero, as long as the puzzle rules allow it. The Joker can assume different values across the grid any number of times, including its own value.

Here is an example set. Classic rules of the individual puzzles are given in subsequent pages.

|   |           |               |                  |   |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |   |   |  |   |   |    |  |  |  |  |   |   |  |  |  |  |   |  |  |   |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |   |   |   |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |   |   |   |   |
|---|-----------|---------------|------------------|---|--|--|--|--|--|--|--|---|---|--|--|--|--|--|--|--|---|---|--|---|---|----|--|--|--|--|---|---|--|--|--|--|---|--|--|---|--|--|---|--|--|--|--|--|---|--|---|--|---|---|--|---|--|--|--|--|--|--|---|--|--|--|--|--|---|--|---|--|---|---|--|---|---|---|---|--|--|--|--|--|--|--|---|--|--|--|--|--|--|--|--|---|---|---|---|
| Ex1. Canal View   | Ex2. Cave | Ex3. Kurodoko | Ex4. Penta Sight |   |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |   |   |  |   |   |    |  |  |  |  |   |   |  |  |  |  |   |  |  |   |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |   |   |   |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |   |   |   |   |
| <table border="1"> <tr><td>6</td><td>4</td><td></td><td>7</td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td>6</td></tr> <tr><td>7</td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td>8</td><td>4</td><td></td><td>1</td></tr> </table> | 6         | 4             |                  | 7 |  |  |  |  |  |  |  | 6 | 7 |  |  |  |  |  |  |  | 8 | 4 |  | 1 | <table border="1"> <tr><td>12</td><td></td><td></td><td></td></tr> <tr><td></td><td>2</td><td>1</td><td></td></tr> <tr><td></td><td></td><td></td><td>1</td></tr> <tr><td></td><td></td><td>2</td><td></td></tr> <tr><td></td><td>5</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td>2</td></tr> </table> | 12 |  |  |  |  | 2 | 1 |  |  |  |  | 1 |  |  | 2 |  |  | 5 |  |  |  |  |  | 2 | <table border="1"> <tr><td>6</td><td></td><td>2</td><td>7</td></tr> <tr><td></td><td>3</td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td>3</td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td>3</td><td></td></tr> <tr><td>6</td><td></td><td>2</td><td>8</td></tr> </table> | 6 |  | 2 | 7 |  | 3 |  |  |  |  |  |  | 3 |  |  |  |  |  | 3 |  | 6 |  | 2 | 8 | <table border="1"> <tr><td>6</td><td>2</td><td>2</td><td>5</td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td>8</td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td>2</td><td>3</td><td>5</td><td>1</td></tr> </table> | 6 | 2 | 2 | 5 |  |  |  |  |  |  |  | 8 |  |  |  |  |  |  |  |  | 2 | 3 | 5 | 1 |
| 6   | 4         |               | 7                |   |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |   |   |  |   |   |    |  |  |  |  |   |   |  |  |  |  |   |  |  |   |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |   |   |   |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |   |   |   |   |
|   |           |               |                  |   |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |   |   |  |   |   |    |  |  |  |  |   |   |  |  |  |  |   |  |  |   |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |   |   |   |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |   |   |   |   |
|   |           |               | 6                |   |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |   |   |  |   |   |    |  |  |  |  |   |   |  |  |  |  |   |  |  |   |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |   |   |   |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |   |   |   |   |
| 7   |           |               |                  |   |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |   |   |  |   |   |    |  |  |  |  |   |   |  |  |  |  |   |  |  |   |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |   |   |   |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |   |   |   |   |
|   |           |               |                  |   |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |   |   |  |   |   |    |  |  |  |  |   |   |  |  |  |  |   |  |  |   |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |   |   |   |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |   |   |   |   |
| 8   | 4         |               | 1                |   |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |   |   |  |   |   |    |  |  |  |  |   |   |  |  |  |  |   |  |  |   |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |   |   |   |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |   |   |   |   |
| 12  |           |               |                  |   |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |   |   |  |   |   |    |  |  |  |  |   |   |  |  |  |  |   |  |  |   |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |   |   |   |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |   |   |   |   |
|   | 2         | 1             |                  |   |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |   |   |  |   |   |    |  |  |  |  |   |   |  |  |  |  |   |  |  |   |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |   |   |   |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |   |   |   |   |
|   |           |               | 1                |   |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |   |   |  |   |   |    |  |  |  |  |   |   |  |  |  |  |   |  |  |   |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |   |   |   |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |   |   |   |   |
|   |           | 2             |                  |   |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |   |   |  |   |   |    |  |  |  |  |   |   |  |  |  |  |   |  |  |   |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |   |   |   |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |   |   |   |   |
|   | 5         |               |                  |   |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |   |   |  |   |   |    |  |  |  |  |   |   |  |  |  |  |   |  |  |   |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |   |   |   |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |   |   |   |   |
|   |           |               | 2                |   |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |   |   |  |   |   |    |  |  |  |  |   |   |  |  |  |  |   |  |  |   |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |   |   |   |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |   |   |   |   |
| 6   |           | 2             | 7                |   |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |   |   |  |   |   |    |  |  |  |  |   |   |  |  |  |  |   |  |  |   |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |   |   |   |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |   |   |   |   |
|   | 3         |               |                  |   |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |   |   |  |   |   |    |  |  |  |  |   |   |  |  |  |  |   |  |  |   |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |   |   |   |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |   |   |   |   |
|   |           |               |                  |   |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |   |   |  |   |   |    |  |  |  |  |   |   |  |  |  |  |   |  |  |   |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |   |   |   |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |   |   |   |   |
| 3   |           |               |                  |   |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |   |   |  |   |   |    |  |  |  |  |   |   |  |  |  |  |   |  |  |   |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |   |   |   |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |   |   |   |   |
|   |           | 3             |                  |   |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |   |   |  |   |   |    |  |  |  |  |   |   |  |  |  |  |   |  |  |   |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |   |   |   |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |   |   |   |   |
| 6   |           | 2             | 8                |   |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |   |   |  |   |   |    |  |  |  |  |   |   |  |  |  |  |   |  |  |   |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |   |   |   |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |   |   |   |   |
| 6   | 2         | 2             | 5                |   |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |   |   |  |   |   |    |  |  |  |  |   |   |  |  |  |  |   |  |  |   |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |   |   |   |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |   |   |   |   |
|   |           |               |                  |   |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |   |   |  |   |   |    |  |  |  |  |   |   |  |  |  |  |   |  |  |   |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |   |   |   |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |   |   |   |   |
|   |           |               | 8                |   |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |   |   |  |   |   |    |  |  |  |  |   |   |  |  |  |  |   |  |  |   |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |   |   |   |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |   |   |   |   |
|   |           |               |                  |   |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |   |   |  |   |   |    |  |  |  |  |   |   |  |  |  |  |   |  |  |   |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |   |   |   |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |   |   |   |   |
|   |           |               |                  |   |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |   |   |  |   |   |    |  |  |  |  |   |   |  |  |  |  |   |  |  |   |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |   |   |   |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |   |   |   |   |
| 2   | 3         | 5             | 1                |   |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |   |   |  |   |   |    |  |  |  |  |   |   |  |  |  |  |   |  |  |   |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |  |   |   |   |   |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |   |   |   |   |

Solution

|  |    |    |    |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |   |   |    |  |  |  |  |  |   |  |   |  |  |  |  |  |   |  |  |   |  |  |  |   |  |  |  |  |  |  |   |  |   |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |   |   |  |   |   |   |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |   |  |   |   |  |   |
|--|----|----|----|---|---|--|--|--|--|--|--|--|--|--|---|---|--|--|--|--|--|--|--|--|--|---|---|--|--|---|---|----|--|--|--|--|--|---|--|---|--|--|--|--|--|---|--|--|---|--|--|--|---|--|--|--|--|--|--|---|--|---|---|--|---|---|--|---|--|--|--|--|--|--|---|--|--|--|--|--|---|--|---|--|---|---|---|---|--|---|---|---|--|--|--|--|--|--|--|--|--|---|--|--|--|--|--|--|--|--|--|--|---|--|---|---|--|---|
| R1 Ex4. Penta Sight  | R2 | R4 | R3 |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |   |   |    |  |  |  |  |  |   |  |   |  |  |  |  |  |   |  |  |   |  |  |  |   |  |  |  |  |  |  |   |  |   |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |   |   |  |   |   |   |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |   |  |   |   |  |   |
| <table border="1"> <tr><td>6</td><td style="background-color: #cccccc;"></td><td>4</td><td></td><td>7</td></tr> <tr><td></td><td style="background-color: #cccccc;"></td><td style="background-color: #cccccc;"></td><td></td><td></td></tr> <tr><td></td><td style="background-color: #cccccc;"></td><td style="background-color: #cccccc;"></td><td></td><td>6</td></tr> <tr><td>7</td><td></td><td style="background-color: #cccccc;"></td><td style="background-color: #cccccc;"></td><td></td></tr> <tr><td></td><td></td><td></td><td style="background-color: #cccccc;"></td><td style="background-color: #cccccc;"></td></tr> <tr><td>8</td><td>4</td><td style="background-color: #cccccc;"></td><td style="background-color: #cccccc;"></td><td>1</td></tr> </table> | 6  |    | 4  |   | 7 |  |  |  |  |  |  |  |  |  | 6 | 7 |  |  |  |  |  |  |  |  |  | 8 | 4 |  |  | 1 | <table border="1"> <tr><td>12</td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td>2</td><td style="background-color: #cccccc;"></td><td>1</td><td style="background-color: #cccccc;"></td></tr> <tr><td></td><td style="background-color: #cccccc;"></td><td style="background-color: #cccccc;"></td><td style="background-color: #cccccc;"></td><td>1</td></tr> <tr><td></td><td style="background-color: #cccccc;"></td><td>2</td><td style="background-color: #cccccc;"></td><td></td></tr> <tr><td></td><td>5</td><td></td><td></td><td style="background-color: #cccccc;"></td></tr> <tr><td></td><td></td><td style="background-color: #cccccc;"></td><td>2</td><td style="background-color: #cccccc;"></td></tr> </table> | 12 |  |  |  |  |  | 2 |  | 1 |  |  |  |  |  | 1 |  |  | 2 |  |  |  | 5 |  |  |  |  |  |  | 2 |  | <table border="1"> <tr><td>6</td><td></td><td>2</td><td>7</td></tr> <tr><td style="background-color: #cccccc;"></td><td>3</td><td style="background-color: #cccccc;"></td><td></td></tr> <tr><td></td><td style="background-color: #cccccc;"></td><td></td><td style="background-color: #cccccc;"></td></tr> <tr><td>3</td><td></td><td style="background-color: #cccccc;"></td><td></td></tr> <tr><td style="background-color: #cccccc;"></td><td></td><td>3</td><td style="background-color: #cccccc;"></td></tr> <tr><td>6</td><td></td><td>2</td><td>8</td></tr> </table> | 6 |  | 2 | 7 |  | 3 |  |  |  |  |  |  | 3 |  |  |  |  |  | 3 |  | 6 |  | 2 | 8 | <table border="1"> <tr><td>6</td><td style="background-color: #cccccc;"></td><td>2</td><td>2</td><td>5</td></tr> <tr><td style="background-color: #cccccc;"></td><td style="background-color: #cccccc;"></td><td style="background-color: #cccccc;"></td><td style="background-color: #cccccc;"></td><td></td></tr> <tr><td></td><td style="background-color: #cccccc;"></td><td></td><td></td><td>8</td></tr> <tr><td style="background-color: #cccccc;"></td><td style="background-color: #cccccc;"></td><td style="background-color: #cccccc;"></td><td></td><td style="background-color: #cccccc;"></td></tr> <tr><td></td><td style="background-color: #cccccc;"></td><td></td><td></td><td style="background-color: #cccccc;"></td></tr> <tr><td>2</td><td style="background-color: #cccccc;"></td><td>3</td><td>5</td><td style="background-color: #cccccc;"></td><td>1</td></tr> </table> | 6 |  | 2 | 2 | 5 |  |  |  |  |  |  |  |  |  | 8 |  |  |  |  |  |  |  |  |  |  | 2 |  | 3 | 5 |  | 1 |
| 6  |    | 4  |    | 7 |   |  |  |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |   |   |    |  |  |  |  |  |   |  |   |  |  |  |  |  |   |  |  |   |  |  |  |   |  |  |  |  |  |  |   |  |   |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |   |   |  |   |   |   |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |   |  |   |   |  |   |
|  |    |    |    |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |   |   |    |  |  |  |  |  |   |  |   |  |  |  |  |  |   |  |  |   |  |  |  |   |  |  |  |  |  |  |   |  |   |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |   |   |  |   |   |   |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |   |  |   |   |  |   |
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| 7  |    |    |    |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |   |   |    |  |  |  |  |  |   |  |   |  |  |  |  |  |   |  |  |   |  |  |  |   |  |  |  |  |  |  |   |  |   |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |   |   |  |   |   |   |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |   |  |   |   |  |   |
|  |    |    |    |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |   |   |    |  |  |  |  |  |   |  |   |  |  |  |  |  |   |  |  |   |  |  |  |   |  |  |  |  |  |  |   |  |   |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |   |   |  |   |   |   |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |   |  |   |   |  |   |
| 8  | 4  |    |    | 1 |   |  |  |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |   |   |    |  |  |  |  |  |   |  |   |  |  |  |  |  |   |  |  |   |  |  |  |   |  |  |  |  |  |  |   |  |   |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |   |   |  |   |   |   |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |   |  |   |   |  |   |
| 12   |    |    |    |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |   |   |    |  |  |  |  |  |   |  |   |  |  |  |  |  |   |  |  |   |  |  |  |   |  |  |  |  |  |  |   |  |   |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |   |   |  |   |   |   |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |   |  |   |   |  |   |
|  | 2  |    | 1  |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |   |   |    |  |  |  |  |  |   |  |   |  |  |  |  |  |   |  |  |   |  |  |  |   |  |  |  |  |  |  |   |  |   |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |   |   |  |   |   |   |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |   |  |   |   |  |   |
|  |    |    |    | 1 |   |  |  |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |   |   |    |  |  |  |  |  |   |  |   |  |  |  |  |  |   |  |  |   |  |  |  |   |  |  |  |  |  |  |   |  |   |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |   |   |  |   |   |   |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |   |  |   |   |  |   |
|  |    | 2  |    |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |   |   |    |  |  |  |  |  |   |  |   |  |  |  |  |  |   |  |  |   |  |  |  |   |  |  |  |  |  |  |   |  |   |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |   |   |  |   |   |   |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |   |  |   |   |  |   |
|  | 5  |    |    |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |   |   |    |  |  |  |  |  |   |  |   |  |  |  |  |  |   |  |  |   |  |  |  |   |  |  |  |  |  |  |   |  |   |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |   |   |  |   |   |   |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |   |  |   |   |  |   |
|  |    |    | 2  |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |   |   |    |  |  |  |  |  |   |  |   |  |  |  |  |  |   |  |  |   |  |  |  |   |  |  |  |  |  |  |   |  |   |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |   |   |  |   |   |   |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |   |  |   |   |  |   |
| 6  |    | 2  | 7  |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |   |   |    |  |  |  |  |  |   |  |   |  |  |  |  |  |   |  |  |   |  |  |  |   |  |  |  |  |  |  |   |  |   |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |   |   |  |   |   |   |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |   |  |   |   |  |   |
|  | 3  |    |    |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |   |   |    |  |  |  |  |  |   |  |   |  |  |  |  |  |   |  |  |   |  |  |  |   |  |  |  |  |  |  |   |  |   |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |   |   |  |   |   |   |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |   |  |   |   |  |   |
|  |    |    |    |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |   |   |    |  |  |  |  |  |   |  |   |  |  |  |  |  |   |  |  |   |  |  |  |   |  |  |  |  |  |  |   |  |   |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |   |   |  |   |   |   |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |   |  |   |   |  |   |
| 3  |    |    |    |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |   |   |    |  |  |  |  |  |   |  |   |  |  |  |  |  |   |  |  |   |  |  |  |   |  |  |  |  |  |  |   |  |   |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |   |   |  |   |   |   |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |   |  |   |   |  |   |
|  |    | 3  |    |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |   |   |    |  |  |  |  |  |   |  |   |  |  |  |  |  |   |  |  |   |  |  |  |   |  |  |  |  |  |  |   |  |   |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |   |   |  |   |   |   |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |   |  |   |   |  |   |
| 6  |    | 2  | 8  |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |   |   |    |  |  |  |  |  |   |  |   |  |  |  |  |  |   |  |  |   |  |  |  |   |  |  |  |  |  |  |   |  |   |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |   |   |  |   |   |   |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |   |  |   |   |  |   |
| 6  |    | 2  | 2  | 5 |   |  |  |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |   |   |    |  |  |  |  |  |   |  |   |  |  |  |  |  |   |  |  |   |  |  |  |   |  |  |  |  |  |  |   |  |   |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |   |   |  |   |   |   |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |   |  |   |   |  |   |
|  |    |    |    |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |   |   |    |  |  |  |  |  |   |  |   |  |  |  |  |  |   |  |  |   |  |  |  |   |  |  |  |  |  |  |   |  |   |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |   |   |  |   |   |   |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |   |  |   |   |  |   |
|  |    |    |    | 8 |   |  |  |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |   |   |    |  |  |  |  |  |   |  |   |  |  |  |  |  |   |  |  |   |  |  |  |   |  |  |  |  |  |  |   |  |   |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |   |   |  |   |   |   |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |   |  |   |   |  |   |
|  |    |    |    |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |   |   |    |  |  |  |  |  |   |  |   |  |  |  |  |  |   |  |  |   |  |  |  |   |  |  |  |  |  |  |   |  |   |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |   |   |  |   |   |   |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |   |  |   |   |  |   |
|  |    |    |    |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |   |   |    |  |  |  |  |  |   |  |   |  |  |  |  |  |   |  |  |   |  |  |  |   |  |  |  |  |  |  |   |  |   |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |   |   |  |   |   |   |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |   |  |   |   |  |   |
| 2  |    | 3  | 5  |   | 1 |  |  |  |  |  |  |  |  |  |   |   |  |  |  |  |  |  |  |  |  |   |   |  |  |   |   |    |  |  |  |  |  |   |  |   |  |  |  |  |  |   |  |  |   |  |  |  |   |  |  |  |  |  |  |   |  |   |   |  |   |   |  |   |  |  |  |  |  |  |   |  |  |  |  |  |   |  |   |  |   |   |   |   |  |   |   |   |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |   |  |   |   |  |   |

A1. Kurotto

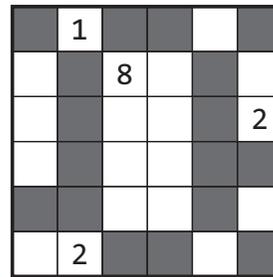
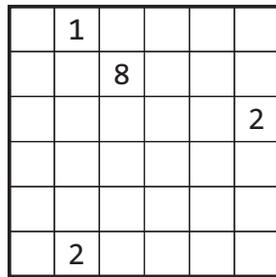
100 Points

Shade some empty cells so that each number indicates the total number of shaded cells in connected groups sharing an edge with that number. Cells with numbers cannot be shaded.

|   |   |   |   |   |
|---|---|---|---|---|
|   |   | 4 |   |   |
|   | 6 |   | 3 |   |
|   |   |   |   | 4 |
| 8 |   |   |   |   |
|   |   | 6 |   | 1 |
|   |   |   | 7 |   |

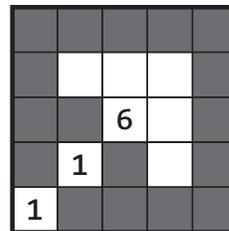
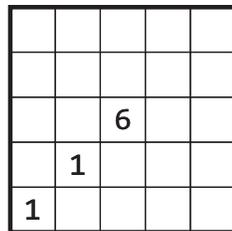
|   |   |   |   |   |
|---|---|---|---|---|
|   |   | 4 |   |   |
|   | 6 |   | 3 |   |
|   |   |   |   | 4 |
| 8 |   |   |   |   |
|   |   | 6 |   | 1 |
|   |   |   | 7 |   |

Shade some empty cells so that the remaining white cells form rectangles, including squares. Two white rectangles can only touch diagonally. All rectangles must be connected through their corners. Every cell with a number in it must be part of a rectangle of the same size. Every rectangle must contain at most one number. No 2x2 group of cells can be entirely shaded.



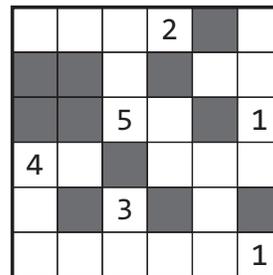
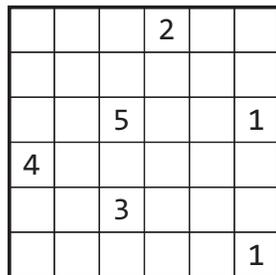
A3. Nurikabe

Shade some empty cells to form distinct 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 shaded cells must form a single connected area. No 2x2 group of cells can be entirely shaded.



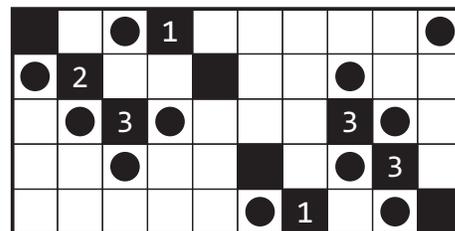
A4. Tasquare

Shade some empty cells so that shaded sections form squares and a number in a cell indicates the total of the areas of the squares touching that cell by a side. All white cells must form a single connected area. Cells with numbers remain white.



B1. Akari

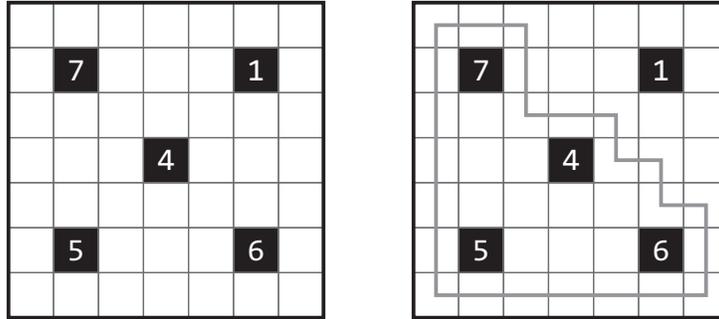
Place light bulbs in some white cells in the grid so that every white cell is illuminated. A cell is illuminated by a light bulb if they are in the same row or column, and if there are no black cells between them. No light bulb may illuminate another light bulb. A number in a black cell indicates the number of light bulbs sharing an edge with that cell.



**B2. Bosnian Loop**

**100 Points**

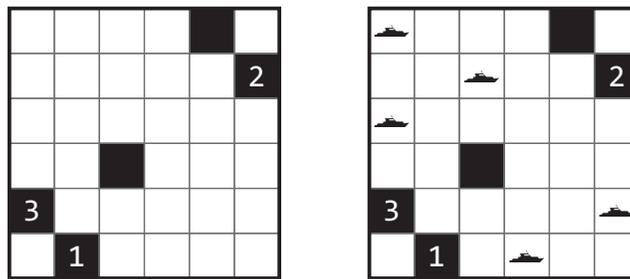
Draw a closed snake-like loop of one cell width, that does not touch itself, even diagonally. The loop does not go through clue cells. The clues indicate the total number of neighbouring cells, including diagonal ones, that the loop passes through.



**B3. Lighthouses**

**100 Points**

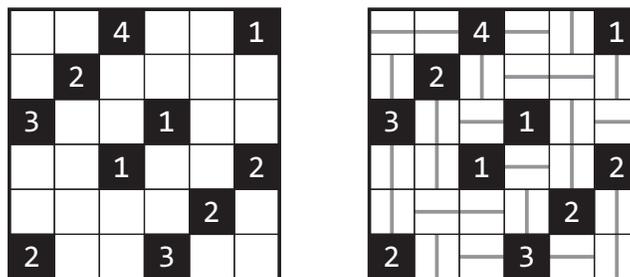
The black cells in the grid are lighthouses. Place some ships, one per empty white cell, such that ships do not touch each other or any lighthouses, even diagonally. Numbers in black cells give total number of ships in the same row and column as the lighthouse. Black cells do not block the view of lighthouses.



**B4. Walls**

**100 Points**

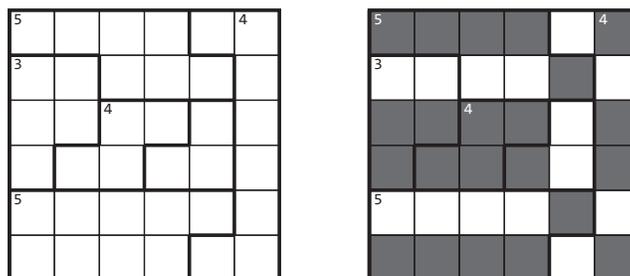
Draw a single horizontal or vertical line across the full width or height of the centre of every white cell, such that the total length of all lines touching each black cell is indicated by the number given in the cell.



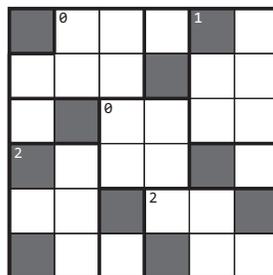
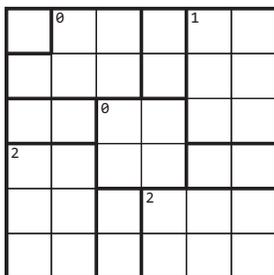
**C1. Chocona**

**75 Points**

Shade some cells so that shaded sections form rectangles, and numbered thickly outlined regions contain the given number of shaded cells, not necessarily consecutive/joined. Blocks without numbers can have any number of shaded cells. Rectangles must not share sides.

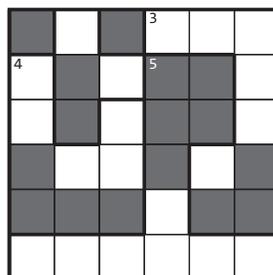
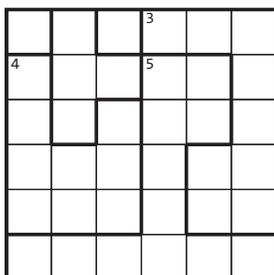


Shade some cells. Shaded cells must not touch each other by a side. The white cells must form a single connected area. The white area cannot span across 2 consecutive thick boundaries. A number in a region indicates the number of shaded cells in that region.



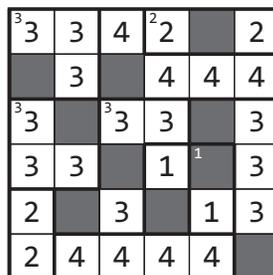
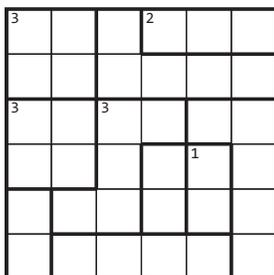
C3. Islands

Shade in a polyomino in each thickly outlined region such that no two polyominoes touch each other by a side, no two regions sharing an edge contain polyominoes of the same size, and a numbered region contains a polyomino of that size.



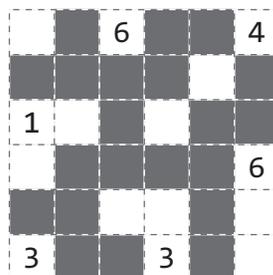
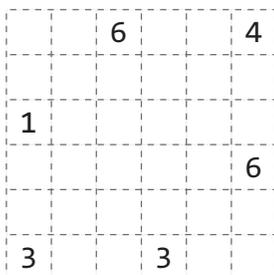
C4. Nanro Signpost

Label some cells with numbers to form a single connected group of labeled cells. No 2x2 group of cells may be fully labeled. Each number must be equal to the total number of labeled cells in that bold region, and all bold regions contain at least one labeled cell. The given numbers indicate how many cells are labeled in that region, but not necessarily which cells are labeled. For two labeled cells touching by a side across a thick boundary, the numbers must be different.

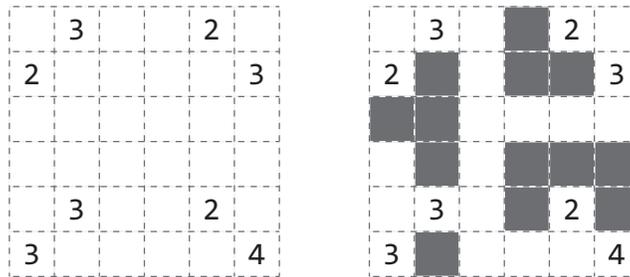


D1. Canal View

Shade some empty cells to create a single connected group. Cells with numbers cannot be shaded, and the shaded cells cannot form a 2x2 square anywhere in the grid. Each numbered cell indicates the total number of shaded cells connected vertically and horizontally to that numbered cell, in a straight line till the next numbered/unoccupied cell, or the edge of the grid.

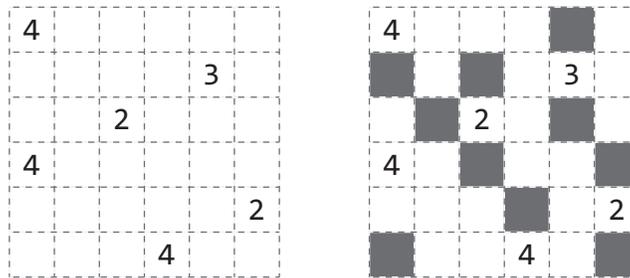


Shade some cells to leave behind a single connected group — the cave. All shaded cells must be connected horizontally or vertically through other shaded cells to an edge of the grid. All numbered cells must be a part of the cave, with each number indicating the total number of cells connected vertically and horizontally to the numbered cell, including the cell itself.



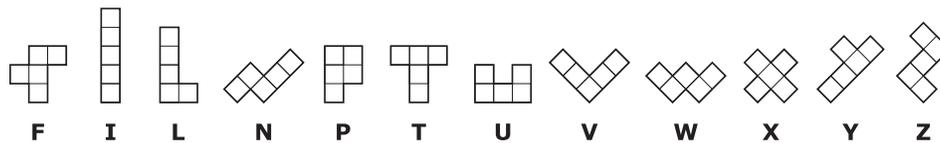
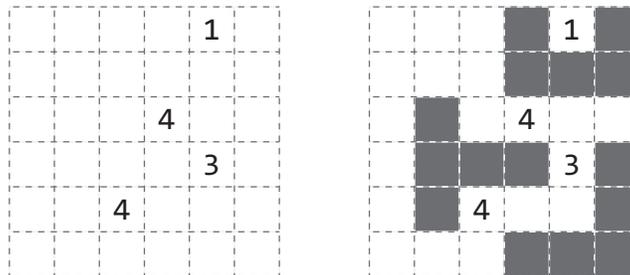
D3. Kurodoko

Shade some empty cells so that each number indicates the total number of white cells connected vertically and horizontally to that number including the numbered cell itself. Shaded cells cannot share an edge, and all white cells must belong to a single connected group.



D4. Pentasight

Place a number of different pentominos in the grid. Rotations and reflections are considered the same pentomino. The pentominos aren't allowed to touch each other, not even diagonally. The numbers in the grid indicate how many white cells can be seen from that cell in all horizontal and vertical directions, including the cell itself. Pentomino pieces block their sight.



# 08 KASHMIR CARPET

1600 Points

40 Minutes

40x Bonus

Team

Round note: This is a team round containing 4 puzzles across 4 puzzle types. Conceptually the round is based on interweaving yarns to form carpets on which the puzzles must be solved. Carpets are grids where there is a checkerboard pattern of alternating visibility of horizontal and vertical strips, and it is part of solving to find out the positioning and exact visibility of the given set of strips. For this round, three A4 sheets will be provided for each puzzle. One of them contains the base grid, one of them contains row strips and one of them contains column strips. It will not be allowed to cut out the strips, the interweaving must be done visually. The circles in the base grid are to help visualize the checkerboard pattern of interweaving, and the grey lines on the strips are also to help visualize the alternating cells. Neither of these markings have any bearing on actual solving.

Partial points are available for this round. For each strip correctly identified and matching the global solution, teams will be awarded ten partial points in the case of a base grid that is not completely solved.

Here is an example with Neighbours puzzle.

Base Grid

Row Yarns

(R) ○ 1 1 3 1

(R) ○ 1 1

(R) ○ 3 3 3

(R) ○ 2 2

(R) ○ 3 3 2

(R) ○ 1 3

Column Yarns

(C) (C) (C) (C) (C) (C)

○ ○ ○ ○ ○ ○

1 1 1

2 2 2 3 3 1

2 3 3

3 1 2

Solution

|   |   |   |   |   |   |
|---|---|---|---|---|---|
| 1 | 1 | 3 | 2 | 3 | 2 |
| 2 | 2 | 3 | 1 | 1 | 3 |
| 2 | 3 | 2 | 3 | 1 | 1 |
| 3 | 1 | 2 | 2 | 3 | 1 |
| 1 | 2 | 1 | 3 | 2 | 3 |
| 3 | 3 | 1 | 1 | 2 | 2 |

Marked Row Yarns

(R) 4 1 1 3 1

(R) 5 1 1

(R) 2 3 3 3

(R) 3 2 2

(R) 6 3 3 2

(R) 1 1 3

Marked Column Yarns

(C) (C) (C) (C) (C) (C)

1 3 5 2 4 6

1 1 1

2 2 2 3 3 1

2 3 3

3 1 2

Some Example strips are given below containing all possible elements for each puzzle type. Note that within the elements presented there may be variations like changing numbers or different turns, as long as they fall within the individual puzzle rules.

Castle Wall



Neighbours



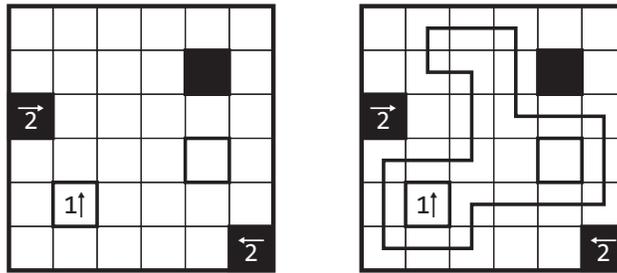
Shakashaka



Railway Tracks

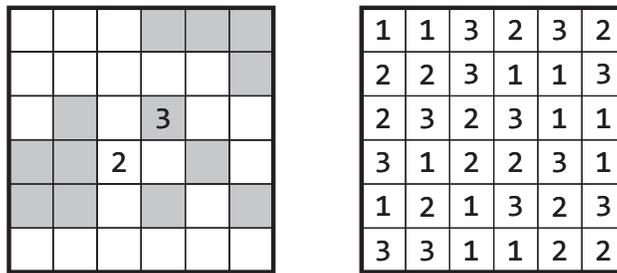


Draw a closed loop passing through centres of cells horizontally or vertically. The grid contains some bordered or black cells that cannot be part of the loop. Black cells must be outside the loop; white cells with thick borders must be inside the loop. Numbered arrows refer to the total sum of the lengths of loop segments in the given direction. There can be no bordered or black cells apart from those indicated within the yarns.



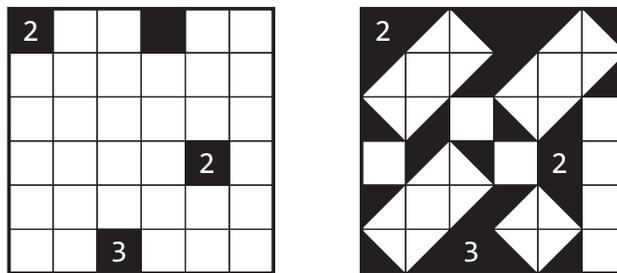
2. Neighbours

Place digits 1–3 in the grid so that each digit appears an equal number of times in each row and column. Digits in shaded cells do not share an edge with a cell containing the same digit. Digits in white cells share an edge with at least one cell containing the same digit. All shaded cells are given in the base grid and the yarns will only contain numbers that can be true or false.



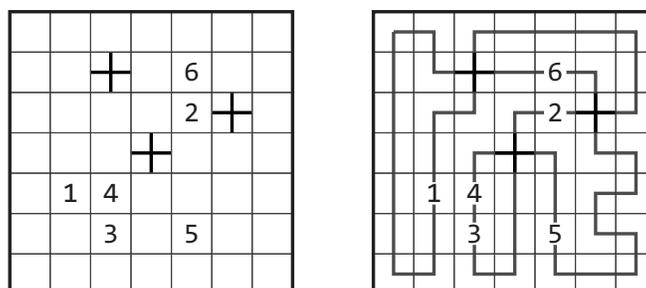
3. Shakashaka

Shade in triangles in some cells so that the remaining white spaces are all shaped like rectangles. The triangles have to split a cell into two equal size shaded & unshaded right angled triangles. The numbers in the black cells indicate number of cells sharing an edge with the black cell that are to be shaded with a triangle. No cell can be shaded completely black apart from those indicated within the yarns.



4. Railroad Tracks

Draw a loop passing through centres of cells horizontally or vertically, passing through all circles. The loop must cross itself, but only in cells with a given '+'. The loop must pass straight through 'stations', i.e. numbered cells, and must travel in order from 1 to 2 and so on till N, where N is the highest number that will be placed in the grid, and then back to 1. No numbers and crosses can be placed in the grid apart from those indicated within the yarns.



# 09 PUZZLE MARATHON

1100 Points

110 Minutes

10x Bonus

Individual

Round note: This round contains 8 puzzles across 8 puzzle types. The puzzles of this round are larger in size than the puzzles in other individual rounds. Partial points are available for partly solved grids. The grids will be divided into four equal quadrants during correction and if three quadrants are correctly solved, 50% of the points will be awarded. If seven puzzles are correctly solved and one puzzle has a completed grid with mistakes in a single quadrant, a partial bonus of 8 points per minute will be awarded for the round. For odd dimensions each quadrant is defined overlapping the middle row/column.

## 1. Suguru

65 Points

Place a digit in each empty cell such that every thickly outlined region of size N contains all digits from 1 to N. The same digits do not touch each other, even diagonally.

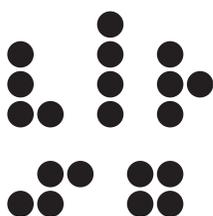
|   |   |  |   |   |
|---|---|--|---|---|
|   | 3 |  | 3 |   |
|   |   |  |   |   |
|   |   |  |   |   |
| 4 |   |  |   | 3 |
|   |   |  |   |   |

|   |   |   |   |   |
|---|---|---|---|---|
| 2 | 3 | 1 | 3 | 1 |
| 1 | 4 | 5 | 4 | 5 |
| 3 | 2 | 1 | 2 | 1 |
| 4 | 5 | 3 | 4 | 3 |
| 2 | 1 | 2 | 1 | 2 |

## 2. Statue Park

65 Points

Place each of the shapes from the given bank into the grid, with rotations and reflections allowed. Shapes must be placed exactly as many times as they appear in the bank. No two shapes can overlap or touch each other by a side, and all of the space not occupied by shapes must form a single connected area. Black circles in the grid indicate cells that must be contained in one of the shapes, and white circles represent cells that must not be contained in a shape.



|   |   |  |   |   |   |  |   |   |  |
|---|---|--|---|---|---|--|---|---|--|
| ● | ○ |  | ● | ● |   |  |   |   |  |
|   |   |  |   | ○ |   |  |   | ○ |  |
|   |   |  |   |   |   |  |   |   |  |
|   | ● |  |   | ● |   |  |   |   |  |
|   |   |  |   | ○ | ○ |  | ○ | ○ |  |

|   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|
| ● | ○ | ○ | ● | ● | ● | ○ | ○ | ○ |
| ● | ● | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| ● | ○ | ○ | ● | ○ | ● | ○ | ● | ● |
| ○ | ● | ● | ○ | ● | ● | ○ | ● | ○ |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

## 3. Snaky Search

80 Points

Find the given list of words in the grid. Each word is in the form of a Snake. A snake cannot touch/cross itself or other Snakes, even diagonally. The letters in the Snake must follow the same order as the word. Black cells cannot be visited by Snakes. Ignore any punctuation, numbers or special characters in the words.

|   |   |   |   |   |   |
|---|---|---|---|---|---|
| D | O | Y | O | Y | ■ |
| O | Y | O | U | K | I |
| A | O | U | E | E | L |
| I | U | D | N | I | I |
| D | N | I | I | A | K |
| ■ | N | D | D | N | E |

DO  
YOU  
LIKE  
INDIA?

|   |   |   |   |   |   |
|---|---|---|---|---|---|
| D | ○ | Y | ○ | Y | ■ |
| O | Y | ○ | U | K | I |
| A | ○ | U | E | E | L |
| I | U | D | N | I | I |
| D | N | I | I | A | K |
| ■ | N | D | D | N | E |

## 4. Spiral Galaxies

110 Points

Divide the grid into 180° symmetrical regions along the gridlines, so that each cell is part of only one region. Each region must contain exactly one black dot, which represents the central symmetry point of the region. All circles are given and all white cells must be part of a region. The black cells are not part of any regions.

|   |   |   |   |
|---|---|---|---|
| ● | ■ |   | ● |
|   |   |   |   |
| ● |   | ● | ● |
|   |   | ● |   |

|   |   |   |   |
|---|---|---|---|
| ● | ■ |   | ● |
|   |   |   |   |
| ● |   | ● | ● |
|   |   | ● |   |

### 5. Gapped Kakuro

170 Points

Place a digit from 1 to 9 in some of the empty cells. The sum of digits in each horizontal and vertical group of cells is given on its left and top respectively. Digits do not repeat within any set of consecutive empty cells. Some cells can be left blank but blank cells cannot touch each other by a side.

|    |    |    |   |    |   |
|----|----|----|---|----|---|
|    | 15 | 13 | 5 | 22 | 4 |
| 5  |    |    |   |    |   |
| 8  |    |    |   |    |   |
| 4  |    |    | 1 |    |   |
| 17 |    |    | 5 |    |   |
| 29 |    |    |   |    |   |

|    |    |    |   |    |   |
|----|----|----|---|----|---|
|    | 15 | 13 | 5 | 22 | 4 |
| 5  |    | 1  |   | 4  |   |
| 8  | 2  |    | 5 |    | 1 |
| 4  | 1  | 3  | 1 | 1  |   |
| 17 | 4  | 2  |   | 8  | 3 |
| 29 | 8  | 7  | 5 | 9  |   |

### 6. Palindrome

170 Points

The grid is divided into multiple subgrids, separated by thick lines. Place a letter A or B or C in some of the cells. Some cells will remain blank, but blank cells can't touch each other by a side, even across subgrids. Each row and each column of subgrids form palindromes. A palindrome has at least 2 different letters and reads same from both sides, ignoring the blank cells. Two cells, with different letters, cannot have a thick line between them.

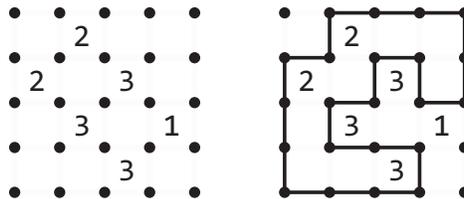
|  |   |   |   |  |   |   |   |  |   |
|--|---|---|---|--|---|---|---|--|---|
|  | A |   | A |  |   |   | C |  | B |
|  | A | A |   |  |   | B |   |  |   |
|  |   | C | A |  | B | B | B |  |   |
|  |   |   |   |  |   | C | A |  | B |
|  |   | B |   |  |   |   |   |  |   |

|   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|
|   | A | B | A |   | B | C | C | C | B |
| B | A | A | B | B | A | B | A |   | B |
| A | C | C | A | A | B | B | B | B | A |
| B | A | A | B | B | A | C | A |   | B |
|   | A | B | A |   | B |   | C | C | B |

### 7. Slitherlink

190 Points

Draw a closed loop by connecting dots along the dashed lines. The loop can't touch or cross itself. A number in a cell indicates the number of segments used by the loop around that cell.



### 8. Nurikabe

250 Points

Shade some empty cells to form distinct 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 shaded cells must form a single connected area. No 2x2 group of cells can be entirely shaded.

|   |   |   |  |  |
|---|---|---|--|--|
|   |   |   |  |  |
|   |   |   |  |  |
|   |   | 6 |  |  |
|   | 1 |   |  |  |
| 1 |   |   |  |  |

|   |   |   |  |  |
|---|---|---|--|--|
|   |   |   |  |  |
|   |   |   |  |  |
|   |   | 6 |  |  |
|   | 1 |   |  |  |
| 1 |   |   |  |  |

# 10 PARALLEL UNIVERSE

650 Points

50 Minutes

10x Bonus

Individual

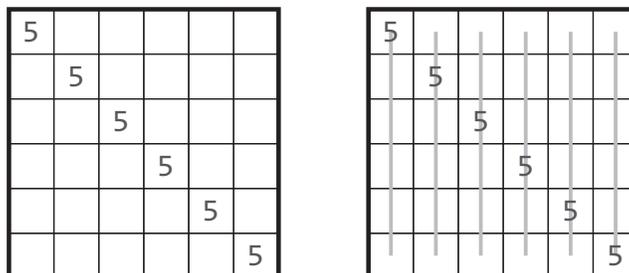
Round note: This round contains 16 puzzles across the same 16 puzzle types that appear in the Evergreens round, but with a slight tweak in the form of an optimization requirement in each puzzle. All puzzles in this round have multiple solutions but have a unique solution if the optimization requirement is met. It is part of solving to use the optimization and achieve the single solution.

## 1. Four Winds Optimizer

15 Points

Draw one or more horizontal or vertical lines from each numbered cell. The lines cannot cross other numbered cells. Each number indicates the total number of cells connected by its lines, the numbered cells themselves are not counted. No lines overlap or intersect each other. Each empty cell is visited by exactly one line.

Maximize the number of vertical line segments.

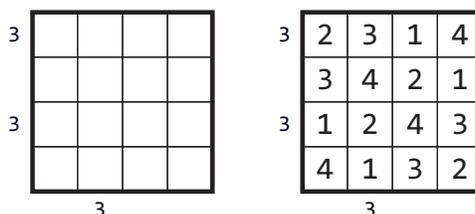


## 2. Skyscrapers Optimizer

90 Points

Place a digit from 1 to N, in an NxN grid, into each of the empty cells so that each digit appears exactly once in each row and column. Each digit inside the grid represents the height of the skyscraper in that cell. Each number outside the grid represents the number of skyscrapers that can be seen in the corresponding row or column. Taller skyscrapers hide shorter ones.

Maximize the sum of missing outside clues.

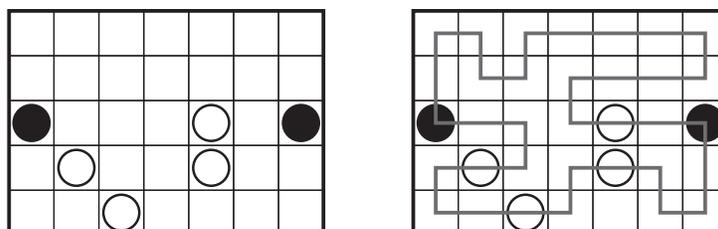


## 3. Masyu Optimizer

20 Points

Draw a closed loop passing through centres of cells horizontally or vertically, passing through all circles. The loop must go straight through the cells with white circles, with a turn in at least one of the cells immediately before/after each white circle. The loop must make a turn in all the black circles, but must go straight in both cells immediately before/after each black circle.

Maximize the number of cells the loop visits.



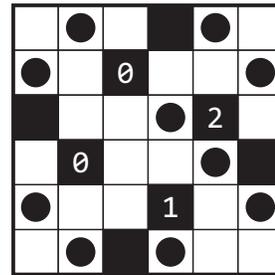
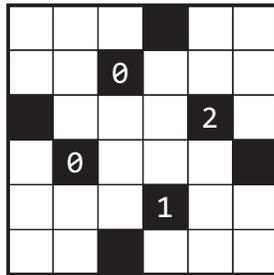


7. Akari Optimizer

20 Points

Place light bulbs in some white cells in the grid so that every white cell in the grid is illuminated. A cell is illuminated by a light bulb if they are in the same row or column, and if there are no black cells between them. No light bulb may illuminate another light bulb. A number in a black cell indicates the number of light bulbs sharing an edge with that cell.

Maximize the number of light bulbs used.

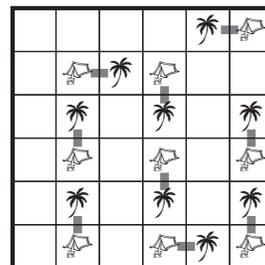
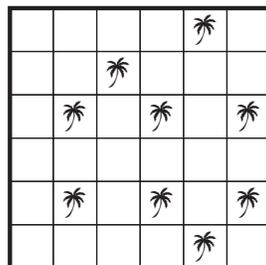


8. Tents Optimizer

20 Points

Place one distinct tent next to each tree horizontally or vertically. Tents do not touch each other, even diagonally. The numbers outside the grid indicate the number of tents in the corresponding row or column.

Maximize the length of longest orthogonally connected chain of tents and trees. A chain is defined as a continuous, non-overlapping, non-branching, non-backtracking path of consecutive cells containing tents or trees in each cell.



9. Mastermind Optimizer

20 Points

Find out the correct series of digits with the help of the information given by the black and white dots. Black dots imply correct digits in the correct position while white dots imply correct digits in the wrong position. Digits are not repeated and 0 is not used.

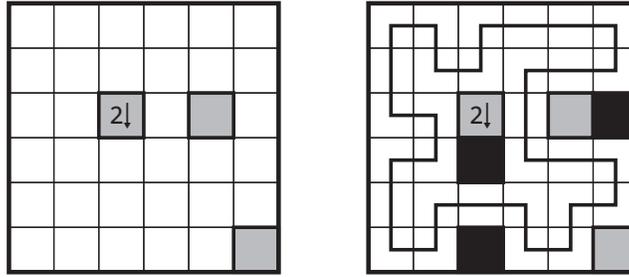
Maximize the four-digit number formed by the series.

1 2 3 4 • • •  
 4 5 6 7 • •  
 7 8 9 1 • •  
 -----  
 ○ ○ ○ ○ • • • •

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

Blacken some white cells and draw a closed loop passing through centres of all remaining white cells horizontally or vertically. Blackened cells cannot share an edge with each other. Some cells are outlined and in grey and cannot be part of the loop. Numbered arrows in such cells indicate the total number of blackened cells in the direction pointed at by the arrow.

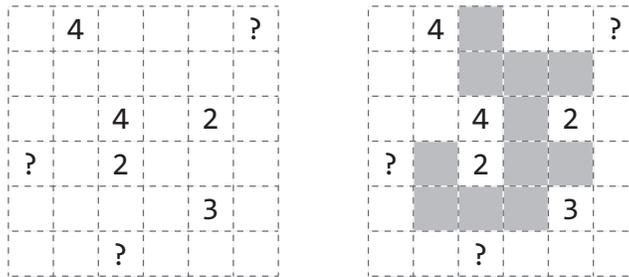
Minimize the number of shaded cells.



11. Cave Optimizer

Shade some cells to leave behind a single connected group — the cave. All shaded cells must be connected horizontally or vertically through other shaded cells to an edge of the grid. All numbered cells must be a part of the cave, with each number indicating the total number of cells connected vertically and horizontally to the numbered cell, including the cell itself.

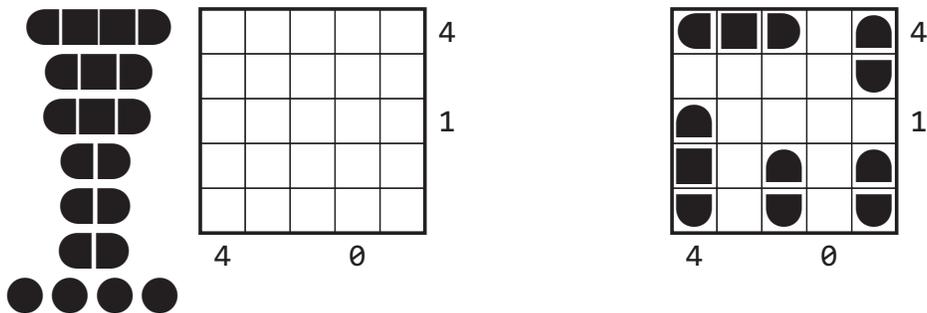
Some clues are replaced by question marks (?). Maximize the sum of those clues.



12. Battleships Optimizer

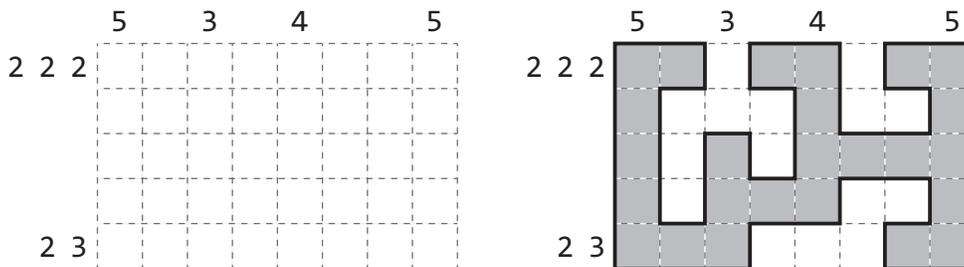
Place the given fleet of ships with the shapes of the ships as shown. The numbers outside the grid indicate the number of cells occupied by a ship segment in that row or column. Ships cannot touch each other, even diagonally. Some cells are known to be water unoccupied by ships, and are indicated by waves.

Some of the fleet will NOT appear in the grid, but only ships within the fleet can be used. Maximize the number of cells occupied by ships in the final solution.



Shade some cells to leave behind a single connected group — the Coral. No 2x2 area may be fully covered by the coral. All empty cells must be connected horizontally or vertically through other empty cells to an edge of the grid. Numbers outside the grid indicate the lengths of consecutive parts of the coral in the corresponding row or column. Numbers belonging to the same row or column are in increasing order and not necessarily in the order they appear.

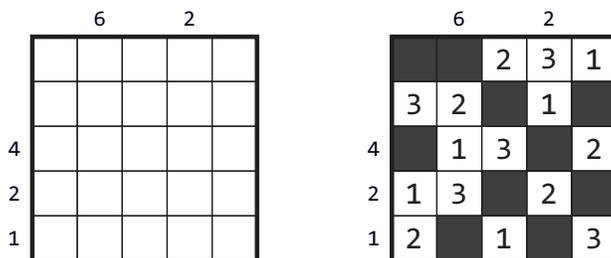
Maximize the number of cells used by the largest un-shaded group in the grid.



14. Doppelblock Optimizer

Place a digit from 1 to (N-2), in an NxN grid, into each of the empty cells so that each digit appears exactly once in each row and column. Shade the remaining two cells in each row and column. The numbers outside indicate the sum of the digits in between the two shaded cells in the corresponding row or column.

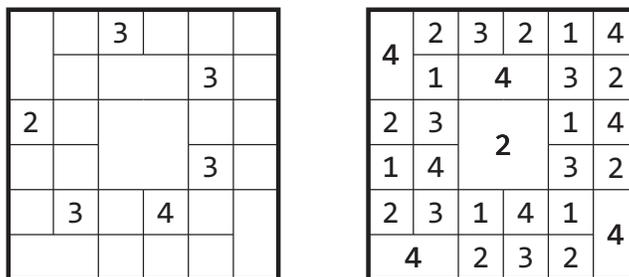
Minimize the number of white cells adjacent (sharing an edge) to shaded cells.



15. Different Neighbours Optimizer

Place a digit from 1 to 4 into each of the empty cells so that identical digits do not touch each other, even diagonally. Some cells span across a larger area than others.

Minimize the number of 1's placed in the grid.



Place a digit in each of the white cells, so that all the given numbers are found in the grid, either in left-to-right or in top-to-bottom directions. Black cells separate different numbers.

Some numbers are not found in the grid. Minimize the sum of those numbers.

14 338 2365  
 21 553 3459  
 31 651 3469  
 51 653  
 62 673  
 63 725  
 77 891

|  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

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

# 11 SVC

250 Points

25 Minutes

10x Bonus

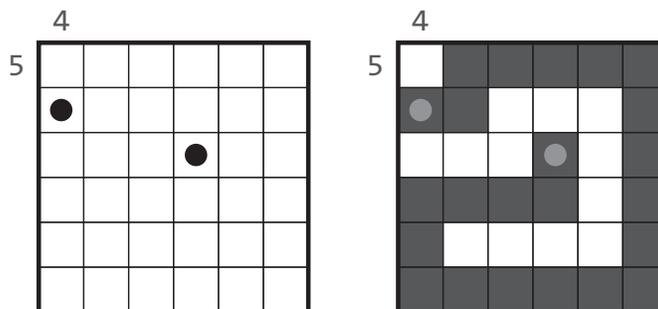
Individual

Round note: This is a single-type round that contains 8 puzzles featuring 6 variations of the Snake puzzle type along with two Classic Snake puzzles.

## 1,2. Snake

5 + 15 Points

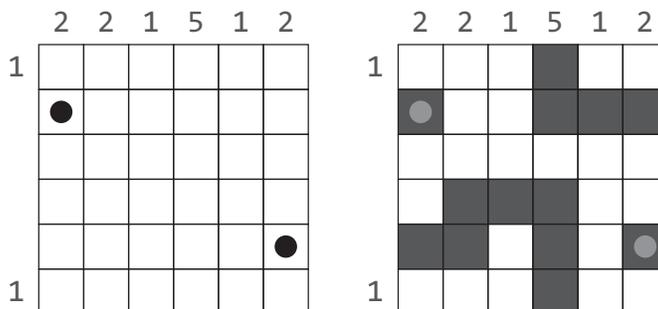
Draw a snake, i.e. a 1 cell-wide single continuous path in the grid whose head and tail are given. The snake does not touch itself, even diagonally. Numbers outside the grid indicate the number of snake cells in that row/column.



## 3. Toroidal Snake

55 Points

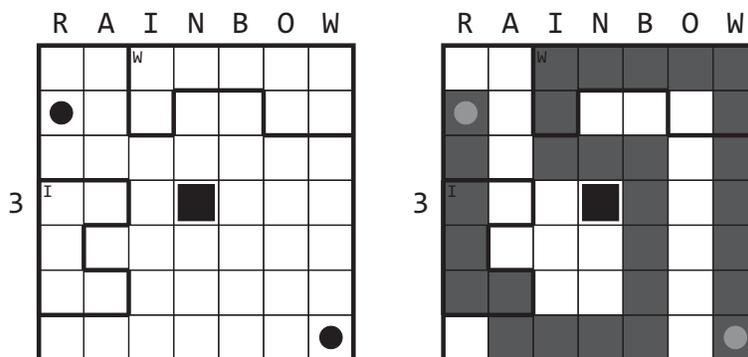
Apply Snake rules. Additionally, the snake can wrap around all four edges of the grid, but still cannot touch itself, even diagonally across edges.



## 4. Regional Coded Snake

65 Points

Apply Snake rules. Additionally, a thickly outlined region must have the number of snake cells indicated in the top left cell of the region. Some numbers have been substituted by letters, both outside the grid, and in regions. All instances of the same letter must become the same number and different letters must become different numbers. Black cells are not part of the snake.



Apply Snake rules. Additionally, if one instance of a letter is part of the snake, all instances of the letter are part of the snake. The length of the snake is given.

Length = 25

|   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
| ● | P | Q | R | S | T | A |
|   | T |   |   |   | P | K |
|   | R | Q | D | U | Q |   |
|   | R |   | S |   | R |   |
|   | R | E | U | E | T |   |
| P | P |   |   |   | L |   |
| P | P | S | T | K | Z | ● |

|   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
| ● | P | Q | R | S | T | A |
|   | T |   |   |   | P | K |
|   | R | Q | D | U | Q |   |
|   | R |   | S |   | R |   |
|   | R | E | U | E | T |   |
| P | P |   |   |   | L |   |
| P | P | S | T | K | Z | ● |

6. True-False Snake

Apply Snake rules. Additionally, the numbered arrows in the grid indicate the number of cells the snake visits in the direction of the arrow. If the snake does not pass through a clue cell, then that clue is true, otherwise, it must be false, i.e. cannot be true.

|   |                |                |                |  |                |
|---|----------------|----------------|----------------|--|----------------|
| ● |                |                |                |  | ●              |
|   |                | ← <sub>2</sub> | → <sub>1</sub> |  |                |
|   |                |                |                |  |                |
|   |                | → <sub>3</sub> | ↑ <sub>0</sub> |  |                |
|   | ← <sub>1</sub> |                |                |  | → <sub>0</sub> |

|   |                |                |                |  |                |
|---|----------------|----------------|----------------|--|----------------|
| ● |                |                |                |  | ●              |
|   |                | ← <sub>2</sub> | → <sub>1</sub> |  |                |
|   |                |                |                |  |                |
|   |                | → <sub>3</sub> | ↑ <sub>0</sub> |  |                |
|   | ← <sub>1</sub> |                |                |  | → <sub>0</sub> |

7. BOA Snake

Apply Snake rules. Additionally, the head and tail are defined as H and T. Traveling from H to T, the Snake behaves differently at each letter. It goes straight through all Os. It turns clockwise at all As and anti-clockwise at all Bs.

|   |   |   |  |   |   |
|---|---|---|--|---|---|
|   |   |   |  |   | O |
|   |   | H |  |   | T |
|   |   |   |  |   |   |
| B | O |   |  | A | B |
|   |   | A |  |   | O |
|   |   |   |  |   | O |

|   |   |   |  |   |   |
|---|---|---|--|---|---|
|   |   |   |  |   | O |
|   |   | H |  |   | T |
|   |   |   |  |   |   |
| B | O |   |  | A | B |
|   |   | A |  |   | O |
|   |   |   |  |   | O |

8. Instructionless Snake

This is a Snake variant puzzle. Instead of instructions, an example will be given, with its solution. It is part of solving to determine what the variant rules are and then solve the Snake. It is not required to describe the rules. There are no points for determining the rule correctly, but not solving the Snake (or solving incorrectly).

# 12 123 GO

450 Points

40 Minutes

10x Bonus

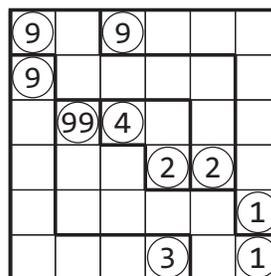
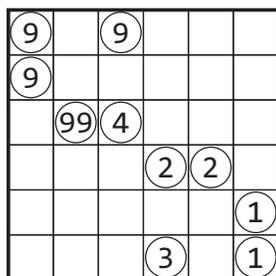
Individual

Round note: This round contains 26 puzzles across 26 puzzle types. This is a sprint round meant for speed solving in a short span of time.

## 1. Araf

10 Points

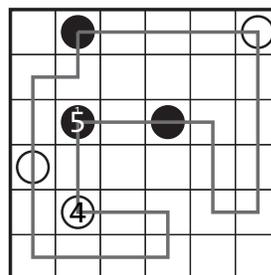
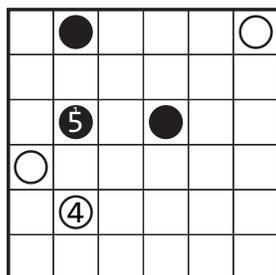
Divide the grid into some regions containing two circles each. Each cell of the grid is part of one region. Each region must have an area that is strictly between the numbers in the circles contained in it. This means, for two number clues A and B with  $A < B$ , the area C fulfills  $A < C < B$ .



## 2. Balance Loop

20 Points

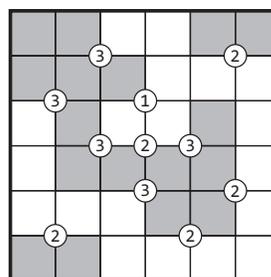
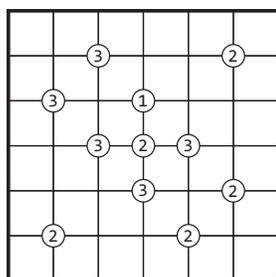
Draw a closed loop passing through centres of cells horizontally or vertically. All white circles must have equal segment lengths on both sides of the circle before turning. All black circles must have unequal segment lengths on both sides of the circle before turning. Numbers indicate the sum of the segment lengths on both sides of the circle.



## 3. Creek

10 Points

Shade some cells in the grid so that the remaining white cells form a single connected area. The small numbers at the intersection of four cells give the number of shaded cells among them.

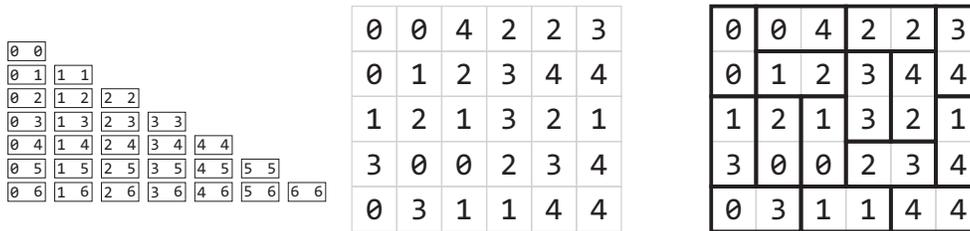


#### 4. Dominos

15 Points

The grid contains a set of dominos, using all pairing combinations of 0~6 from 0-0 to 6-6. The layout is shown with domino edges removed. Reconstruct the missing edges.

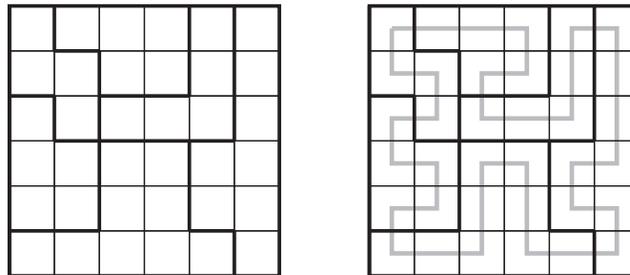
The example uses 0-0 to 4-4.



#### 5. EntryExit

5 Points

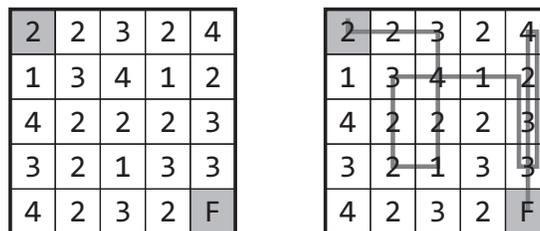
Draw a closed loop passing through centres of all cells horizontally or vertically. It can enter and exit any region only once.



#### 6. Football

20 Points

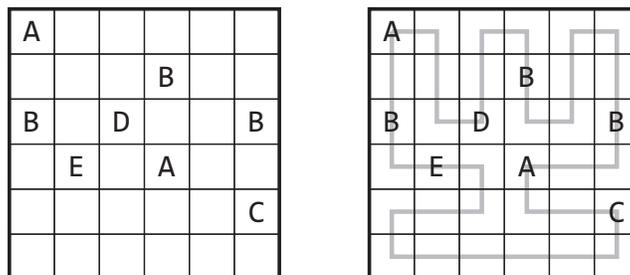
Starting at the top-left corner, find a path to 'F' such that the digit in each cell along the way indicates the distance to the next cell in the path. The path cannot visit the same cell more than once but it can cross and overlap itself.



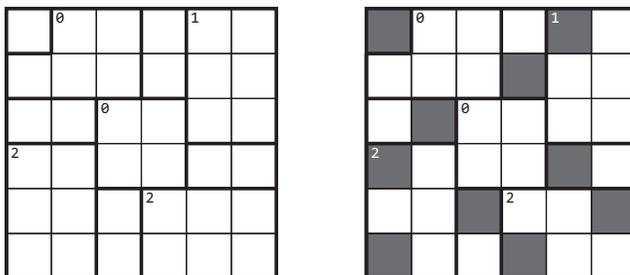
#### 7. Gemini Loop

10 Points

Draw a closed loop passing through centres of all cells horizontally or vertically. Cells with the same letter all have the same appearance as to how the loop enters and exits the cell. Cells with different letters have a different appearance.

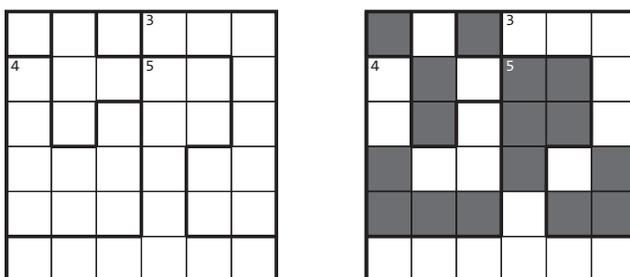


Shade some cells. Shaded cells must not touch each other by a side. The white cells must form a single connected area. The white area cannot span across 2 consecutive thick boundaries. A number in a region indicates the number of shaded cells in that region.



9. Islands

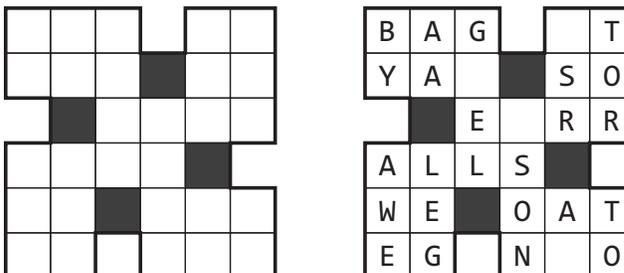
Shade in a polyomino in each thickly outlined region such that no two polyominoes touch each other by a side, no two regions sharing an edge contain polyominoes of the same size, and a numbered region contains a polyomino of that size.



10. Jumping Crossword

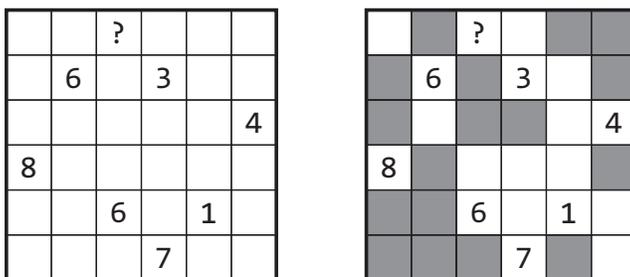
Place the given words into the grid, from left to right and top to bottom in each consecutive line of cells, separated by grid borders and black cells. The words may jump over some cells, even the first or the last ones, but never more than one cell for one jump. The jumped cells are also jumped by any intersecting word. The jumps are not indicated in the listed words.

- 2     3     4
- A     AWE    ALLS
- AA    BAG     ERR
- BY    LEG     GEL
- EG    NO      SON
- SO    OAT
- T     SR
- TO    TOR
- WE    YA



11. Kurotto

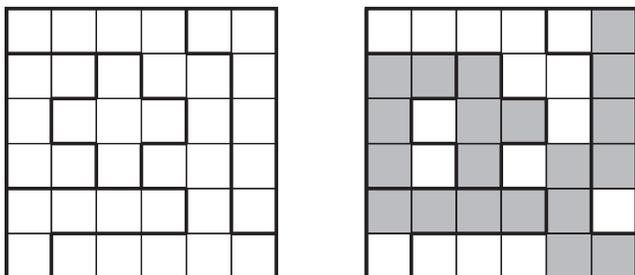
Shade some empty cells so that each number indicates the total number of shaded cells in connected groups sharing an edge with that number. Cells with numbers cannot be shaded. Some numbers are replaced by '?'s and can assume any value, including 0.



12. LITS

5 Points

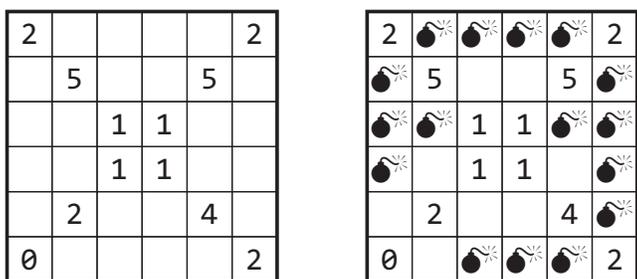
Shade a shape of four orthogonally connected cells in each black bordered region so that all shaded cells form a single contiguous area. This area can't contain any 2x2 group of shaded cells. Two identical shapes in different regions can't touch each other by a side. Rotations and reflections are considered the same shape.



13. Minesweeper

5 Points

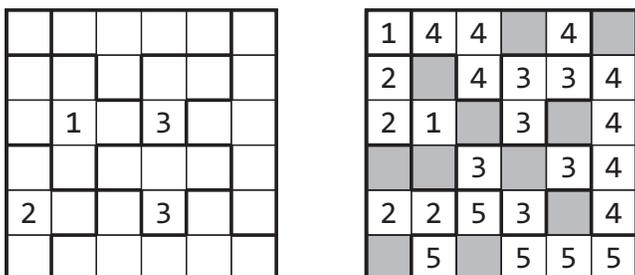
Place mines into empty cells in the grid such that the numbers in the grid represent the number of mines in the eight neighbouring cells, including diagonal ones.



14. Nanro

25 Points

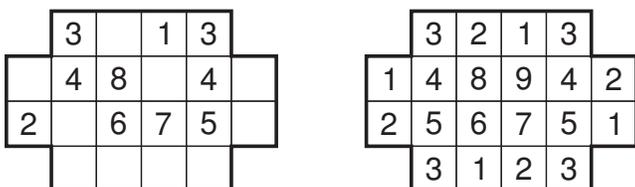
Label some cells with numbers to form a single connected group of labeled cells; no 2x2 group of cells may be fully labeled. Each bold region must contain at least one labeled cell. Each number, including any given number, must equal the total number of labeled cells in that region. For two labeled cells touching by a side across a thick boundary, the numbers must be different.



15. Offspring

20 Points

Place a digit from 1 to 9 into each cell of the grid so that same digits do not touch each other, even diagonally. Every digit must have all the digits that are smaller than itself in the eight neighbouring cells, including diagonal ones.



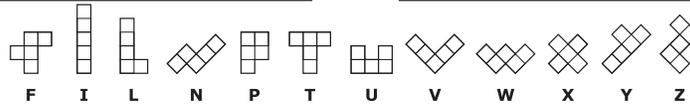
16. Pentomino Divider

10 Points

Divide all cells of the grid into pentominos, so that all twelve pentominos are used exactly once. Rotations and reflections are allowed. A cell with a letter is part of a pentomino of that letter's shape. Pentominos may contain zero, one or more given letters.

|   |  |   |   |   |  |   |  |  |   |
|---|--|---|---|---|--|---|--|--|---|
|   |  | N | L |   |  |   |  |  |   |
|   |  |   |   |   |  |   |  |  |   |
|   |  |   |   |   |  |   |  |  | X |
|   |  |   | Z | T |  |   |  |  | V |
| Y |  |   |   |   |  | P |  |  |   |
| W |  |   |   |   |  | I |  |  |   |

|   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|
| N | N | N | L | L | L | L | U | U | U |
| Y | Z | N | N | F | F | L | U | X | U |
| Y | Z | Z | Z | T | F | F | X | X | X |
| Y | Y | W | Z | T | F | P | P | X | V |
| Y | W | W | T | T | T | P | P | P | V |
| W | W | I | I | I | I | I | V | V | V |



17. Queens

50 Points

Place the given number of queens into empty cells in the grid so that each number indicates the number of directions from which that cell can be attacked by a queen. A queen attacks to an arbitrary distance in a straight line in any of the eight directions along cells from the cell it is placed in. Queens block other queens. Hollow areas do not block queens.

|   |   |   |  |   |   |
|---|---|---|--|---|---|
|   | 2 |   |  |   | 2 |
|   |   |   |  |   |   |
|   | 2 |   |  |   |   |
| 0 | 2 |   |  | 2 |   |
|   |   | 2 |  |   | 2 |
| 2 |   |   |  |   | 2 |

|   |   |   |   |   |   |
|---|---|---|---|---|---|
|   | 2 | ♔ |   | ♔ | 2 |
|   | ♔ |   | ♔ | ♔ |   |
|   | 2 |   |   |   |   |
| 0 | 2 |   |   | 2 |   |
|   |   | 2 |   | ♔ | 2 |
| 2 |   |   |   | ♔ | 2 |



(7 Queens)

18. Ripple Effect

25 Points

Place digits 1-N in each thickly outlined region, where N equals the size of the region. Same digits in the same row or column are separated by at least a number of cells equal to that digit. Distances are counted along hollow areas in the same units as areas containing cells.

|  |  |  |   |   |   |  |  |  |  |
|--|--|--|---|---|---|--|--|--|--|
|  |  |  |   |   | 1 |  |  |  |  |
|  |  |  |   |   |   |  |  |  |  |
|  |  |  |   |   |   |  |  |  |  |
|  |  |  |   |   |   |  |  |  |  |
|  |  |  |   |   |   |  |  |  |  |
|  |  |  |   | 4 |   |  |  |  |  |
|  |  |  | 1 |   |   |  |  |  |  |

|   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|
| 3 | 1 | 2 | 4 | 3 | 1 | 2 | 1 | 3 | 2 |
| 1 | 2 | 4 | 1 | 2 | 3 | 1 | 2 | 1 | 3 |
| 2 | 1 | 3 | 2 |   |   | 4 | 3 | 2 | 1 |
| 4 | 3 | 2 | 1 |   |   | 2 | 5 | 1 | 2 |
| 5 | 2 | 1 | 3 | 4 | 2 | 5 | 1 | 3 | 1 |
| 3 | 4 | 5 | 1 | 2 | 3 | 1 | 4 | 2 | 3 |

19. Scrabble

20 Points

Place all words from the given list into the grid from left to right or from top to bottom exactly once. All words must form a single connected area. No words of two or more letters can appear anywhere in the grid, except the ones listed.

PLEASE  
SOLVE  
THE  
EXACT  
PUZZLE

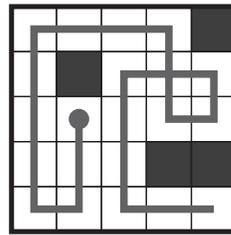
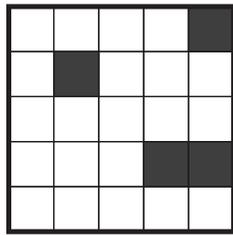
|  |  |   |  |   |  |
|--|--|---|--|---|--|
|  |  |   |  |   |  |
|  |  |   |  | O |  |
|  |  |   |  |   |  |
|  |  |   |  |   |  |
|  |  | T |  |   |  |
|  |  |   |  |   |  |

|   |   |   |   |   |   |
|---|---|---|---|---|---|
| P | L | E | A | S | E |
| U |   | X |   | O |   |
| Z |   | A |   | L |   |
| Z |   | C |   | V |   |
| L |   | T | H | E |   |
| E |   |   |   |   |   |

20. Tiger in the Woods

10 Points

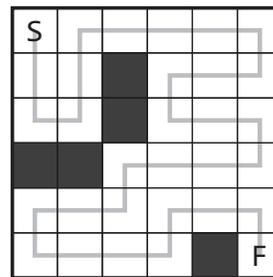
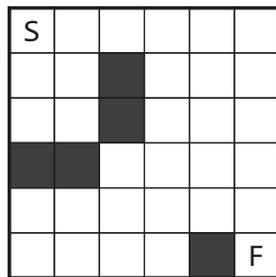
Draw a path in the grid that starts from any white cell and travels horizontally and vertically to visit every white cell. The path can cross over itself but it may not overlap itself. It cannot cross the start or end cells. Following the path from the starting cell, it may change direction only after facing either a black cell or the edge of the grid. The path must end facing a black cell or edge.



21. Unequal Length Maze

10 Points

Find a path from "S" to "F" passing through centres of all cells horizontally or vertically exactly once. The path must alternate between horizontal and vertical segments where two consecutive segments cannot be the same length.



22. Vista

30 Points

Each cell in the grid represents a room. All rooms are interconnected by doors. Some doors are open, while the others are closed. The number inside a room indicates the number of rooms that can be seen from it in all four directions, including itself. Draw the closed doors.

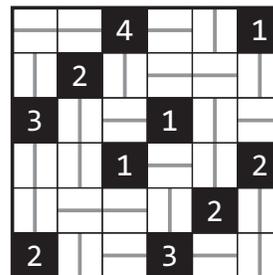
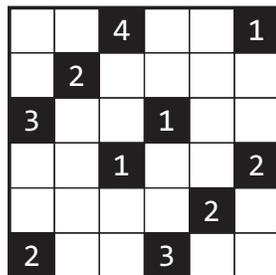
|   |   |   |   |
|---|---|---|---|
| 4 | 2 | 4 | 2 |
| 5 | 3 | 5 | 3 |
| 4 | 3 | 4 | 4 |
| 2 | 3 | 2 | 4 |

|   |   |   |   |
|---|---|---|---|
| 4 | 2 | 4 | 2 |
| 5 | 3 | 5 | 3 |
| 4 | 3 | 4 | 4 |
| 2 | 3 | 2 | 4 |

23. Walls

10 Points

Draw a single horizontal or vertical line across the full width or height of the centre of every white cell, such that the total length of all lines touching each black cell is indicated by the number given in the cell.



Place an X or an O into each empty cell such that no three consecutive cells horizontally, vertically or diagonally, contain the same letter.

|   |  |   |   |   |   |
|---|--|---|---|---|---|
| O |  | X |   | X |   |
|   |  |   | X |   |   |
|   |  |   |   |   | X |
|   |  |   |   |   |   |
|   |  |   |   |   |   |
| X |  |   |   |   | X |

|   |   |   |   |   |   |
|---|---|---|---|---|---|
| O | O | X |   | X | O |
| O | X | O | X | O | X |
|   | X | O | X | O | X |
| O | O | X | O | X |   |
| X | O | X | O | X | O |
| X | X |   | X | O | X |

25. Yajisan Kazusan

Shade some cells so that all unshaded numbered arrow clues indicate the exact number of shaded cells in the given direction. Arrows point beyond hollow areas. Shaded cells cannot touch each other by a side, and all white cells must form a single connected area. The numbered arrow clue cells can be shaded, and a clue once shaded may or may not be true.

|    |    |    |    |    |    |
|----|----|----|----|----|----|
|    | 1→ | 2→ |    |    | 2↓ |
|    |    |    | 0← |    |    |
|    |    | 2↓ |    | 1→ |    |
|    | 0← |    |    | 1↓ |    |
|    |    | 2↑ |    |    |    |
| 1↑ |    |    | 1↑ | 0← |    |

|    |    |    |    |    |    |
|----|----|----|----|----|----|
|    | 1→ | 2→ |    |    | 2↓ |
|    |    |    | 0← |    |    |
|    |    | 2↓ |    | 1→ |    |
|    | 0← |    |    | 1↓ |    |
|    |    | 2↑ |    |    |    |
| 1↑ |    |    | 1↑ | 0← |    |

26. Zig Zag

Draw a line passing exactly once through the centres of all cells horizontally, vertically or diagonally, starting from the top-left cell and ending at the bottom-right cell. The line cannot cross or overlap itself. The letters of the word ZIGZAG must occur along the path in order repeatedly.

|   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
| Z | I | G | I | A | G | I | G |
| G | A | Z | G | Z | G | Z | Z |
| Z | G | Z | G | Z | A | A | G |
| Z | G | A | I | G | Z | I | Z |
| I | Z | Z | G | G | I | G | Z |
| A | G | I | Z | A | Z | A | G |

|   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
| Z | I | G | I | A | G | I | G |
| G | A | Z | G | Z | G | Z | Z |
| Z | G | Z | G | Z | A | A | G |
| Z | G | A | I | G | Z | I | Z |
| I | Z | Z | G | G | I | G | Z |
| A | G | I | Z | A | Z | A | G |

# 13 NO NUMBERS

400 Points

40 Minutes

10x Bonus

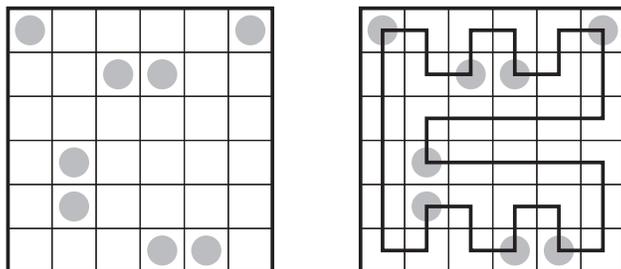
Individual

Round note: This round contains 14 puzzles across 14 puzzle types. All puzzle types appearing in this round do not use any numerical or character based clues.

## 1. Nth Breakpoint

20 Points

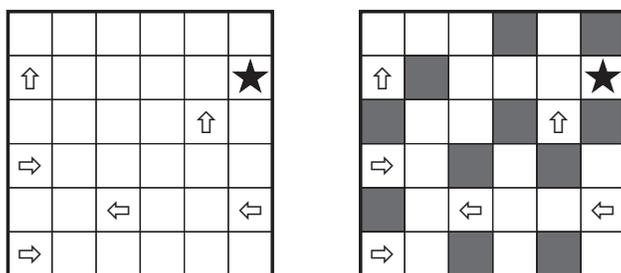
Draw a closed loop passing through centres of all cells horizontally or vertically. It makes a 90° turn at every cell with a circle. The number of turns between between two consecutive circles that the loop visits is constant across the grid.



## 2. Compass

35 Points

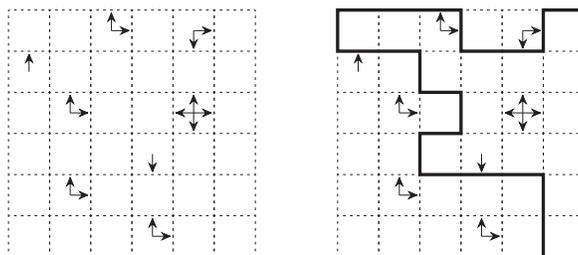
Shade some cells so that all remaining white cells form a single connected area. Shaded cells can't touch each other by a side. There can't be any 2x2 area of white cells. Cells with arrows or stars can't be shaded. Arrows indicate that this is the only direction to travel to the star horizontally and vertically over the white cells without backtracking.



## 3. Myopia

25 Points

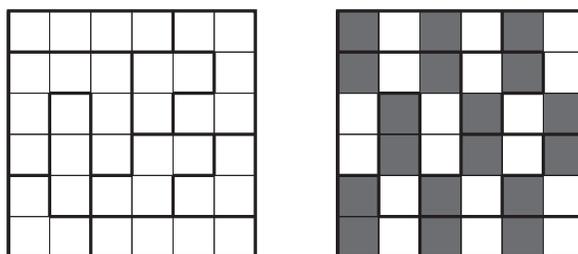
Draw a closed loop along the dashed lines. The arrows in the grid indicate the direction(s) in which the loop is closest when looking from that cell.



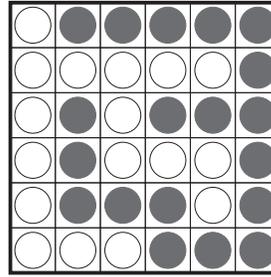
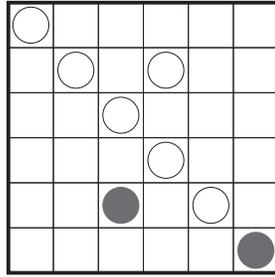
## 4. Norinori

30 Points

Shade two cells in each thickly outlined region, so that each shaded cell shares an edge with exactly one other shaded cell.

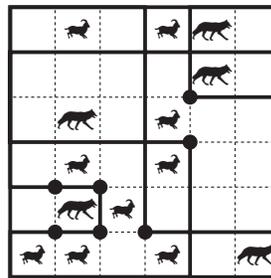
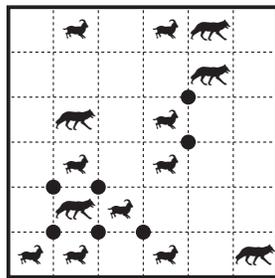


Fill in the grid with white and black circles such that all white circles and all black circles form a single connected area. No 2x2 region can contain circles of the same colour.



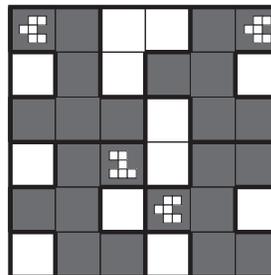
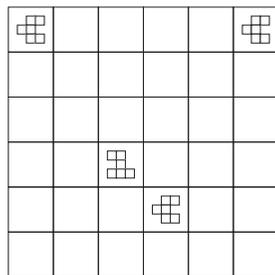
6. Yagit

Draw vertical and horizontal lines along the gridlines, going from one grid edge to any other grid edge, i.e. no loops within the grid. The lines can make 90° turns only where black dots are located. Divide the grid into regions where each region contains only sheep or only wolves, i.e. not both, and not empty. Lines may cross each other anywhere except at the black dots. All black dots need not necessarily be used.



7. Its Yours

Put some pairs of polyominoes in the grid so that each polyomino has one clue inside it. The paired polyominoes will touch each other by at least one side, and a pair of polyominoes cannot touch another pair of polyominoes by a side. A clue in a polyomino shows the shape of the other polyomino of the pair with no rotation or reflection.

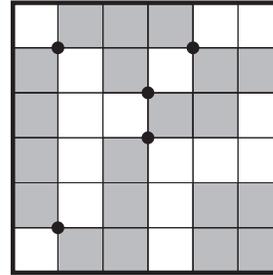
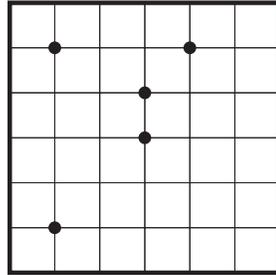
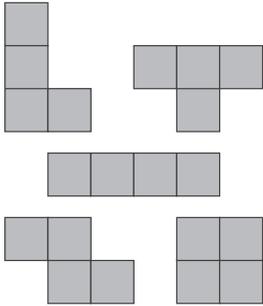


8. Penta Touch

15 Points

Place all 12 pentominoes from the bank into the grid so that no shape appears more than once. Rotations and reflections are considered the same shape. No two pentominoes can touch each other by a side. They can touch diagonally, but every node where two pentomino pieces share a corner is marked with a dot.

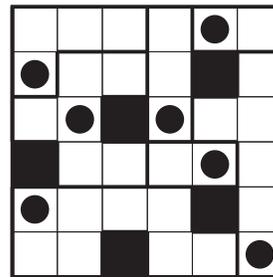
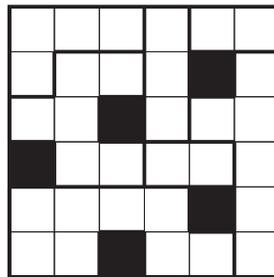
The example uses all 5 tetriminoes.



9. Regional Akari

20 Points

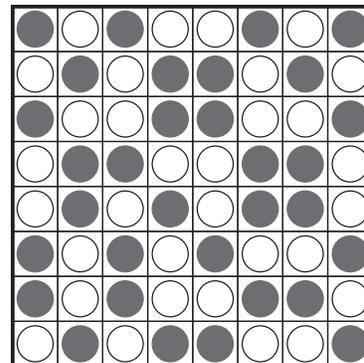
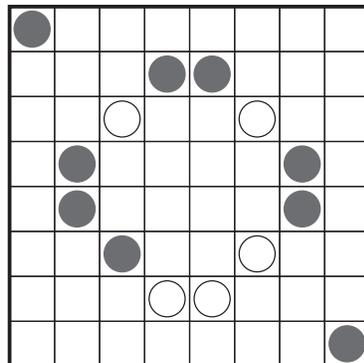
Place light bulbs, one per thickly outlined region, in some white cells in the grid so that every white cell is illuminated. A cell is illuminated by a light bulb if they are in the same row or column, and if there are no black cells between them. No light bulb may illuminate another light bulb.



10. Binaire

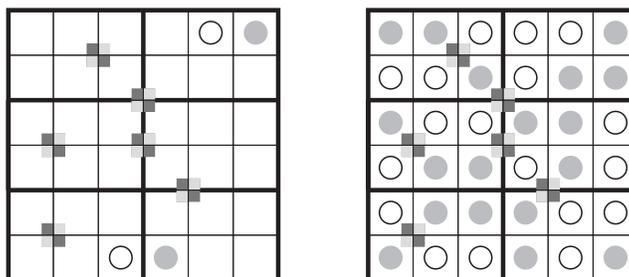
55 Points

Place a white or black circle in each of the empty cells so that each row and column contains same number of circles of each colour. Three circles of a single colour must not be placed continuously in a row or column. No two rows can be identical from left to right, and similarly no two columns can be identical from top to bottom.



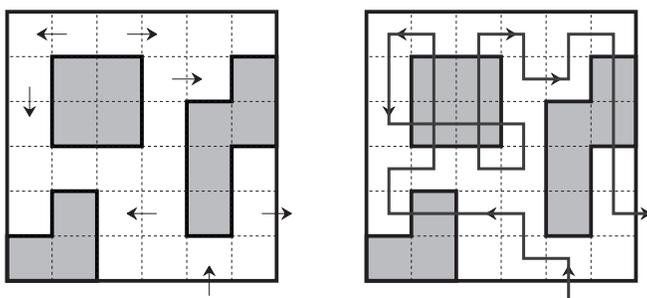
Place five black circles and four white circles in every row, column and thickly outlined 3x3 region. Wherever two black and two white circles form a 2x2 checkerboard pattern, a Battenburg marking is given. Some circles are already placed.

The example uses three black circles and three white circles in every row, column and thickly outlined 2x3 region.



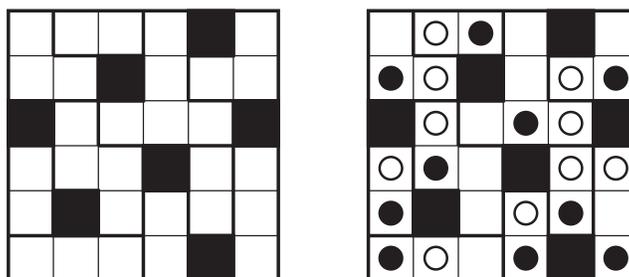
12. Ice Barn

Draw a single path passing through the centres of some cells of the grid horizontally or vertically, from the arrow pointing into the grid to the arrow pointing out of the grid, which follows the directions of the arrows consistently. Lines that enter a grey area cannot change direction until they leave the grey area. Lines are only allowed to cross inside the grey areas. The path must go through every grey area at least once.



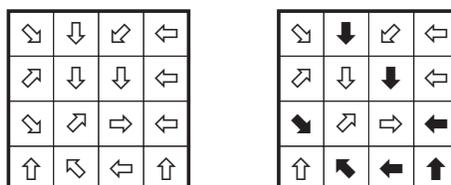
13. Dosun Fuwari

Place balloons, i.e. white circles and iron balls, i.e. black circles into some empty cells of the grid so that each thickly outlined region contains one balloon and one iron ball. Balloons are light and float, and thus must be placed at the top of the grid, immediately under black cells, or under other balloons. Iron balls are heavy and sink, and thus must be placed at the bottom of the grid, immediately above a black cell, or above other iron balls.



14. Arrow Web

Shade some of the arrows so that each arrow in the grid points to exactly one shaded arrow.



# 14 FILLOMINO-FILLIA

300 Points

30 Minutes

10x Bonus

Individual

Round note: This is a single-type round that contains 7 puzzles featuring 5 variations of the Fillomino puzzle type along with two Classic Fillomino puzzles.

## 1,2. Fillomino

25 + 15 Points

Divide the grid along the dotted lines into polyominoes so that no two polyominoes with the same area share an edge. Each given number must represent the area of the polyomino it belongs to. A polyomino may contain zero, one, or more of the given numbers.

|   |   |   |   |
|---|---|---|---|
| 7 |   |   | 1 |
| 2 |   |   |   |
| 1 |   | 7 | 3 |
|   |   |   | 7 |
|   | 7 |   | 1 |

|   |   |   |   |   |
|---|---|---|---|---|
| 7 | 7 | 7 | 1 | 3 |
| 2 | 2 | 7 | 7 | 3 |
| 1 | 7 | 7 | 1 | 3 |
| 7 | 2 | 2 | 7 | 7 |
| 7 | 7 | 7 | 7 | 1 |

## 3. Queen Fillomino

50 Points

Apply Fillomino rules. Additionally, all 1-cell polyominoes must be treated like queens in chess, i.e. no two queens, i.e. "1s", can see each other in any horizontal, vertical or diagonal line of cells.

|   |   |   |   |   |
|---|---|---|---|---|
|   | 4 |   | 4 |   |
|   |   | 4 |   |   |
| 6 |   | 1 | 4 | 2 |
| 4 |   | 3 | 3 | 4 |
|   |   |   | 4 |   |
|   |   | 4 |   | 4 |

|   |   |   |   |   |   |
|---|---|---|---|---|---|
| 6 | 4 | 4 | 4 | 3 | 1 |
| 6 | 6 | 4 | 3 | 3 | 2 |
| 6 | 6 | 1 | 4 | 4 | 2 |
| 4 | 6 | 3 | 3 | 4 | 4 |
| 4 | 4 | 3 | 4 | 3 | 3 |
| 4 | 1 | 4 | 4 | 4 | 3 |

## 4. Nonconsecutive Fillomino

50 Points

Apply Fillomino rules. Additionally, two orthogonally adjacent cells must not contain consecutive numbers.

|   |   |   |   |
|---|---|---|---|
|   |   |   | 5 |
| 5 |   |   | 1 |
|   |   |   |   |
|   |   | 6 |   |
| 4 |   |   |   |
|   | 3 |   | 2 |

|   |   |   |   |   |   |
|---|---|---|---|---|---|
| 5 | 5 | 5 | 3 | 5 | 5 |
| 5 | 1 | 5 | 3 | 5 | 1 |
| 1 | 4 | 1 | 3 | 5 | 5 |
| 4 | 4 | 6 | 6 | 2 | 2 |
| 4 | 1 | 3 | 6 | 6 | 6 |
| 1 | 3 | 3 | 6 | 2 | 2 |

## 5. Restricted Fillomino

55 Points

Apply Fillomino rules. Additionally, all different polyomino sizes used in the grid are given.

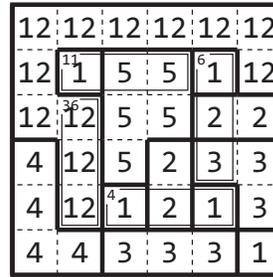
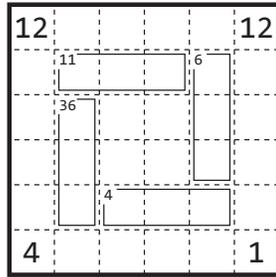
|    |    |  |    |
|----|----|--|----|
|    | 13 |  | 3  |
| 3  |    |  | 13 |
|    |    |  |    |
| 13 |    |  | 13 |
|    | 13 |  | 3  |

|    |    |    |    |    |
|----|----|----|----|----|
| 3  | 13 | 3  | 3  | 3  |
| 3  | 13 | 13 | 13 | 13 |
| 3  | 13 | 3  | 3  | 3  |
| 13 | 13 | 13 | 13 | 13 |
| 13 | 13 | 3  | 3  | 3  |

## 6. Sum Fillomino

90 Points

Apply Fillomino rules. Additionally, the grid contains some cages. The number at the top left of each cage gives the sum of all numbers that appear inside of it. Numbers may be repeated in cages.



## 7. Instructionless Fillomino

15 Points

This is a Fillomino variant puzzle. Instead of instructions, an example will be given, with its solution. It is part of solving to determine what the variant rules are and then solve the Fillomino. It is not required to describe the rules. There are no points for determining the rule correctly, but not solving the Fillomino (or solving incorrectly).

# 15 LOOP POOL

2500 Points

50 Minutes

40x Bonus

Team

Round note: This round will have no written instructions. There will be four individual puzzle types, all of them following the same base rule: Draw a loop that passes through all cells. For each puzzle type, there is an example and solution next to it, that must be used to deduce the rules of the given puzzle type. When the round starts, individual players of each team start on separate individual tables and each of them will get one of the four types. Each 'type' includes a solved example and a set of four puzzles.

There are two puzzles at the team table, which use all four individual puzzle rules combined. The solvers can submit their puzzle sheet along with solved example at any point in time and proceed to the team table, but the sheets must be submitted before moving to the team table, and participants cannot return to the individual table or review the instructions at any point of time after moving. They must then use their quarter of the rules to collaborate with the rest of the team to solve the team puzzles.

At the team table, there will be four envelopes. Each of these envelopes contains the same solved example for Sets A, B, C and D from the individual tables. Teams may use these envelopes to check the rules, but opening envelopes reduces the team's tally for the team table puzzles by 15% per each envelope, and foregoes the chance at a bonus for finishing early.

The individual puzzles will be provided on an A3 sheet each, with the solved example at the centre of the sheet. The team table puzzles will also be on one A3 sheet, there will be one 10x10 puzzle and one 20x20 puzzle. Sizes for individual puzzles will not be specified.

A1,A2,A3,A4. Instructionless Loop

25 + 70 + 140 + 35 Points

B1,B2,B3,B4. Instructionless Loop

60 + 85 + 45 + 75 Points

C1,C2,C3,C4. Instructionless Loop

140 + 50 + 135 + 155 Points

D1,D2,D3,D4. Instructionless Loop

20 + 20 + 55 + 90 Points

T1,T2. Instructionless Loop

375 + 925 Points

# 16 SAMPLER PLATTER

1400 Points

35 Minutes

40x Bonus

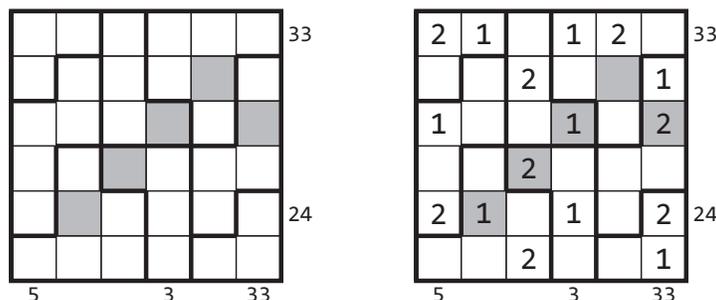
Team

Round note: For this round, the teams must start at the team table, and then work their way to four separate individual tables.

At each individual table there is a set of four puzzles, in one A3 sheet, arranged at different levels of difficulty. The make-up of sets A, B, C and D are revealed at the team table, but teams must solve the team table puzzles T1, T2, T3 and T4, in four separate A4 sheets, to get clues as to which of the sets are on each corresponding individual table. The clues are in the form of a choice of four sums provided below each team puzzle. Players may move to the individual tables at any point in the round, even without solving the team table puzzles. Note that leaving any team table puzzles unsolved or incorrect takes away the chance of a time bonus for the round. The round is considered finished when all individual solvers are done with their individual sets, and bonus, if any, will be calculated from this point.

There is a randomized example given below to showcase how the clue is used. At the team table, the team immediately has access to a table like the one below. The Competition Booklet will contain the puzzle names as well. In the example below, one of the team table puzzles, T4. Summon, has digits in shaded cells summing to 6, which means that Table 4 (T4) has Set C.

| Set A     | Set B     | Set C     | Set D     |
|-----------|-----------|-----------|-----------|
| Puzzle 3  | Puzzle 1  | Puzzle 4  | Puzzle 2  |
| Puzzle 5  | Puzzle 7  | Puzzle 9  | Puzzle 8  |
| Puzzle 6  | Puzzle 12 | Puzzle 15 | Puzzle 10 |
| Puzzle 14 | Puzzle 13 | Puzzle 16 | Puzzle 11 |



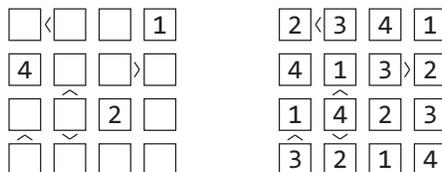
|       |       |       |       |
|-------|-------|-------|-------|
| 4     | 5     | 6     | 7     |
| Set A | Set B | Set C | Set D |

## T1. Futoshiki

55 Points

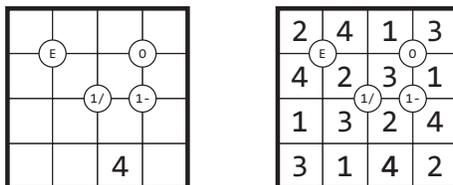
Place a digit from 1 to 8 into each of the empty cells so that each digit appears exactly once in each row and column. If '<' or '>' is present between adjacent cells, the arrow points to the smaller number of the two.

The example uses 1 to 4.



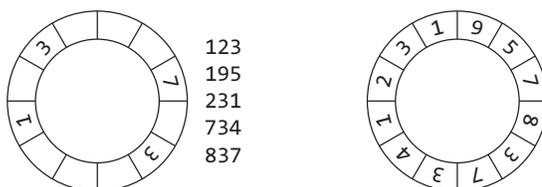
Place a digit from 1 to 8 into each of the empty cells so that each digit appears exactly once in each row and column. Some intersections of the grid lines are marked by a number and an operator (+, -, x, /) in a circle. The number is the result of the operation, applied to both pairs of diagonally opposite cells within the 2x2 area. An "E" in the circle indicates that all four neighbouring digits are even, while an "O" indicates that all four neighbouring digits are odd.

The example uses 1 to 4.



T3. Numbers in a Loop

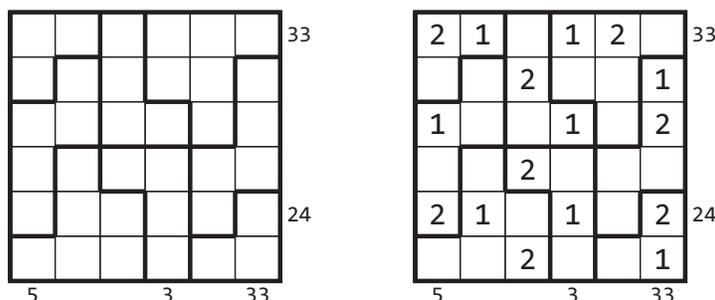
Place a digit from 1 to 9 in each of the blank cells. All the given numbers must be found when reading in clockwise direction along the loop. Numbers may overlap each other.



T4. Summon

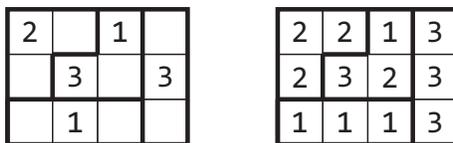
Fill the grid digits from 1 to 3, so that each region includes all digits exactly once. Same digits cannot touch each other, even diagonally. Clues outside the grid indicate the sum of all numbers in the corresponding row or column. Numbers must be read from left to right or top to bottom.

The example uses 1 to 2.



1. All or One

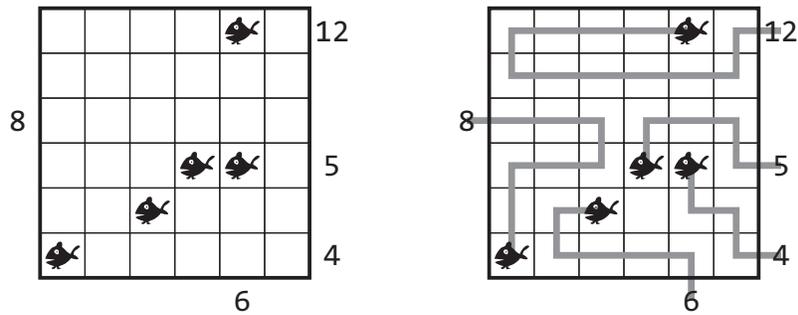
Place a digit from 1 to 3 into each cell so that each thickly outlined region contains either the same digit in all cells or a different digit in each cell. If two cells are separated by a thick outline, they must contain different digits.



## 2. Anglers

20 Points

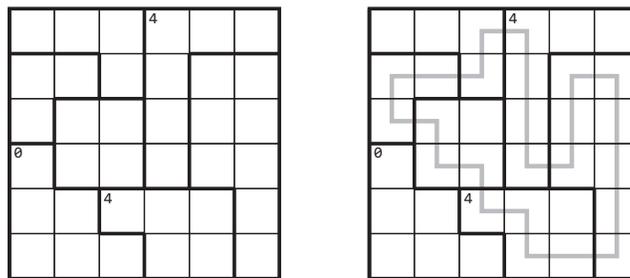
The grid represents a lake and the numbers on the periphery represent anglers (fishermen). The fishes shown in the lake are such that every angler gets exactly one fish. The numbers indicate the length of the fishlines which are composed of horizontal and vertical line segments passing through the centres of cells. Draw the fishlines starting from grid border such that no two of them cross or overlap each other.



## 3. Country Road

55 Points

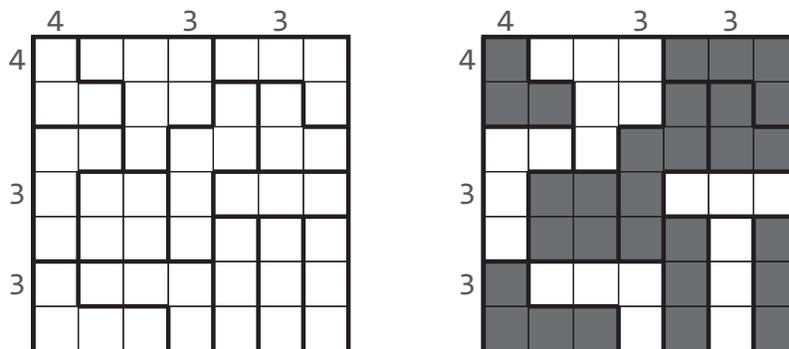
Draw a closed loop passing through the centres of cells horizontally and vertically. The loop must not return to any thickly outlined region it has already visited, and any two cells touching by a side that the loop does not visit must be in the same region. The loop does not have to visit all regions. A number in a region indicates the number of cells visited by the loop in that region.



## 4. Crazy Pavement

70 Points

Shade all cells of some regions. Numbers outside the grid indicate the number of shaded cells in the corresponding row/column.



Shade some cells to form a single connected shaded area. No 2x2 group of cells within the grid can be completely shaded. Numbers outside the grid indicate the number of shaded cells in the corresponding row or column. In case of multiple clues, the number of shaded cell blocks must match the clues with at least one white cell between each pair of shaded blocks. A question mark (?) represents a group of consecutive shaded cells whose size is unknown; an asterisk (\*) represents any number of unknown groups of shaded cells, including none at all.

|   |   |   |   |   |   |
|---|---|---|---|---|---|
| * | * | * | * | * | * |
| 1 | 1 | 2 | 3 | 1 | 4 |
| * | * | * | * | * | * |

|   |   |
|---|---|
| 2 | 2 |
| 2 | 2 |
| 2 | 2 |
| ? | ? |
| ? | ? |
| ? | ? |

|  |  |  |  |  |  |
|--|--|--|--|--|--|
|  |  |  |  |  |  |
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|  |  |  |  |  |  |

|   |   |   |   |   |   |
|---|---|---|---|---|---|
| * | * | * | * | * | * |
| 1 | 1 | 2 | 3 | 1 | 4 |
| * | * | * | * | * | * |

|   |   |
|---|---|
| 2 | 2 |
| 2 | 2 |
| 2 | 2 |
| ? | ? |
| ? | ? |
| ? | ? |

|  |  |  |  |  |  |
|--|--|--|--|--|--|
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
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|  |  |  |  |  |  |

6. Gaps

Place two stars in each row and column such that stars do not touch each other, even diagonally. The numbers outside give the number of empty cells between the two stars in the corresponding row or column.

|   |  |  |  |  |  |  |  |
|---|--|--|--|--|--|--|--|
|   |  |  |  |  |  |  |  |
|   |  |  |  |  |  |  |  |
|   |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |
|   |  |  |  |  |  |  |  |
|   |  |  |  |  |  |  |  |
|   |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |
|   |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |

6
6

|   |  |  |  |  |  |  |  |
|---|--|--|--|--|--|--|--|
|   |  |  |  |  |  |  |  |
|   |  |  |  |  |  |  |  |
|   |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |
|   |  |  |  |  |  |  |  |
|   |  |  |  |  |  |  |  |
|   |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |
|   |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |

6
6

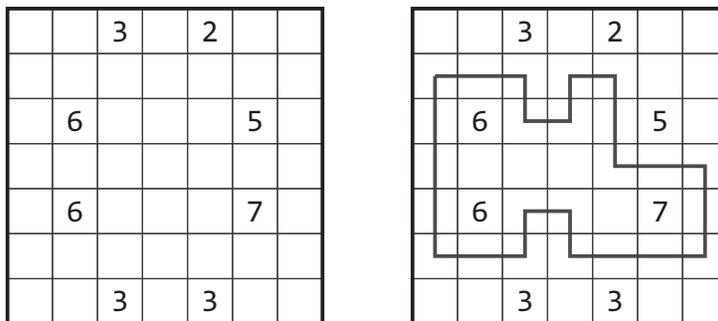
7. Heyawacky

Shade some cells. Shaded cells must not touch each other by a side. The white cells must form a single connected area. The white area cannot span across 2 consecutive thick boundaries. A number in a region indicates the number of shaded cells in that region.

|   |   |  |   |   |   |
|---|---|--|---|---|---|
|   | 0 |  |   |   | 1 |
|   |   |  |   |   |   |
|   |   |  | 0 |   |   |
| 2 |   |  |   |   |   |
|   |   |  |   | 2 |   |
|   |   |  |   |   |   |

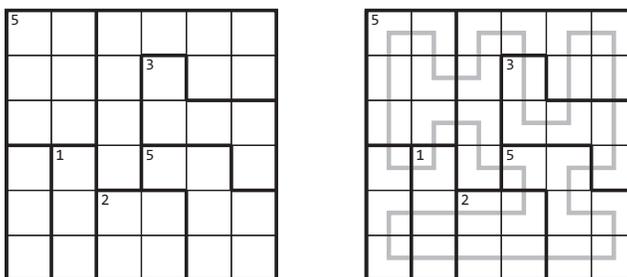
|   |   |  |   |   |   |
|---|---|--|---|---|---|
|   | 0 |  |   |   | 1 |
|   |   |  |   |   |   |
|   |   |  | 0 |   |   |
| 2 |   |  |   |   |   |
|   |   |  |   | 2 |   |
|   |   |  |   |   |   |

Draw a closed loop passing through centres of cells horizontally and vertically. Numbers in the grid show the number of cells visited by the loop in the eight neighbouring cells, including the diagonal ones. The loop cannot pass through cells with numbers.



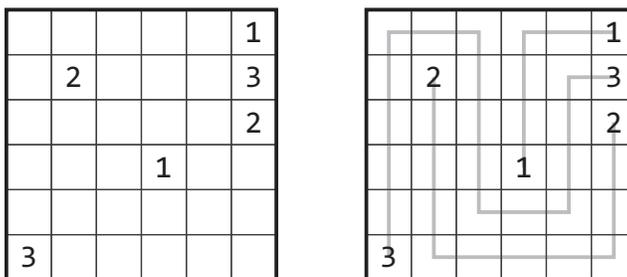
9. Maxi Loop

Draw a closed loop passing through the centres of all cells horizontally and vertically. The numbers in a thickly outlined region indicate the highest number of cells the loop passes consecutively in that area. This number must be achieved at least once.



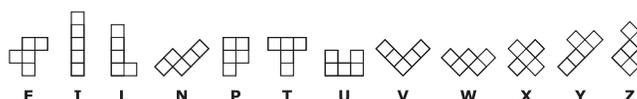
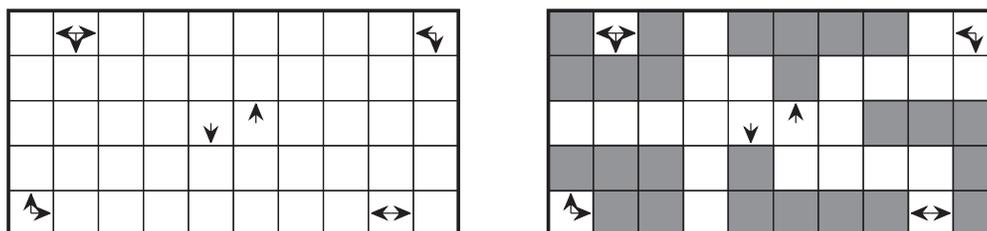
10. Numberlink

Connect every pair of digits through horizontal and vertical paths so that no two paths cross or overlap each other.



11. Pentopia

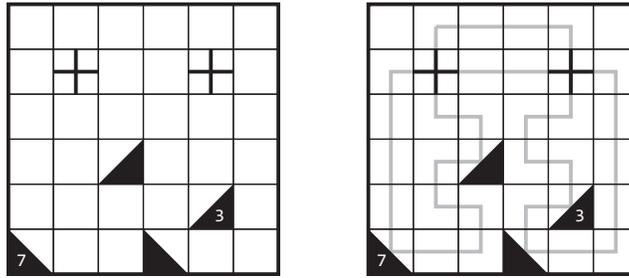
Place some pentominos in the grid without repeating any shape. Rotations and reflections are considered the same shape. The pentominos are not allowed to touch, not even at the corners. The arrows point in the direction(s) in which the pentomino(s) is/are closest when looking from that cell.



12. Reflect Link

70 Points

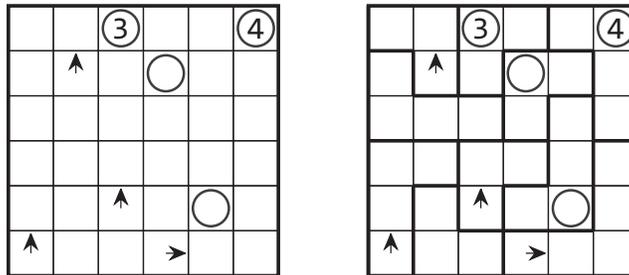
Draw a closed loop passing through the centres of cells horizontally or vertically. The loop must cross itself only at cells containing a + sign. Cells with triangles in them reflect the loop at right angles, and all cells containing triangles must be visited by the loop. Numbered triangles indicate the total number of cells, including the triangle's cell, that the loop segments travel horizontally and vertically before changing direction.



13. Sashigane

35 Points

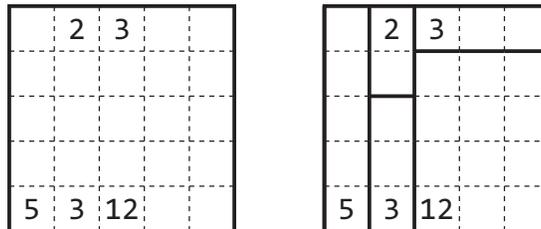
Divide the grid into L-shaped regions. Regions can contain zero, one or more clues among circles and arrows. A circle must always be in the cell where the region containing it turns and an arrow must always be at an end of the region containing it, pointing inwards. Some circles contain numbers, that show the size of the region they are contained in.



14. Shikaku

40 Points

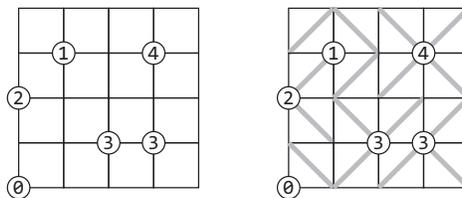
Divide the grid into rectangles, each containing only one given number showing the number of cells in the rectangle.



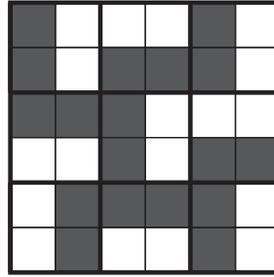
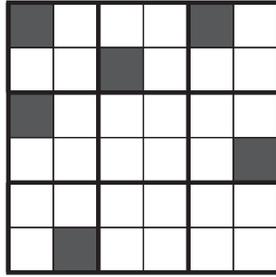
15. Slant

40 Points

Draw exactly one diagonal line in each cell. The numbers in some intersections of the grid lines indicate how many diagonal lines end at the intersection. The lines must not form a closed loop.



Shade exactly two cells in each of the thickly outlined 2x2 regions, i.e. the Windows. Shaded cells must form a single connected area. All white cells must be connected horizontally or vertically through other white cells to an edge of the grid. No 2x2 area can contain all shaded cells or all white cells.



# 17 FAST

600 Points

60 Minutes

10x Bonus

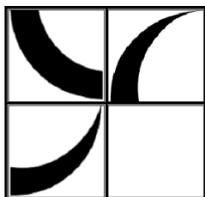
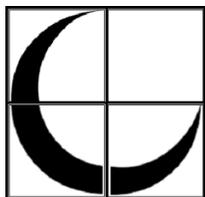
Individual

Round note: This round contains 29 puzzles across 29 puzzle types that are more likely to be seen in mainstream puzzle platforms, and are familiar to puzzle enthusiasts regardless of WPC experience. The round contains some observation based puzzles; please ignore subtle differences due to graphic anomalies or overall distortion.

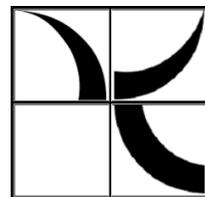
Points will be deducted for puzzles with limited options, specifically puzzles numbered 1, 2, 3, 4, 5, 6, 12, 25, 28 and 29. 1 point will be deducted for one error, 3 points for two errors, 6 for three errors, and so on, till 55 points for ten errors. The overall score will not be negative.

## 1. Sliding Puzzle 15 Points

Identify the block that can be rearranged to form the given picture. The blocks can slide only horizontally or vertically into the blank cell. The blocks cannot be rotated or reflected.



(A)

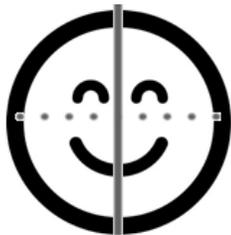


(B)

The answer is (A)

## 2. Map Folds 5 Points

The images below represent sheets of paper which were folded and unfolded. The bold grey lines are mountain folds, i.e. folded in, and the dashed grey lines are valley folds, i.e. folded out. Find the image in which the folds are not represented correctly.



(A)

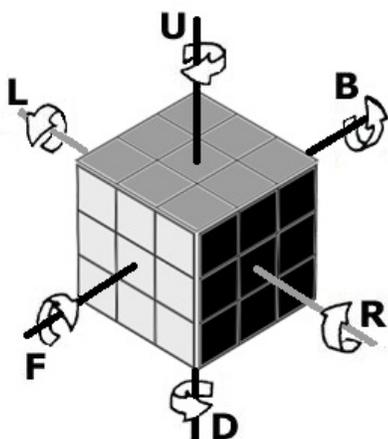


(B)

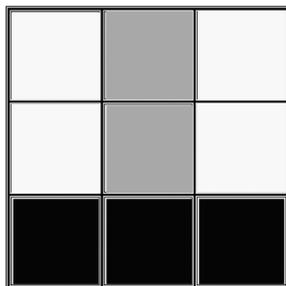
The answer is (A)

## 3. Rubiks Cube 20 Points

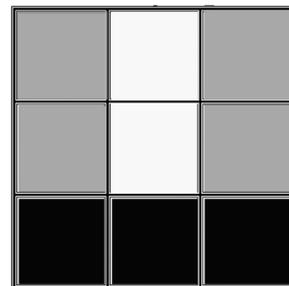
The Rubiks cube given below is scrambled with the given set of moves. The moves are defined as per the notation in the diagram, where R represents a clockwise rotation of the right (R) surface and R' represents an anticlockwise rotation of the right (R) surface. Identify the final state of the front (F) surface after the scrambling. The opposite faces of the cube are the same.



Moves – LR'D'



(A)



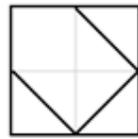
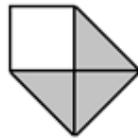
(B)

The answer is (B)

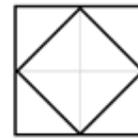
4. Origami

30 Points

The Origami model has been made with a grey sheet of paper (white on the back). The sheet is unfolded. Identify the option that represents the appropriate crease lines after unfolding in which only the essential lines are marked. Essential lines are the ones which are present in the final model and not the intermediate folds used for making the model.



(A)



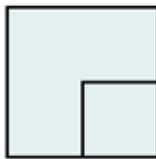
(B)

The answer is (A)

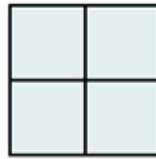
5. Isometric View

10 Points

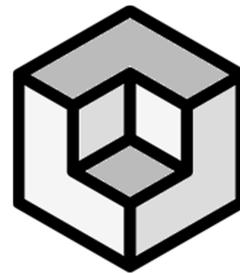
Identify the image that is the correct top view of the isometric image on the right.



(A)



(B)

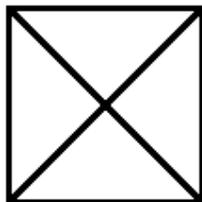


The answer is (A)

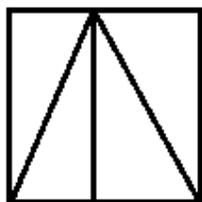
6. Easy Draw

10 Points

Identify the shape that can be drawn without lifting the pen/pencil or folding the paper, without tracing the same line more than once. The same vertex can be visited multiple times. The ending vertex can be different from the starting one.



(A)



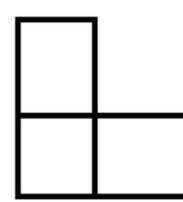
(B)



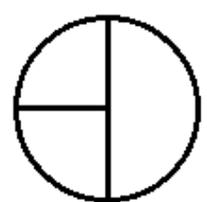
(C)



(D)



(E)



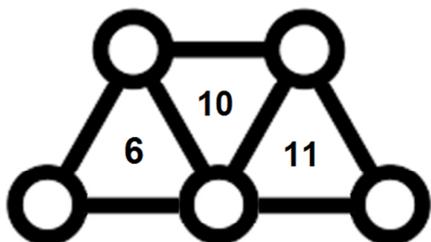
(F)

The solution is (E)

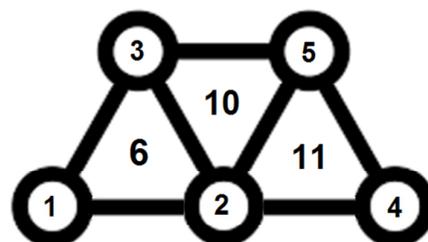
7. Number Placement

5 Points

Place the given set of numbers in the circles. The numbers given inside each shape within the grid represent the sum of numbers in the circles on its vertices.



- 1
- 2
- 3
- 4
- 5

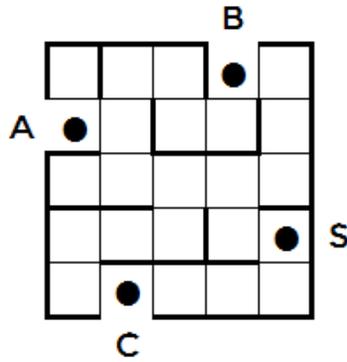




12. Nearest Exit

10 Points

Identify the nearest exit from the starting point marked by "S".

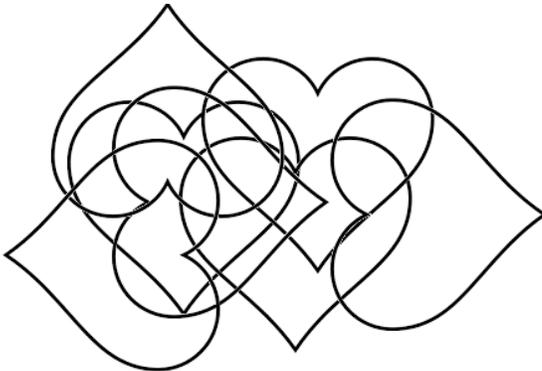


The answer is C

13. Count Shapes

5 Points

Identify the number of identical shapes in the picture.



7

14. Quadrilateral Count

15 Points

Enter the number of quadrilaterals in the image.

5 partial points will be awarded for answers within a difference of two from the correct answer.

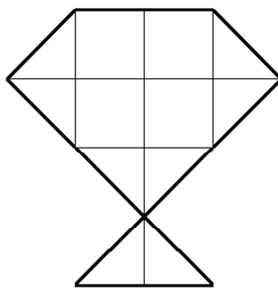


12

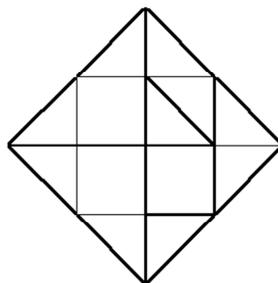
15. Tangram Division

10 Points

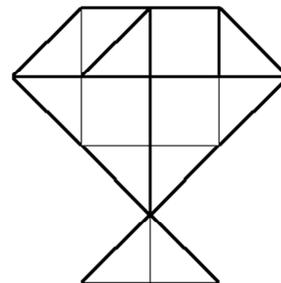
Divide the given shape using the tangram shapes given on the right. The shapes can be rotated but not reflected.



Puzzle



Tangram Set

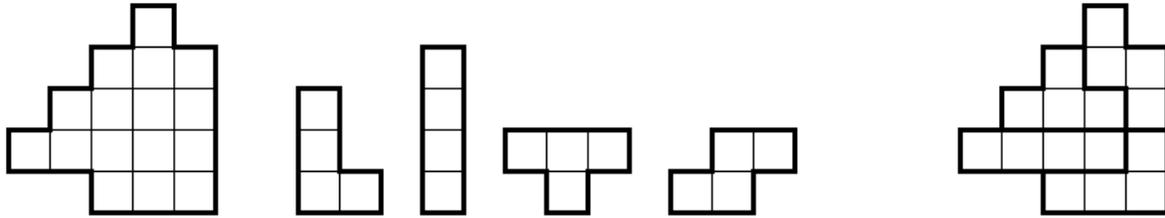


Solution

16. LITS Division

15 Points

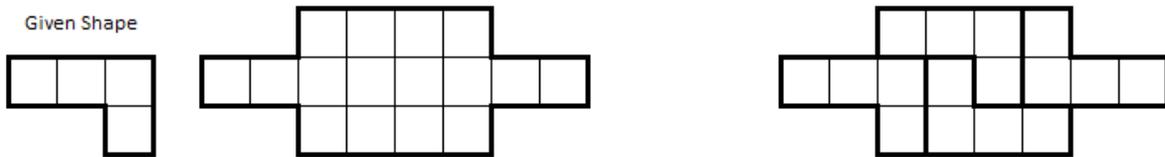
Divide the grid into the given tetromino regions (L,I,T,S) along the gridlines. The tetrominoes must be of the same size as depicted and may be rotated but not reflected. Each tetromino shape will be used an equal number of times.



17. Shape Division Optimizer

25 Points

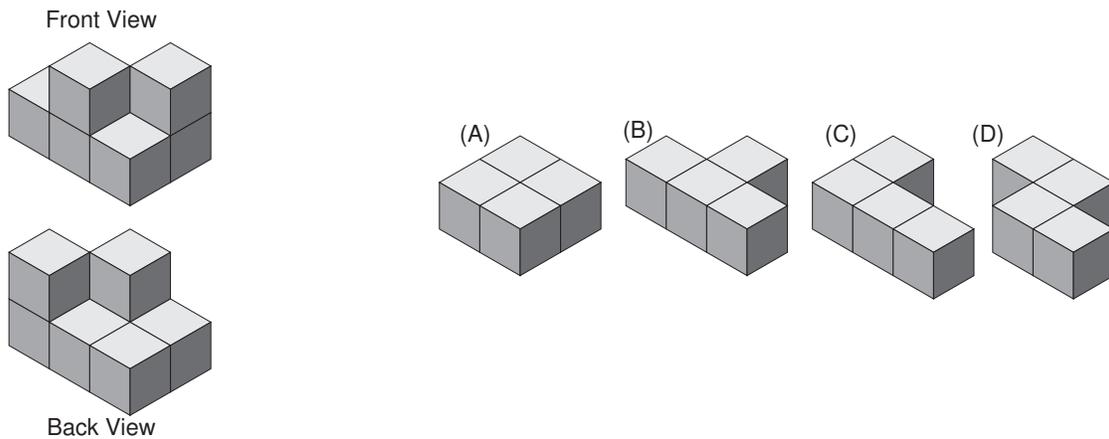
Divide the grid into congruent parts using the given shape. Congruent parts have the same size but may be rotated or reflected. Maximize the number of parts in the given orientation of the shape, i.e. without rotation and reflection.



18. 3D Division

45 Points

Identify the set of shapes that can be used together to form the given model. There are no additional parts of the model apart from those visible in either the front view or the back view. Colours are only for representation of 3D shape.



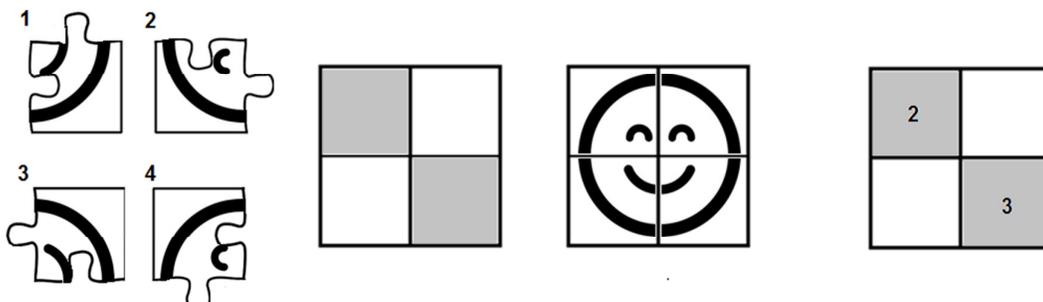
The answer is (B,C)

19. Jigsaw

65 Points

Identify the correct positions of the jigsaw pieces which fit the shaded cells in the grid below so that they form the given image. The gridlines are only for representing the positions of the pieces. Actual sizes of pieces may vary slightly. Pieces can be rotated but not reflected

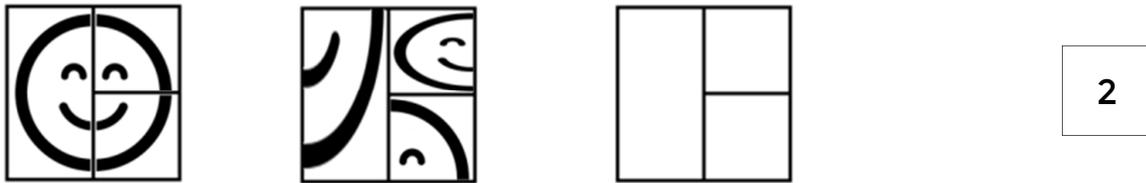
5 Partial points will be awarded per correctly identified shaded cell.



20. Rescaled Jigsaw

30 Points

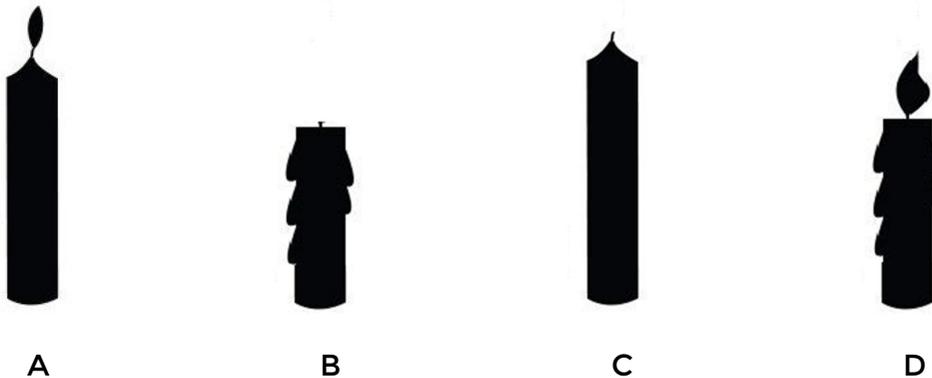
Identify the minimum number of swaps required to achieve the given picture. A swap involves the interchanging of two tiles where each tile gets re-scaled to fit the dimensions of the destination tile. The swapped tiles need not be adjacent to each other. Tiles cannot be rotated or reflected.



21. Chronological Order

65 Points

Arrange the images in a chronological order.

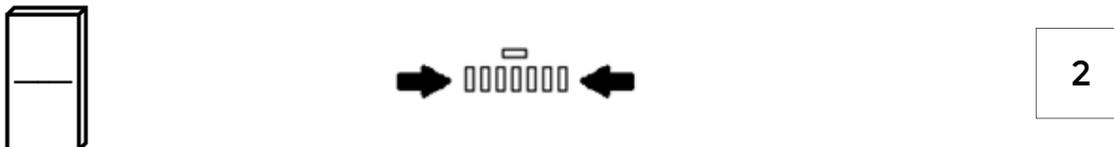


The answer is CADB.

22. Falling Dominoes

15 Points

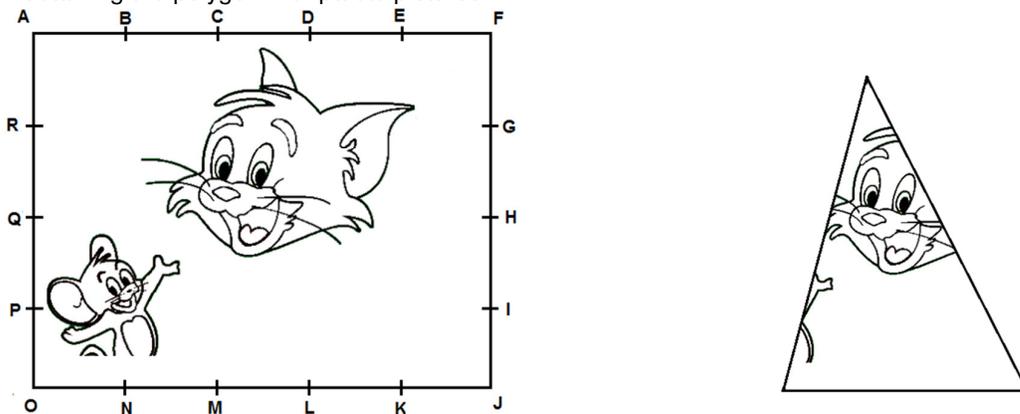
The image below depicts the top view of a set of dominoes (as represented by the picture on the left) which are placed on a level floor. They are pushed simultaneously in the direction of the given arrows. Identify the number of dominoes that will stand erect, i.e. not fall.



23. Picture Slice

10 Points

For each of the pictures, determine the set of letters so that cutting the picture along straight lines connecting those letters would result in obtaining the polygon with partial pictures.



The answer is (N,C,K)

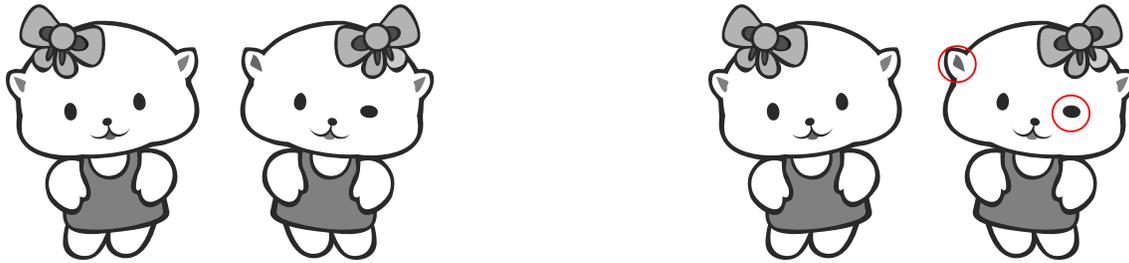
24. Spot The Differences

15 Points

Circle ten differences between the image and its reflection. The differences are clearly intentional, such as things that have disappeared, moved, changed size, shape, or orientation.

1 partial point will be awarded per correctly circled difference.

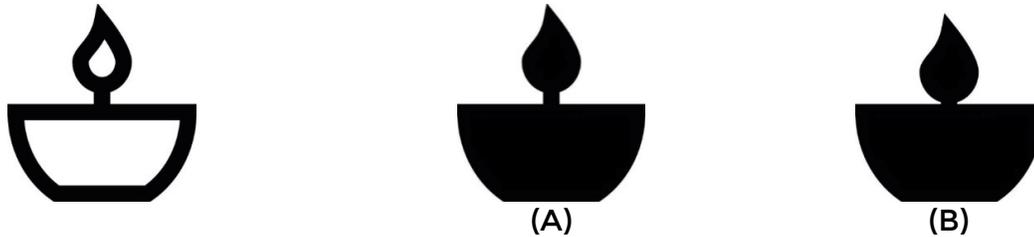
The example has two differences.



25. Silhouette

20 Points

Identify the correct silhouette, i.e. dark version of it against a lighter background, for the image.



The answer is (A)

26. Find a Pair

10 Points

Find the identical pair among the given images. Rotated / reflected images are not considered as identical.



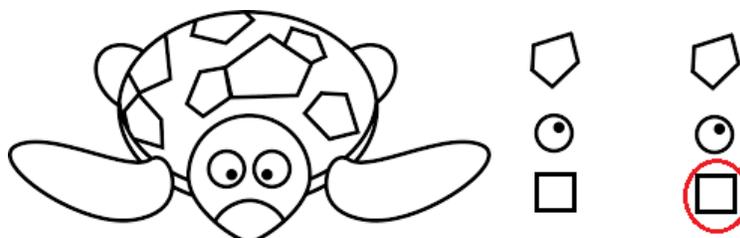
The answer is (A,C)

27. Hidden Objects

15 Points

Locate the objects hidden within the image. The objects may be rotated or reflected before being hidden. Mark the 5 objects which cannot be found in the image.

The example has only 1 which cannot be found.



Identify the option that is the odd one out.

(A)  $71 = (14/7)+15+16+18+20$

(B)  $71 = 14+(15/5)+16+18+20$

(C)  $71 = 14+15+(16/4)+18+20$

(D)  $71 = 14+15+16+(18/3)+20$

(E)  $71 = 14+15+16+18+(20/2)$

The answer is (E)

This is an observation based puzzle, no prior knowledge / information is required to solve this puzzle

# 18 PIC

1000 Points

80 Minutes

10x Bonus

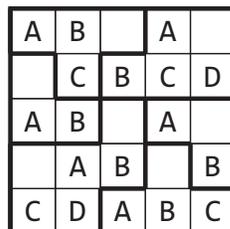
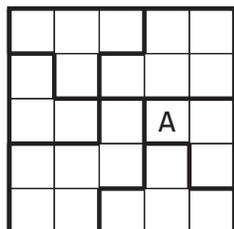
Individual

Round note: This round contains 22 puzzles across 11 puzzle types. All puzzle types in this round are new innovations debuting at this WPC, both from foreign authors participating in Logic Masters India's Puzzle Innovations Contest and from the core author team.

## 1,2. Falling Letters

45 + 95 Points

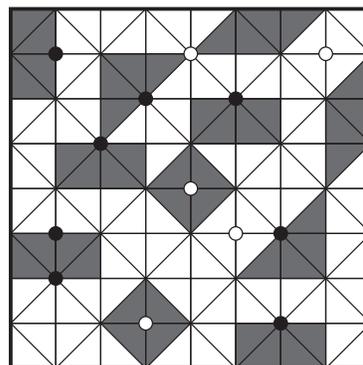
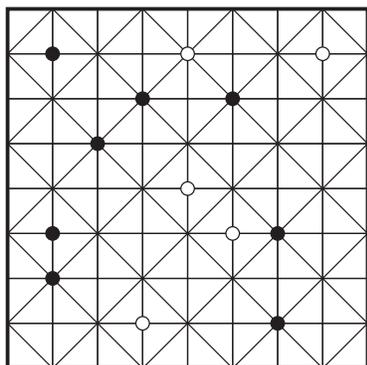
Place letters into some cells in the grid. Same letters cannot share a side, and blank cells cannot share a side. Each outlined region must be filled in alphabetical order, starting with 'A', from left to right and top to bottom. Each outlined region contains at least one blank cell. Cells with the letters form a single connected area.



## 3,4. Shards

35 + 65 Points

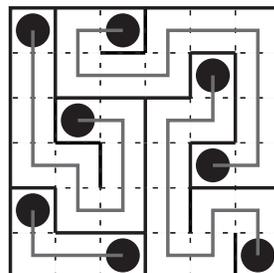
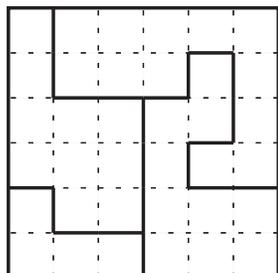
Shade some cells such that shaded cells form four-cell "shards" that may touch on a vertex, but not an edge. If a vertex has a black circle, then the eight cells in the 2x2 square surrounding that black circle must contain at least one shard with none of its pieces outside the 2x2 square. If a vertex has a white circle, then the eight cells in the 2x2 square surrounding that vertex must be rotationally symmetric about that point and at least one cell must be shaded. All unshaded cells must be connected edge to edge.



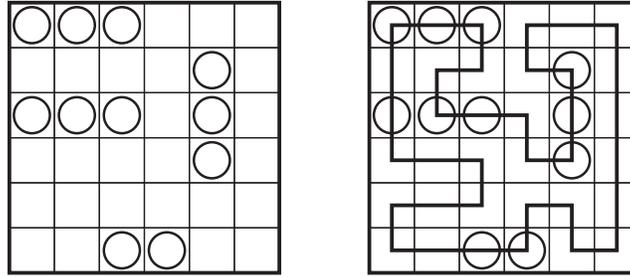
## 5,6. Rassi Silai

10 + 15 Points

Thread a rope in each region. A rope is a path that passes through all cells of the region, between two cells that are end-points. End-points do not touch each other, even diagonally, even across regions.



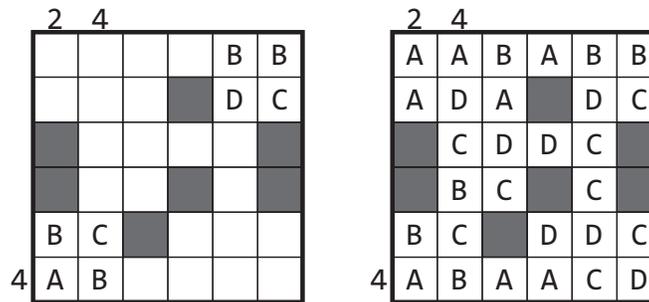
Draw a closed loop that connects the centres of all cells horizontally or vertically. Wherever two circles are edge-adjacent, the loop must go straight through one, and make a right angle turn in the other.



## 9.10. Candy Crush

Place a letter from A-D in each empty white cell such that there are never three consecutive cells in a horizontal or vertical line containing the same letter. In the final solution it must be possible to directly 'eliminate' any letter using any one single swap of two letters sharing a side, not considering gravity and chains. Letters are 'eliminated' if they become part of three or more horizontally or vertically consecutive cells containing the same letter. Numbers outside the grid indicate the number of different letters in the corresponding direction.

E.g. if R5C1 and R5C2 in the solution below are swapped, three Bs are consecutive. This one swapping possibility satisfies the 'elimination' condition for all these three Bs. No other letters get eliminated within this consideration as there are no other lines of three consecutive cells containing the same letter formed by this swap.



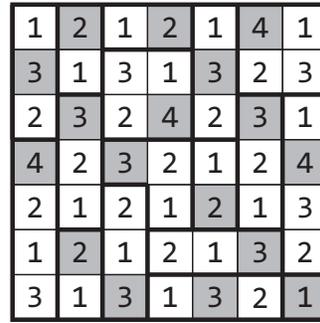
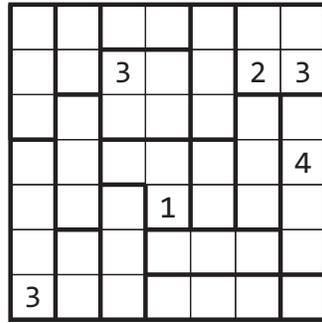
## 11.12. Partiti

Place one or more digits from 1 to 9 in arbitrary order in each empty cell, such that a number in the top left corner of each cell is the sum of digits entered in that cell. Same digits cannot be placed in cells that touch, even diagonally. The solution below shows the digits in ascending order but this is not a requirement to receive credit for the puzzle.

|    |    |   |    |    |    |    |   |    |    |
|----|----|---|----|----|----|----|---|----|----|
| 10 | 13 | 8 | 2  | 1  | 10 | 13 | 8 | 2  | 1  |
| 7  | 4  | 4 | 4  | 10 | 7  | 4  | 4 | 13 | 4  |
| 6  | 5  |   | 10 | 14 | 6  | 5  | 9 | 10 | 14 |
| 2  | 5  | 7 | 6  | 10 | 2  | 5  | 7 | 6  | 10 |
| 7  | 12 | 7 | 8  | 4  | 7  | 12 | 7 | 8  | 4  |

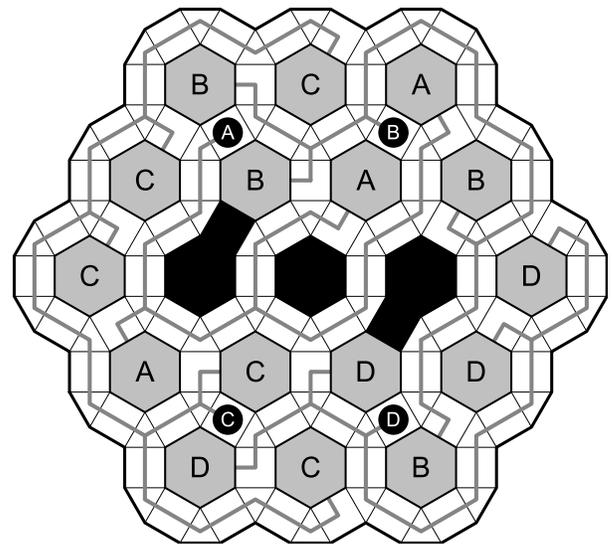
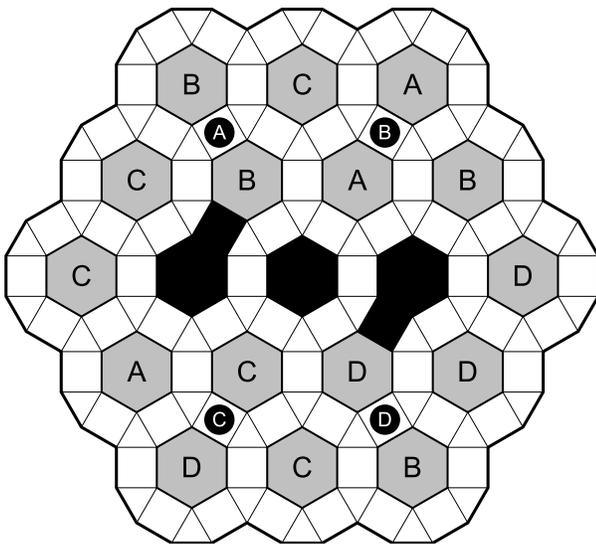


Fill every outlined region with different numbers from 1 to N, where N is the number of cells in the region. No two adjacent cells can contain the same number. No two cells from different regions sharing a side can both contain the largest number of their corresponding regions.



21,22. Grapevine

Draw vines to connect all grape, i.e. grey hexagons to stems, i.e. black circles, with the same symbol. The vine can branch only at triangular cells and can only start in a single direction from a stem. Every white cell must contain part of a vine. Vines must end on a grape, i.e. no dead ends.



# 19 LOGIDOKU

500 Points

40 Minutes

10x Bonus

Individual

Round notes: This round contains 9 puzzles across 9 Sudoku variations. All Sudoku variations in this round have a component of a popular puzzle added to them. It is not required to mark the additional elements (e.g. stars, code, shading, ships and lines) in this round.

## 1. Star Battle Sudoku

30 Points

Place a digit from the given set into some of the empty cells so that each digit appears exactly once in each row, column and 3x3 outlined box. All the remaining cells contain stars that do not touch each other, even diagonally.

|   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|
|   | 8 |   |   | 3 |   |   | 5 |   |
| 5 | 3 |   |   | 1 |   |   | 2 | 6 |
|   |   | 2 |   |   |   | 7 |   |   |
|   |   |   |   |   | 1 |   |   |   |
| 7 | 6 |   |   | 4 |   |   | 3 | 2 |
|   |   |   | 3 |   |   |   |   |   |
|   |   | 5 |   |   |   | 1 |   |   |
| 3 | 1 |   |   | 6 |   |   | 4 | 5 |
|   | 4 |   |   | 8 |   |   | 6 |   |

1~8



|   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|
| 1 | 8 | 6 | 2 | 3 | 7 | 4 | 5 | ★ |
| 5 | 3 | 7 | ★ | 1 | 4 | 8 | 2 | 6 |
| 4 | ★ | 2 | 8 | 5 | 6 | 7 | 1 | 3 |
| 8 | 2 | 3 | 6 | ★ | 1 | 5 | 7 | 4 |
| 7 | 6 | 1 | 5 | 4 | 8 | ★ | 3 | 2 |
| ★ | 5 | 4 | 3 | 7 | 2 | 6 | 8 | 1 |
| 6 | 7 | 5 | 4 | 2 | 3 | 1 | ★ | 8 |
| 3 | 1 | 8 | 7 | 6 | ★ | 2 | 4 | 5 |
| 2 | 4 | ★ | 1 | 8 | 5 | 3 | 6 | 7 |

## 2. Mastermind Sudoku

60 Points

Place a digit from 1 to 9 into each of the empty cells so that each digit appears exactly once in each row, column and 3x3 outlined box. The black and white dots to the right of the grid compare the five marked cells in that row to the mastermind code. Black dots imply correct digits in the correct position while white dots imply correct digits in the wrong position. There must not be any repeating digits in the code.

|   |   |   |   |   |   |   |   |       |
|---|---|---|---|---|---|---|---|-------|
|   |   |   |   | 3 |   | 7 |   | ●○○   |
| 8 |   |   |   | 2 |   | 1 |   | ●○○   |
|   | 7 |   |   |   |   | 6 |   | ●○○○  |
| 1 |   | 9 |   |   |   |   | 4 | ●●    |
|   | 5 |   | 7 |   |   |   |   | ○○○○○ |
| 7 |   | 6 |   |   |   |   | 5 | ●●○   |
|   | 4 |   |   |   |   |   | 9 | ●○    |
| 3 |   |   |   |   | 6 |   | 2 | ○○    |
|   |   |   |   | 1 |   | 8 |   | ○○○○  |

1 9 6 2 3

|   |   |   |   |   |   |   |   |   |       |
|---|---|---|---|---|---|---|---|---|-------|
| 6 | 1 | 4 | 2 | 8 | 3 | 5 | 7 | 9 | ●○○   |
| 8 | 9 | 3 | 6 | 7 | 5 | 2 | 4 | 1 | ●○○   |
| 5 | 7 | 2 | 4 | 1 | 9 | 3 | 6 | 8 | ●○○○  |
| 1 | 2 | 9 | 8 | 5 | 6 | 7 | 3 | 4 | ●●    |
| 4 | 5 | 8 | 7 | 3 | 2 | 9 | 1 | 6 | ○○○○○ |
| 7 | 3 | 6 | 1 | 9 | 4 | 8 | 2 | 5 | ●●○   |
| 2 | 4 | 7 | 5 | 6 | 8 | 1 | 9 | 3 | ●○    |
| 3 | 8 | 1 | 9 | 4 | 7 | 6 | 5 | 2 | ○○    |
| 9 | 6 | 5 | 3 | 2 | 1 | 4 | 8 | 7 | ○○○○  |

1 9 6 2 3

### 3. Japanese Sums Sudoku

50 Points

Place a digit from 1 to 9 into each of the empty cells so that each digit appears exactly once in each row, column and 3x3 outlined box. Shade some cells in the grid such that the numbers outside the grid represent sums of digits in white cells of the corresponding row or column. If there is more than one sum, the given order is valid and there must be at least one shaded cell between the sums. Some shaded cells may be given.

|    |    |    |    |    |    |    |    |   |  |    |    |    |   |  |  |  |  |
|----|----|----|----|----|----|----|----|---|--|----|----|----|---|--|--|--|--|
|    |    | 17 | 21 | 7  |    |    |    |   |  | 21 | 9  | 15 |   |  |  |  |  |
|    |    | 7  | 4  | 8  |    |    |    |   |  | 5  | 2  | 3  |   |  |  |  |  |
|    |    | 18 | 6  | 21 | 23 | 13 | 10 |   |  | 6  | 22 | 17 |   |  |  |  |  |
| 13 | 19 |    |    |    |    |    | 8  |   |  |    |    |    |   |  |  |  |  |
| 20 | 11 |    |    |    | 5  |    | 6  |   |  |    |    |    |   |  |  |  |  |
| 12 | 15 |    |    |    |    |    | 9  |   |  |    |    |    |   |  |  |  |  |
|    | 5  |    | 9  |    | 7  |    |    |   |  |    |    | 8  |   |  |  |  |  |
| 19 | 6  | 10 | 7  |    | 8  |    |    |   |  | 5  |    |    | 3 |  |  |  |  |
|    | 2  |    | 5  |    |    |    |    | 8 |  |    | 4  |    |   |  |  |  |  |
| 23 | 15 |    |    |    |    |    | 7  |   |  |    |    |    |   |  |  |  |  |
| 26 | 15 |    |    |    | 8  |    |    | 2 |  |    |    |    |   |  |  |  |  |
| 19 | 25 |    |    |    |    |    |    | 1 |  |    |    |    |   |  |  |  |  |

|    |    |    |    |    |    |    |    |   |   |   |    |    |   |    |  |  |  |
|----|----|----|----|----|----|----|----|---|---|---|----|----|---|----|--|--|--|
|    |    | 17 | 21 | 7  |    |    |    |   |   |   |    | 21 | 9 | 15 |  |  |  |
|    |    | 7  | 4  | 8  |    |    |    |   |   |   |    | 5  | 2 | 3  |  |  |  |
|    |    | 18 | 6  | 21 | 23 | 13 | 10 |   |   | 6 | 22 | 17 |   |    |  |  |  |
| 13 | 19 | 5  | 6  | 2  | 4  | 8  | 1  | 9 | 3 | 7 |    |    |   |    |  |  |  |
| 20 | 11 | 9  | 7  | 4  | 5  | 3  | 6  | 8 | 1 | 2 |    |    |   |    |  |  |  |
| 12 | 15 | 3  | 8  | 1  | 2  | 9  | 7  | 4 | 5 | 6 |    |    |   |    |  |  |  |
|    | 5  | 2  | 9  | 3  | 7  | 5  | 4  | 6 | 8 | 1 |    |    |   |    |  |  |  |
| 19 | 6  | 10 | 7  | 4  | 8  | 1  | 6  | 9 | 5 | 2 | 3  |    |   |    |  |  |  |
|    | 2  | 1  | 5  | 6  | 3  | 2  | 8  | 7 | 4 | 9 |    |    |   |    |  |  |  |
| 23 | 15 | 8  | 1  | 5  | 9  | 7  | 3  | 2 | 6 | 4 |    |    |   |    |  |  |  |
| 26 | 15 | 6  | 3  | 9  | 8  | 4  | 2  | 1 | 7 | 5 |    |    |   |    |  |  |  |
| 19 | 25 | 4  | 2  | 7  | 6  | 1  | 5  | 3 | 9 | 8 |    |    |   |    |  |  |  |

### 4. Easy As Sudoku

55 Points

Place a digit from the given set into each of the empty cells so that each digit appears exactly once in each row, column and 3x3 outlined box. The remaining cells are blank. Each digit outside the grid is the first digit seen from the corresponding direction.

|   |  |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  |  |
|---|--|---|---|---|---|---|---|---|--|--|--|--|--|--|--|--|--|
|   |  | 4 |   | 3 |   | 5 | 4 |   |  |  |  |  |  |  |  |  |  |
| 6 |  |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  |  |
| 2 |  |   | 3 |   |   |   |   |   |  |  |  |  |  |  |  |  |  |
| 5 |  |   |   | 4 |   | 1 |   |   |  |  |  |  |  |  |  |  |  |
| 2 |  |   |   |   | 5 |   |   |   |  |  |  |  |  |  |  |  |  |
| 4 |  |   | 6 | 3 |   | 2 | 1 |   |  |  |  |  |  |  |  |  |  |
| 3 |  |   |   |   | 1 |   |   |   |  |  |  |  |  |  |  |  |  |
| 3 |  |   |   | 6 |   | 5 |   |   |  |  |  |  |  |  |  |  |  |
| 4 |  |   |   |   |   |   |   | 6 |  |  |  |  |  |  |  |  |  |
| 1 |  |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  |  |
|   |  | 6 | 5 |   | 2 |   | 3 |   |  |  |  |  |  |  |  |  |  |

|   |   |   |   |   |   |   |   |   |   |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|--|--|--|--|--|--|--|--|
|   |   | 4 |   | 3 |   | 5 | 4 |   |   |  |  |  |  |  |  |  |  |
| 6 | 6 | 4 |   | 2 | 3 |   | 5 |   | 1 |  |  |  |  |  |  |  |  |
| 2 | 2 | 1 | 3 | 5 | 6 |   |   | 4 |   |  |  |  |  |  |  |  |  |
| 5 | 5 |   |   | 4 |   | 1 | 2 | 6 | 3 |  |  |  |  |  |  |  |  |
| 2 |   | 2 | 1 |   | 5 | 6 | 3 |   | 4 |  |  |  |  |  |  |  |  |
| 4 | 4 |   | 6 | 3 |   | 2 | 1 |   | 5 |  |  |  |  |  |  |  |  |
| 3 | 3 | 5 |   |   | 1 | 4 |   | 2 | 6 |  |  |  |  |  |  |  |  |
| 3 |   | 3 | 2 | 6 | 4 | 5 |   | 1 |   |  |  |  |  |  |  |  |  |
| 4 |   |   | 4 | 1 |   | 3 | 6 | 5 | 2 |  |  |  |  |  |  |  |  |
| 1 | 1 | 6 | 5 |   | 2 |   | 4 | 3 |   |  |  |  |  |  |  |  |  |
|   |   | 6 | 5 |   | 2 |   | 3 |   |   |  |  |  |  |  |  |  |  |

Shade some cells such that the numbers outside the grid indicate the number of shaded cells in each shaded stretch in the corresponding row or column. If there is more than one number, the given order is valid and there must be at least one white cell between the stretches of shaded cells. Then transfer the digits from the white cells into the blank grid and solve it as classic Sudoku. Place a digit from 1 to 9 into each of the empty cells so that each digit appears exactly once in each row, column and 3x3 outlined box.

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

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

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

6. Sudokuro

Place a digit from 1 to 9 into each of the empty cells so that each digit appears exactly once in each row, column and irregular shaped outlined box. The sum of digits in each horizontal and vertical group of cells is given on its left and top respectively.

|    |    |    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|----|----|
|    |    | 18 | 5  | 27 | 13 | 13 | 5  | 25 | 25 | 20 |    |
|    | 45 |    |    |    |    |    |    |    |    |    |    |
| 20 |    |    |    |    |    |    |    |    |    |    |    |
| 37 |    |    |    |    |    |    | 8  |    |    |    | 45 |
| 8  |    |    | 3  |    |    | 34 |    |    |    |    |    |
| 7  |    |    | 31 |    |    | 21 |    |    |    |    |    |
|    |    |    | 5  |    |    | 33 |    |    |    |    |    |
|    | 12 |    |    |    |    | 21 |    |    |    |    |    |
|    | 42 |    |    |    |    |    |    |    |    | 3  |    |
| 25 |    |    |    |    |    |    |    |    |    | 4  |    |
| 38 |    |    |    |    |    |    |    |    | 7  |    |    |
|    |    |    |    |    |    |    | 20 | 20 |    |    |    |
| 15 |    |    |    | 12 |    |    | 18 |    |    |    |    |
|    |    |    |    |    |    |    | 14 |    |    |    |    |
| 2  |    | 38 |    |    |    |    |    |    |    | 5  |    |
|    |    | 15 |    |    |    |    |    |    |    | 21 |    |
| 21 |    |    |    |    |    |    | 11 | 11 |    |    |    |
|    |    |    |    |    |    |    |    |    |    |    |    |
| 8  |    |    | 37 |    |    |    |    |    |    |    |    |
|    |    |    | 9  | 6  |    |    |    |    |    |    |    |
| 39 |    |    |    |    |    |    |    |    |    | 6  |    |

|    |    |    |    |    |    |    |    |    |    |    |   |
|----|----|----|----|----|----|----|----|----|----|----|---|
|    |    | 18 | 5  | 27 | 13 | 13 | 5  | 25 | 25 | 20 |   |
|    | 45 | 9  | 1  | 2  | 8  | 4  | 5  | 6  | 3  | 7  |   |
| 20 |    | 8  | 6  | 4  | 7  | 3  | 9  | 26 | 5  | 1  | 2 |
| 37 |    | 8  | 6  | 4  | 7  | 3  | 9  | 26 | 5  | 1  | 2 |
| 8  |    | 5  | 3  | 3  | 1  | 2  | 34 | 21 | 9  | 8  | 4 |
|    |    | 8  | 5  | 3  | 3  | 1  | 2  | 34 | 21 | 9  | 8 |
| 7  |    | 7  | 5  | 2  | 3  | 21 | 8  | 6  | 4  | 9  | 5 |
|    |    | 7  | 5  | 2  | 3  | 21 | 8  | 6  | 4  | 9  | 5 |
|    | 42 | 7  | 6  | 9  | 5  | 1  | 4  | 2  | 8  | 3  | 3 |
| 25 |    | 7  | 6  | 9  | 5  | 1  | 4  | 2  | 8  | 3  | 3 |
| 38 |    | 9  | 1  | 8  | 5  | 6  | 2  | 7  | 20 | 20 | 3 |
|    |    | 9  | 1  | 8  | 5  | 6  | 2  | 7  | 20 | 20 | 3 |
| 15 |    | 6  | 4  | 5  | 12 | 9  | 3  | 14 | 7  | 2  | 1 |
|    |    | 6  | 4  | 5  | 12 | 9  | 3  | 14 | 7  | 2  | 1 |
| 2  |    | 2  | 38 | 3  | 4  | 1  | 7  | 8  | 9  | 6  | 5 |
|    |    | 2  | 38 | 3  | 4  | 1  | 7  | 8  | 9  | 6  | 5 |
| 21 |    | 4  | 2  | 7  | 8  | 11 | 11 | 1  | 3  | 5  | 9 |
|    |    | 4  | 2  | 7  | 8  | 11 | 11 | 1  | 3  | 5  | 9 |
|    |    | 3  | 5  | 9  | 6  | 37 | 4  | 6  | 2  | 1  | 7 |
| 8  |    | 3  | 5  | 9  | 6  | 37 | 4  | 6  | 2  | 1  | 7 |
| 39 |    | 1  | 8  | 9  | 6  | 7  | 5  | 3  |    | 6  | 4 |
|    |    | 1  | 8  | 9  | 6  | 7  | 5  | 3  |    | 6  | 4 |

Place a digit from 1 to 9 into each of the empty cells so that each digit appears exactly once in each row, column and 3x3 outlined box. The given fleet of ships must appear in the grid such that ships do not touch each other, even diagonally. Rotation and reflection are allowed but the orientation of digits in the ships remain the same. Ship segments without a digit can contain any digit. Each number outside the grid is the number of ship segments in the corresponding row or column. Cells with given digits are not part of any ship.

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

5 1 3 2 3 3 1 2



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

8. Skyscraper Sudoku

Place a digit from 1 to 9 into each of the empty cells so that each digit appears exactly once in each row, column and 3x3 outlined box. Each digit inside the grid represents the height of the skyscraper in that cell. Each number outside the grid represents the number of skyscrapers that can be seen in the corresponding row or column. Taller skyscrapers hide shorter ones.

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

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

Place a symbol from the given set into each of the empty cells so that each symbol appears exactly once in each row, column and 3x3 outlined box. Each given word must appear horizontally, vertically, or diagonally - forward or backward, in the grid.

|  |   |  |   |  |  |   |   |
|--|---|--|---|--|--|---|---|
|  |   |  |   |  |  |   |   |
|  | E |  |   |  |  | S |   |
|  |   |  |   |  |  |   |   |
|  | U |  |   |  |  |   | T |
|  |   |  | M |  |  |   |   |
|  | S |  |   |  |  |   | M |
|  |   |  |   |  |  |   |   |
|  | M |  |   |  |  |   | C |
|  |   |  |   |  |  |   |   |

MOCKTEST  
STOCK  
SUE  
MODE  
SUDOKUS

C D E K M O S T U

|   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|
| C | O | T | M | S | E | D | K | U |
| D | E | U | K | C | O | T | S | M |
| S | K | M | D | U | T | E | O | C |
| M | U | O | S | E | D | C | T | K |
| T | C | D | U | M | K | O | E | S |
| K | S | E | O | T | C | U | M | D |
| O | D | C | E | K | S | M | U | T |
| E | M | S | T | D | U | K | C | O |
| U | T | K | C | O | M | S | D | E |

# 20 PUZZLE FUSION

350 Points

30 Minutes

10x Bonus

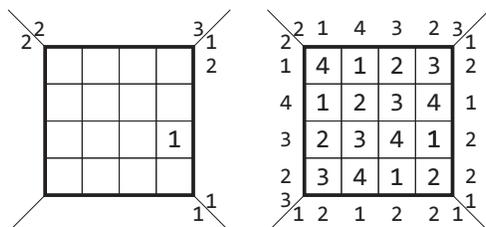
Individual

Round note: This round contains 8 puzzles across 4 puzzle types. All puzzle types in this round are hybrids formed by fusing regular puzzle types with their own rule sets.

## 1,2. Skyscraper<sup>2</sup>

15 + 70 Points

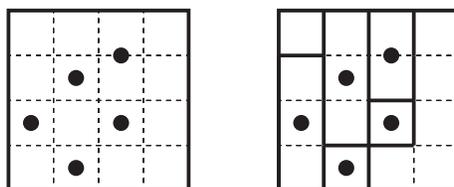
Place a digit from 1 to N, in an NxN grid, into each of the empty cells so that each digit appears exactly once in each row and column. Each digit inside the grid represents the height of the skyscraper in that cell. Each number outside the grid represents the number of skyscrapers that can be seen in the corresponding row or column. Taller skyscrapers hide shorter ones. Numbers beside diagonal lines indicate the number of skyscrapers seen considering skyscraper clues in a line in the corresponding direction. It may be part of solving to use the missing skyscraper clues.



## 3,4. Spiral Galaxy<sup>2</sup>

25 + 30 Points

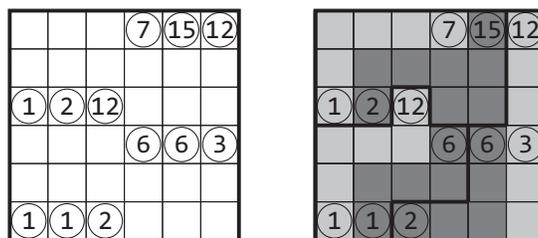
Divide the grid into 180° symmetrical regions along the gridlines. Each region must contain exactly one circle, which represents the central symmetry point of the region. All circles are given. Some cells may not be part of any region. All the used cells must together form a single connected area that is 180° symmetrical.



## 5,6. Araf<sup>2</sup>

45 + 40 Points

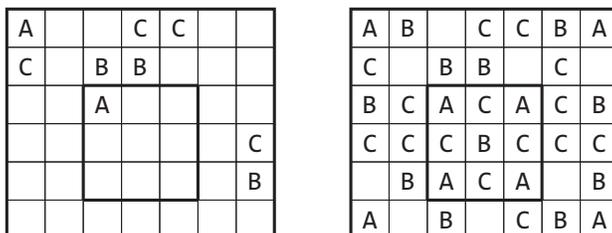
Divide the grid into some regions containing four circles each. Each cell is part of one region. Each region must have an area that is strictly between the smallest and the largest of the numbers in the circles contained in it. Further to this, each region must also be divided into two sub-regions, each containing exactly two given numbers, and each having an area strictly between the two numbers they contain.



## 7,8. Palindrome<sup>2</sup>

60 + 65 Points

Place a letter A or B or C in some of the cells. Some cells will remain blank, but blank cells do not share an edge. Each row and each column of the grid, and each row and each column of the thickly outlined square regions within the grid, form palindromes. A palindrome has at least 2 different letters and reads the same from both sides, ignoring the blank cells.



# 21 BROKEN PIECES

160 Points

15 Minutes

5x Bonus

Individual

Round note: This round contains a single puzzle type, consisting of numbered tiles that must be grouped into triplets under the given rules. All tiles must be used in triplets to achieve full credit for the round, but partial points are available if there are some tiles unused in triplets, even if the ones used are not a part of the global solution. The participants will be provided with an A4 answer key sheet like the one below.

## 1. Tiles

160 Points

Each player will be given 18 tiles, packed inside an envelope. The goal is to make 6 sets, each consisting of 3 tiles. Each tile must be used exactly once. 3 tiles can make a set, only if the letters at the respective positions in every tile are all same or are all different. Rotation or reflection of tiles not allowed while comparing letters.

Ignore the numbers in tiles while solving; they are used for answer key purpose and also to help make the orientation of the tiles clear. In the answer key, each column represents a triplet. Participants must enter a dot/circle/marking for each tile which is part of the triplet. There will be no credit for columns with anything more than or less than three consistent markings.

Partial points will be awarded in the following structure: 5 points for 1 tile set, 10 points for 2 tile sets, 20 points for 3 tile sets, 40 points for 4 tile sets and 80 points for 5 tile sets.

|                   |   |                   |   |                   |   |                   |   |                   |   |
|-------------------|---|-------------------|---|-------------------|---|-------------------|---|-------------------|---|
| <sup>1</sup><br>A | A | <sup>2</sup><br>A | A | <sup>3</sup><br>B | A | <sup>4</sup><br>A | C | <sup>5</sup><br>C | A |
| A                 | A | B                 | A | B                 | A | B                 | C | B                 | A |
| <sup>6</sup><br>A | B | <sup>7</sup><br>C | B | <sup>8</sup><br>B | A | <sup>9</sup><br>A | C |                   |   |
| C                 | B | C                 | B | A                 | B | B                 | B |                   |   |

Answer key

|        |   |   |   |
|--------|---|---|---|
| Tile 1 | ● |   |   |
| Tile 2 |   | ● |   |
| Tile 3 |   | ● |   |
| Tile 4 | ● |   |   |
| Tile 5 |   | ● |   |
| Tile 6 | ● |   |   |
| Tile 7 |   |   | ● |
| Tile 8 |   |   | ● |
| Tile 9 |   |   | ● |

# 22 DO NOT WORRY BE HAPPY

1600 Points

40 Minutes

40x Bonus

Team

Round note: This is a team round containing 7 puzzles, across 7 puzzle types, all given on A4 sheets. In this round, participants cannot use pens, pencils or any other stationery. All puzzles have some cells covered by scratch labels. These labels can be scratched off a cell to reveal its contents. In each puzzle, some specific cells must all be revealed while none of the remaining cells must be revealed. The specific cells to be scratched for each puzzle are indicated in the table below. To discourage guessing, even if one cell that isn't supposed to be revealed is scratched off, a smiley face will be visible, and a zero score will be awarded for the puzzle. The team can work on only one puzzle at one instance and it is allowed to switch puzzles during the round. It is possible to scratch off the labels even using fingernails but the organizers highly recommend the use of coins which will be provided before the round commences.

An extra sheet will be provided. This sheet will contain the Battleship Fleet, the Pentomino Set, some other pictorial depictions of allowed/not allowed cells for puzzles, and a 2x2 grid containing 4 scratch labels so teams may try it out before starting the round.

This is a list showing cells to be revealed for each puzzle. The second column shows cells that must be revealed and the third column shows the cells that must not be revealed in order to receive credit for that puzzle.

| Puzzle      | Must be Revealed                   | Must Not Be Revealed                  |
|-------------|------------------------------------|---------------------------------------|
| Minesweeper | All non-mine cells                 | Any cell containing a mine            |
| Dotted Wall | All cells containing the wall      | Any cells not containing the wall     |
| Cave        | All cells inside the Cave          | Any cell outside the cave             |
| Nanro       | All cells containing digits        | Any cells not containing digits       |
| Battleships | All cells containing ship segments | Any cell not containing ship segments |
| Summon      | All cells containing digits        | Any cell not containing digits        |
| Pentomino   | All cells containing Pentominos    | Any cell not containing Pentominos    |

An example of the content-reveal aspect using Minesweeper:

| Puzzle   | Solution | Wrong Solution |   |   |   |   |  |   |  |  |   |  |  |  |   |   |  |  |  |  |   |   |  |  |  |   |  |  |   |  |   |  |  |  |  |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |
|--|----------|----------------|---|---|---|---|--|---|--|--|---|--|--|--|---|---|--|--|--|--|---|---|--|--|--|---|--|--|---|--|---|--|--|--|--|---|--|---|---|---|---|---|---|---|---|--|--|---|---|---|---|---|---|---|---|---|--|---|---|--|---|--|---|--|--|---|---|---|--|---|---|---|---|--|---|---|---|---|---|---|---|---|--|--|---|---|---|---|---|---|---|---|---|--|---|---|--|---|--|---|--|--|---|---|---|--|---|---|---|---|
| <table border="1" style="width: 100%; text-align: center;"> <tr><td>2</td><td></td><td></td><td></td><td></td><td>2</td></tr> <tr><td></td><td>5</td><td></td><td></td><td>5</td><td></td></tr> <tr><td></td><td></td><td>1</td><td>1</td><td></td><td></td></tr> <tr><td></td><td></td><td>1</td><td>1</td><td></td><td></td></tr> <tr><td></td><td>2</td><td></td><td></td><td>4</td><td></td></tr> <tr><td>0</td><td></td><td></td><td></td><td></td><td>2</td></tr> </table> | 2        |                |   |   |   | 2 |  | 5 |  |  | 5 |  |  |  | 1 | 1 |  |  |  |  | 1 | 1 |  |  |  | 2 |  |  | 4 |  | 0 |  |  |  |  | 2 | <table border="1" style="width: 100%; text-align: center;"> <tr><td>2</td><td>☺</td><td>☺</td><td>☺</td><td>☺</td><td>2</td></tr> <tr><td>☺</td><td>5</td><td></td><td></td><td>5</td><td>☺</td></tr> <tr><td>☺</td><td>☺</td><td>1</td><td>1</td><td>☺</td><td>☺</td></tr> <tr><td>☺</td><td></td><td>1</td><td>1</td><td></td><td>☺</td></tr> <tr><td></td><td>2</td><td></td><td></td><td>4</td><td>☺</td></tr> <tr><td>0</td><td></td><td>☺</td><td>☺</td><td>☺</td><td>2</td></tr> </table> | 2 | ☺ | ☺ | ☺ | ☺ | 2 | ☺ | 5 |  |  | 5 | ☺ | ☺ | ☺ | 1 | 1 | ☺ | ☺ | ☺ |  | 1 | 1 |  | ☺ |  | 2 |  |  | 4 | ☺ | 0 |  | ☺ | ☺ | ☺ | 2 | <table border="1" style="width: 100%; text-align: center;"> <tr><td>2</td><td>☺</td><td>☺</td><td>☺</td><td>☺</td><td>2</td></tr> <tr><td>☺</td><td>5</td><td></td><td></td><td>5</td><td>☺</td></tr> <tr><td>☺</td><td>☺</td><td>1</td><td>1</td><td>☺</td><td>☺</td></tr> <tr><td>☺</td><td></td><td>1</td><td>1</td><td></td><td>☺</td></tr> <tr><td></td><td>2</td><td></td><td></td><td>4</td><td>☺</td></tr> <tr><td>0</td><td></td><td>☺</td><td>☺</td><td>☺</td><td>2</td></tr> </table> | 2 | ☺ | ☺ | ☺ | ☺ | 2 | ☺ | 5 |  |  | 5 | ☺ | ☺ | ☺ | 1 | 1 | ☺ | ☺ | ☺ |  | 1 | 1 |  | ☺ |  | 2 |  |  | 4 | ☺ | 0 |  | ☺ | ☺ | ☺ | 2 |
| 2  |          |                |   |   | 2 |   |  |   |  |  |   |  |  |  |   |   |  |  |  |  |   |   |  |  |  |   |  |  |   |  |   |  |  |  |  |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |
|  | 5        |                |   | 5 |   |   |  |   |  |  |   |  |  |  |   |   |  |  |  |  |   |   |  |  |  |   |  |  |   |  |   |  |  |  |  |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |
|  |          | 1              | 1 |   |   |   |  |   |  |  |   |  |  |  |   |   |  |  |  |  |   |   |  |  |  |   |  |  |   |  |   |  |  |  |  |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |
|  |          | 1              | 1 |   |   |   |  |   |  |  |   |  |  |  |   |   |  |  |  |  |   |   |  |  |  |   |  |  |   |  |   |  |  |  |  |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |
|  | 2        |                |   | 4 |   |   |  |   |  |  |   |  |  |  |   |   |  |  |  |  |   |   |  |  |  |   |  |  |   |  |   |  |  |  |  |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |
| 0  |          |                |   |   | 2 |   |  |   |  |  |   |  |  |  |   |   |  |  |  |  |   |   |  |  |  |   |  |  |   |  |   |  |  |  |  |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |
| 2  | ☺        | ☺              | ☺ | ☺ | 2 |   |  |   |  |  |   |  |  |  |   |   |  |  |  |  |   |   |  |  |  |   |  |  |   |  |   |  |  |  |  |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |
| ☺  | 5        |                |   | 5 | ☺ |   |  |   |  |  |   |  |  |  |   |   |  |  |  |  |   |   |  |  |  |   |  |  |   |  |   |  |  |  |  |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |
| ☺  | ☺        | 1              | 1 | ☺ | ☺ |   |  |   |  |  |   |  |  |  |   |   |  |  |  |  |   |   |  |  |  |   |  |  |   |  |   |  |  |  |  |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |
| ☺  |          | 1              | 1 |   | ☺ |   |  |   |  |  |   |  |  |  |   |   |  |  |  |  |   |   |  |  |  |   |  |  |   |  |   |  |  |  |  |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |
|  | 2        |                |   | 4 | ☺ |   |  |   |  |  |   |  |  |  |   |   |  |  |  |  |   |   |  |  |  |   |  |  |   |  |   |  |  |  |  |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |
| 0  |          | ☺              | ☺ | ☺ | 2 |   |  |   |  |  |   |  |  |  |   |   |  |  |  |  |   |   |  |  |  |   |  |  |   |  |   |  |  |  |  |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |
| 2  | ☺        | ☺              | ☺ | ☺ | 2 |   |  |   |  |  |   |  |  |  |   |   |  |  |  |  |   |   |  |  |  |   |  |  |   |  |   |  |  |  |  |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |
| ☺  | 5        |                |   | 5 | ☺ |   |  |   |  |  |   |  |  |  |   |   |  |  |  |  |   |   |  |  |  |   |  |  |   |  |   |  |  |  |  |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |
| ☺  | ☺        | 1              | 1 | ☺ | ☺ |   |  |   |  |  |   |  |  |  |   |   |  |  |  |  |   |   |  |  |  |   |  |  |   |  |   |  |  |  |  |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |
| ☺  |          | 1              | 1 |   | ☺ |   |  |   |  |  |   |  |  |  |   |   |  |  |  |  |   |   |  |  |  |   |  |  |   |  |   |  |  |  |  |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |
|  | 2        |                |   | 4 | ☺ |   |  |   |  |  |   |  |  |  |   |   |  |  |  |  |   |   |  |  |  |   |  |  |   |  |   |  |  |  |  |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |
| 0  |          | ☺              | ☺ | ☺ | 2 |   |  |   |  |  |   |  |  |  |   |   |  |  |  |  |   |   |  |  |  |   |  |  |   |  |   |  |  |  |  |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |  |   |   |   |   |   |   |   |   |  |  |   |   |   |   |   |   |   |   |   |  |   |   |  |   |  |   |  |  |   |   |   |  |   |   |   |   |

## 1. Minesweeper

155 Points

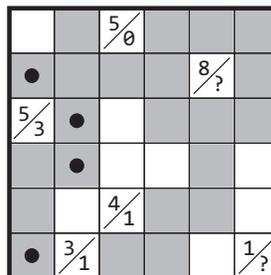
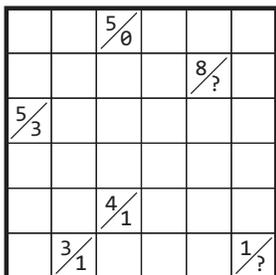
Place mines into empty cells in the grid such that the numbers in the grid represent the number of mines in the eight neighbouring cells, including diagonal ones.

|   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 |   |   |   |   | 2 | 2 | ☹ | ☹ | ☹ | ☹ | 2 |
|   | 5 |   |   | 5 |   | ☹ | 5 |   |   | 5 | ☹ |
|   |   | 1 | 1 |   |   | ☹ | ☹ | 1 | 1 | ☹ | ☹ |
|   |   | 1 | 1 |   |   | ☹ |   | 1 | 1 |   | ☹ |
|   | 2 |   |   | 4 |   |   | 2 |   |   | 4 | ☹ |
| 0 |   |   |   |   | 2 | 0 |   | ☹ | ☹ | ☹ | 2 |

## 2. Dotted Wall

260 Points

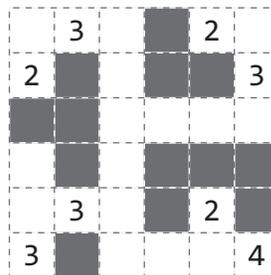
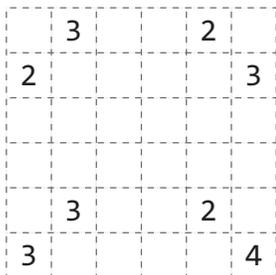
Reading from left to right, top to bottom, every Nth shaded cell is marked by a dot. N is a constant value that needs to be determined by the solver. The shaded cells must form a single connected area, i.e. the wall. No 2x2 group of cells can be entirely shaded. The number at the top of the clue gives the number of shaded cells around it, and the number at the bottom gives the number of dots around it.



## 3. Cave

190 Points

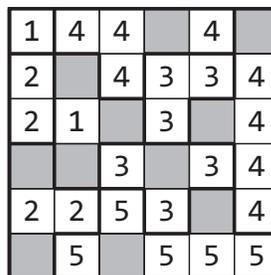
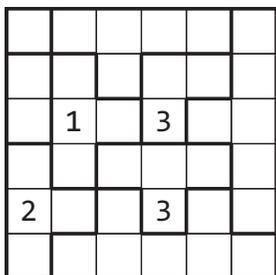
Shade some cells to leave behind a single connected group — the cave. All shaded cells must be connected horizontally or vertically through other shaded cells to an edge of the grid. All numbered cells must be a part of the cave, with each number indicating the total number of cells connected vertically and horizontally to the numbered cell, including the cell itself.



## 4. Nanro

180 Points

Label some cells with numbers to form a single connected group of labeled cells; no 2x2 group of cells may be fully labeled. Each bold region must contain at least one labeled cell. Each number, including any given number, must equal the total number of labeled cells in that region. For two labeled cells touching by a side across a thick boundary, the numbers must be different.



Place the given fleet of ships with the shapes of the ships as shown. The numbers outside the grid indicate the number of cells occupied by a ship segment in that row or column. Ships cannot touch each other, even diagonally. Some cells are known to be water unoccupied by ships, and are indicated by waves.

The puzzle consists of two 7x7 grids. To the left of the first grid is a fleet of ships: a 5x1 ship, a 4x1 ship, a 3x1 ship, a 2x1 ship, a 2x1 ship, a 2x1 ship, and four 1x1 ships. The first grid has clues: Row 1 (5), Row 2 (3), Row 3 (3), Row 4 (2), Row 5 (2), Row 6 (5). Column 1 (5), Column 2 (3), Column 3 (3), Column 4 (2), Column 5 (2), Column 6 (5). Waves are in (3,4), (4,4), (5,3), and (6,3). The second grid has clues: Row 1 (2), Row 2 (4), Row 3 (2), Row 4 (0), Row 5 (4), Row 6 (3), Row 7 (3). Column 1 (5), Column 2 (3), Column 3 (3), Column 4 (2), Column 5 (2), Column 6 (5). Waves are in (4,4), (5,4), and (6,3). Shaded cells in the second grid include (1,3), (1,7), (2,1), (2,4), (2,7), (3,2), (3,5), (4,1), (4,3), (4,6), (5,1), (5,3), (5,7), (6,1), (6,4), (6,7), and (7,2), (7,6).

6. Summon

Fill the grid digits from 1 to 3, so that each region includes all digits exactly once. Same digits cannot touch each other, even diagonally. Clues outside the grid indicate the sum of all numbers in the corresponding row or column. Numbers must be read from left to right or top to bottom.

The example uses 1 to 2.

The puzzle is a 6x6 grid with regions defined by thick lines. Clues are: Row 1 (33), Row 2 (24), Row 3 (5), Row 4 (3), Row 5 (33). Column 1 (5), Column 2 (3), Column 3 (33). The example grid shows digits: Row 1 (2, 1, 1, 2), Row 2 (2, 1), Row 3 (1, 1, 2), Row 4 (2, 1, 1, 2), Row 5 (2, 1).

7. Pentomino

Place all 12 Pentominos given in the bank into the grid. Pentominos do not touch each other, even diagonally. Rotations and reflections are considered the same shape. Pentominos cannot be placed in shaded cells. The numbers outside the grid indicate the number of cells occupied by pentominos in that row or column.

The example uses just 3 Pentominos as labeled below.

The puzzle is a 5x5 grid with clues: Row 1 (4), Row 2 (3), Row 3 (0). Column 1 (4), Column 2 (3). Shaded cells are at (2,2), (2,5), (3,5), and the entire bottom row (4,1-5,5). The bank shows three pentominos: I (a 1x5 vertical bar), P (a 2x3 shape with a missing top-right cell), and U (a 2x3 shape with a missing top-left cell). The example grid shows U in (1,1), (1,2), (2,1), (2,2), (3,1), (3,2), P in (1,4), (1,5), (2,4), (2,5), (3,4), and I in (4,1), (4,2), (4,3), (4,4), (4,5).

# 23 WORD SHOW

2500 Points

50 Minutes

40x Bonus

Team

Round note: This is a team round containing 20 puzzles, across 20 Word-based puzzle types. The types in this round require some placement or usage of words while solving, taken from a given list. There is a common list for all puzzle types in the round. Some words may appear multiple times on the list, and can be used across multiple puzzles as many times as the word appears in the list, but no puzzle can use the same word twice. Only the bold parts of the words shall be used for the puzzle.

In the Instructions below, all word based puzzles except SMS Codes will note that 'all words from the list must be used' in some form, but in the competition puzzle, obviously, this rule will change to 'some words from the list must be used', as in SMS Codes, allowing for the common word list.

The word lists will appear in two A3 sheets, one sheet will contain words of length less than 6 and the other sheet will contain words of size length 6 and greater. 14 puzzles will be on A5 sheets and 6 puzzles on A4 sheets. The word list will be sorted first by length and then in alphabetic order.

There will be three helper lists provided, on an A4 sheet each, with words from the larger list that are 'valid' for the specific puzzles. The puzzles for which such lists will be provided are 6. Double Letter Scrabble, 7. Grid-less Crossword and 10. Letter Scrabble.

5 points will be awarded for correctly identifying the puzzle to which each word belongs to. It is necessary to indicate the puzzle number in the boxes provided in the word list and not sufficient to only indicate those in the individual puzzle grid. If one word appears multiple times, then it can be marked in any order in the word list. Also, to receive credit for an individual puzzle, it must be solved completely and it is not sufficient to only indicate the words belonging to the puzzle in the word list.

Here is an example with Double Letter Scrabble, Gridless Crossword, Retro Scrabble and SMS Codes

## 4 LETTER WORDS

- CUBA NORTH AMERICA
- IRAN ASIA
- MALI AFRICA
- TOGO AFRICA

## 5 LETTER WORDS

- CHINA ASIA
- HAITI NORTH AMERICA
- INDIA ASIA
- JAPAN ASIA
- MALTA EUROPE
- NEPAL ASIA

## 6 LETTER WORD

- GREECE EUROPE

## 7 LETTER WORD

- ANDORRA EUROPE

## 8 LETTER WORDS

- ANGUILLA NORTH AMERICA
- CAMEROON AFRICA

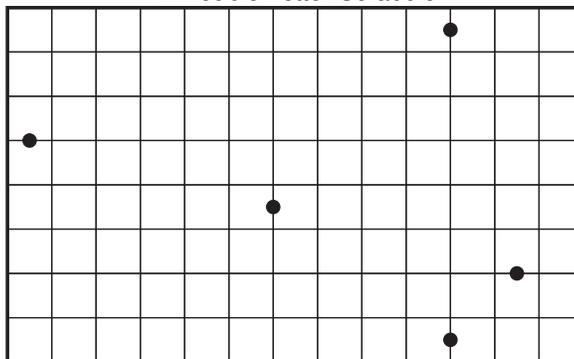
## 11 LETTER WORD

- PHILIPPINES ASIA

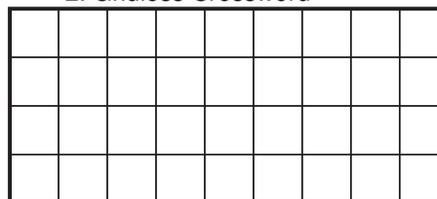
## 13 LETTER WORD

- GUINEA-BISSAU AFRICA

### 1. Double Letter Scrabble



### 2. Gridless Crossword



#### CLUES

#### ACROSS

- 2 EUROPE(5)
- 4 NORTH AMERICA(5)

#### DOWN

- 1 NORTH AMERICA(4)
- 2 AFRICA(4)
- 3 AFRICA(4)

### 3. Retro Scrabble

|   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|
| I | N | D | I | I | N | D | I | A |
| R | E | E | I | R | A | N | E | P |
| A | P | I | R | A | N | E | P | A |
| J | A | P | A | N | E | P | A | L |
| A | L | I | N | D | I | A | N | E |
| J | A | P | A | N | E | L | I | N |

### 4. SMS Codes

2 4 4 6 2

7 4 4 5 4 7 7 4 6 3 8

**4 LETTER WORDS**

- 2 CUBA NORTH AMERICA
- 3 IRAN ASIA
- 2 MALI AFRICA
- 2 TOGO AFRICA

**5 LETTER WORDS**

- 4 CHINA ASIA
- 2 HAITI NORTH AMERICA
- 3 INDIA ASIA
- 3 JAPAN ASIA
- 2 MALTA EUROPE
- 3 NEPAL ASIA

**6 LETTER WORD**

- 1 GREECE EUROPE

**7 LETTER WORD**

- 1 ANDORRA EUROPE

**8 LETTER WORDS**

- 1 ANGUILLA NORTH AMERICA
- 1 CAMEROON AFRICA

**11 LETTER WORD**

- 4 PHILIPPINES ASIA

**13 LETTER WORD**

- 1 GUINEA-BISSAU AFRICA

**1. Double Letter Scrabble**

|   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| G | U | I | N | E | A | - | B | I | S | S | A | U |
| R |   |   |   |   |   |   |   |   |   |   | N |   |
| E |   |   |   |   |   |   |   |   |   |   | G |   |
| E |   |   |   |   |   |   |   |   |   |   | U |   |
| C | A | M | E | R | O | O | N |   |   |   | I |   |
| E |   |   |   |   |   |   |   |   |   |   | L |   |
|   |   |   |   |   |   |   |   |   |   |   | L |   |
|   |   |   |   |   | A | N | D | O | R | R | A |   |

**2. Gridless Crossword**

|                |                |   |   |                |   |   |                |   |
|----------------|----------------|---|---|----------------|---|---|----------------|---|
|                | <sup>1</sup> C |   |   | <sup>2</sup> M | A | L | <sup>3</sup> T | A |
|                | U              |   |   | A              |   |   | O              |   |
|                | B              |   |   | L              |   |   | G              |   |
| <sup>4</sup> H | A              | I | T | I              |   |   | O              |   |

**3. Retro Scrabble**

|   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|
| I | N | D | I | I | N | D | I | A |
| R | E | E | I | R | A | N | E | P |
| A | P | I | R | A | N | E | P | A |
| J | A | P | A | N | E | P | A | L |
| A | L | I | N | D | I | A | N | E |
| J | A | P | A | N | E | L | I | N |

**4. SMS Codes**

2 4 4 6 2 CHINA

7 4 4 5 4 7 7 4 6 3 8 PHILIPPINES

**1. Acrostic**

**35 Points**

Symbols from words in the given list have been replaced by numbers. Each instance of the same symbol is replaced by the same number and each different symbol is replaced by a different number. Identify which number replaces the given symbols.

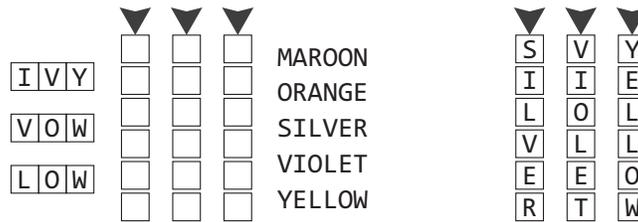
|   |   |   |  |   |   |   |   |   |   |     |
|---|---|---|--|---|---|---|---|---|---|-----|
|   |   |   | <span style="border: 1px solid black; padding: 0 2px;">3</span>  |   |   |   |   |   |   | A   |
|   |   |   | <span style="border: 1px solid black; padding: 0 2px;">10</span> |   |   |   |   |   |   | I   |
|   |   | <span style="border: 1px solid black; padding: 0 2px;">2</span> | <span style="border: 1px solid black; padding: 0 2px;">4</span>  |   |   |   |   |   |   | NO  |
|   |   | <span style="border: 1px solid black; padding: 0 2px;">2</span> | <span style="border: 1px solid black; padding: 0 2px;">6</span>  |   |   |   |   |   |   | OF  |
|   |   | <span style="border: 1px solid black; padding: 0 2px;">7</span> | <span style="border: 1px solid black; padding: 0 2px;">2</span>  |   |   |   |   |   |   | OX  |
|   |   | <span style="border: 1px solid black; padding: 0 2px;">8</span> | <span style="border: 1px solid black; padding: 0 2px;">9</span>  |   |   |   |   |   |   | UP  |
|   | <span style="border: 1px solid black; padding: 0 2px;">1</span> | <span style="border: 1px solid black; padding: 0 2px;">2</span> | <span style="border: 1px solid black; padding: 0 2px;">2</span>  |   |   |   |   |   |   | AXE |
|   | <span style="border: 1px solid black; padding: 0 2px;">3</span> | <span style="border: 1px solid black; padding: 0 2px;">4</span> | <span style="border: 1px solid black; padding: 0 2px;">5</span>  |   |   |   |   |   |   | ZOO |
| <span style="border: 1px solid black; padding: 0 2px;">A</span> | <span style="border: 1px solid black; padding: 0 2px;">E</span> | <span style="border: 1px solid black; padding: 0 2px;">F</span> | <span style="border: 1px solid black; padding: 0 2px;">I</span>  | <span style="border: 1px solid black; padding: 0 2px;">N</span> | <span style="border: 1px solid black; padding: 0 2px;">O</span> | <span style="border: 1px solid black; padding: 0 2px;">P</span> | <span style="border: 1px solid black; padding: 0 2px;">U</span> | <span style="border: 1px solid black; padding: 0 2px;">X</span> | <span style="border: 1px solid black; padding: 0 2px;">Z</span> |     |
|   |   |   |  |   |   |   |   |   |   |     |

|   |   |   |  |   |   |   |   |   |   |  |
|---|---|---|--|---|---|---|---|---|---|--|
|   |   |   | <span style="border: 1px solid black; padding: 0 2px;">3</span>  | <span style="border: 1px solid black; padding: 0 2px;">A</span> |   |   |   |   |   |  |
|   |   |   | <span style="border: 1px solid black; padding: 0 2px;">10</span> | <span style="border: 1px solid black; padding: 0 2px;">I</span> |   |   |   |   |   |  |
|   |   | <span style="border: 1px solid black; padding: 0 2px;">2</span> | <span style="border: 1px solid black; padding: 0 2px;">4</span>  | <span style="border: 1px solid black; padding: 0 2px;">0</span> | <span style="border: 1px solid black; padding: 0 2px;">X</span> |   |   |   |   |  |
|   |   | <span style="border: 1px solid black; padding: 0 2px;">2</span> | <span style="border: 1px solid black; padding: 0 2px;">6</span>  | <span style="border: 1px solid black; padding: 0 2px;">0</span> | <span style="border: 1px solid black; padding: 0 2px;">F</span> |   |   |   |   |  |
|   |   | <span style="border: 1px solid black; padding: 0 2px;">7</span> | <span style="border: 1px solid black; padding: 0 2px;">2</span>  | <span style="border: 1px solid black; padding: 0 2px;">N</span> | <span style="border: 1px solid black; padding: 0 2px;">O</span> |   |   |   |   |  |
|   |   | <span style="border: 1px solid black; padding: 0 2px;">8</span> | <span style="border: 1px solid black; padding: 0 2px;">9</span>  | <span style="border: 1px solid black; padding: 0 2px;">U</span> | <span style="border: 1px solid black; padding: 0 2px;">P</span> |   |   |   |   |  |
|   | <span style="border: 1px solid black; padding: 0 2px;">1</span> | <span style="border: 1px solid black; padding: 0 2px;">2</span> | <span style="border: 1px solid black; padding: 0 2px;">2</span>  | <span style="border: 1px solid black; padding: 0 2px;">Z</span> | <span style="border: 1px solid black; padding: 0 2px;">O</span> | <span style="border: 1px solid black; padding: 0 2px;">O</span> |   |   |   |  |
|   | <span style="border: 1px solid black; padding: 0 2px;">3</span> | <span style="border: 1px solid black; padding: 0 2px;">4</span> | <span style="border: 1px solid black; padding: 0 2px;">5</span>  | <span style="border: 1px solid black; padding: 0 2px;">A</span> | <span style="border: 1px solid black; padding: 0 2px;">X</span> | <span style="border: 1px solid black; padding: 0 2px;">E</span> |   |   |   |  |
| <span style="border: 1px solid black; padding: 0 2px;">A</span> | <span style="border: 1px solid black; padding: 0 2px;">E</span> | <span style="border: 1px solid black; padding: 0 2px;">F</span> | <span style="border: 1px solid black; padding: 0 2px;">I</span>  | <span style="border: 1px solid black; padding: 0 2px;">N</span> | <span style="border: 1px solid black; padding: 0 2px;">O</span> | <span style="border: 1px solid black; padding: 0 2px;">P</span> | <span style="border: 1px solid black; padding: 0 2px;">U</span> | <span style="border: 1px solid black; padding: 0 2px;">X</span> | <span style="border: 1px solid black; padding: 0 2px;">Z</span> |  |
| <span style="border: 1px solid black; padding: 0 2px;">3</span> | <span style="border: 1px solid black; padding: 0 2px;">5</span> | <span style="border: 1px solid black; padding: 0 2px;">6</span> | <span style="border: 1px solid black; padding: 0 2px;">10</span> | <span style="border: 1px solid black; padding: 0 2px;">7</span> | <span style="border: 1px solid black; padding: 0 2px;">2</span> | <span style="border: 1px solid black; padding: 0 2px;">9</span> | <span style="border: 1px solid black; padding: 0 2px;">8</span> | <span style="border: 1px solid black; padding: 0 2px;">4</span> | <span style="border: 1px solid black; padding: 0 2px;">1</span> |  |

2. Alphabet Blocks

70 Points

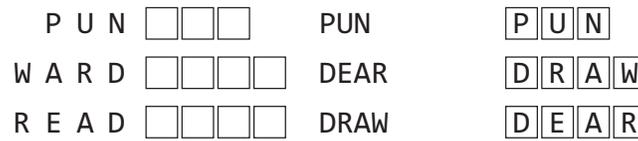
There are multiple cubes, each of which have six faces and are represented by the arrow and its six faces. Each face must be labeled with a letter. Letters can repeat on different faces of a cube. For each of the words in the set marked with cube faces, it is possible to spell the word using at most one face from each cube. Determine which letters are on which cube. Ignore rotations of the letters, e.g. the same face cannot be used for "M" and "W". The letters on each cube must form some of the words from the given list, from top to bottom.



3. Anagram

35 Points

Find the anagram for the given word from the given list of words.



4. Common Letters

70 Points

Place each word into a different box such that the number between two boxes indicates the number of letters those words have in common. Duplicate letters are counted separately.



5. Criss Cross

55 Points

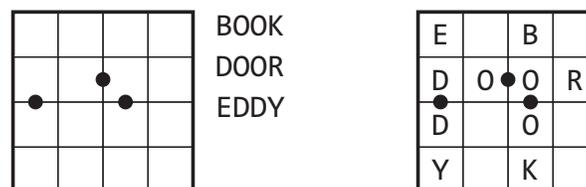
Place all the listed words in the given grid going across or down.



6. Double Letter Scrabble

140 Points

Place all the listed words in the grid going across or down, i.e. left to right and top to bottom. Each word intersects with at least one other word and all words are interconnected. No words of two or more letters can appear anywhere in the grid, except the ones listed. All instances of a double letter are marked in the grid and words must have at least one double letter.



Place the given list of words in the grid going across or down as per the crossword clues. The crossword grid is replaced by a blank grid of the same size. The clues are numbered from left to right and top to bottom and indicate the additional information available for each word in the given list along with the size of the word. The cells occupied by the crossword follow rotational symmetry with respect to the centre of the grid. Words which are not interconnected must be separated by black cells.

CLUES

ACROSS

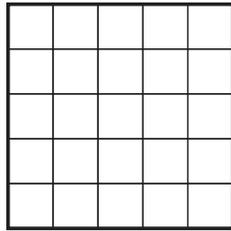
1 FRANCE (5)

3 GHANA (5)

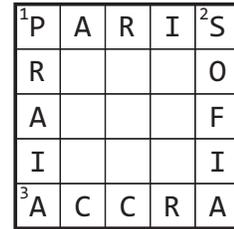
DOWN

1 CAPE VERDE (5)

2 BULGARIA (5)

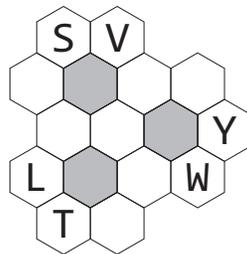


ACCRA, GHANA  
PARIS, FRANCE  
PRAIA, CAPE VERDE  
SOFIA, BULGARIA



8. Hexa Words

Place letters in the empty hexagonal cells, such that the six hexagonal cells around each grey cell must contain letters from one of the words from the given list. The letters can be in any order. All the hexagonal cells must be used.

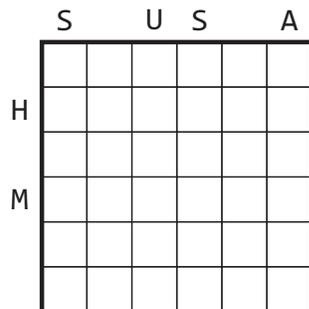


SILVER  
VIOLET  
YELLOW

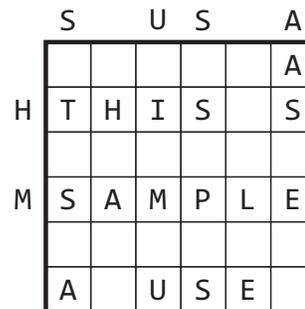


9. Hidden Words

Place all given words in the grid in straight lines of consecutive cells going across or down, such that words cannot touch each other, even diagonally. The letters outside the grid indicate that they must appear in that row or column at least once.

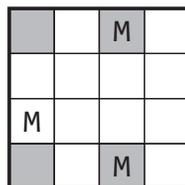


USE  
THIS  
AS  
A  
SAMPLE

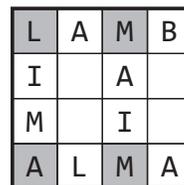


10. Letter Scrabble

Place all the listed words in the grid going across or down. Each word intersects with at least one other word and all words are interconnected. All interconnections are given as grey cells. No words of two or more letters can appear anywhere in the grid, except the ones listed. All instances of a letter are given and all words must have at least one occurrence of that letter.



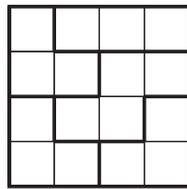
ALMA  
LAMB  
LIMA  
MAIM



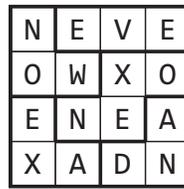
11. Meandering Words

70 Points

Place the given list of words in the grid so that there is one letter in each empty cell and cells that contain the same letter do not touch each other, even diagonally. Each word must be placed within a thickly outlined region such that consecutive letters in the word are touching each other by a side.



AND  
AXE  
EVE  
NOW  
OXEN

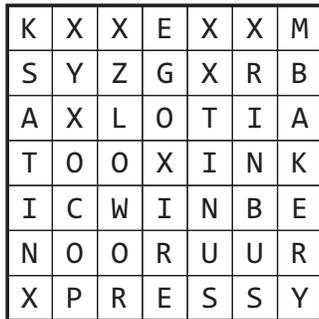


12. Retro Scrabble

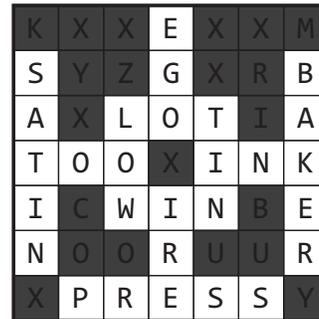
55 Points

Shade some cells in the grid so that all the listed words remain in the grid going across or down. Each word crosses with at least one other word and all words are interconnected. No words of two or more letters can appear anywhere in the grid, except the ones listed. The number of words used in this puzzle will be given.

11



EGO BAKER  
INK PRESS  
IRE SATIN  
LOT  
LOW  
TIN  
TOO  
WIN



13. SMS Codes

35 Points

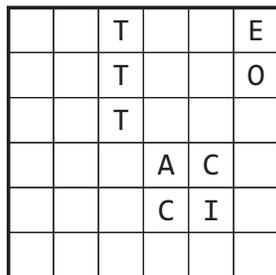
Some words from the given list have been coded using the SMS code. Letters A,B,C are replaced by the digit 2, D,E,F are replaced by the digit 3, G,H,I are replaced by the digit 4, J,K,L are replaced by 5, M,N,O are replaced by 6, P,Q,R are replaced by 7, S,T,U,V are replaced by 8 and W,X,Y,Z are replaced by 9. Decode the SMS codes using the given list.

2 8 7  ASP SPA 2 8 7   
 2 6 2 7 2  CARBO COBRA 2 6 2 7 2   
 7 9 8 4 6 6  PYTHON 7 9 8 4 6 6

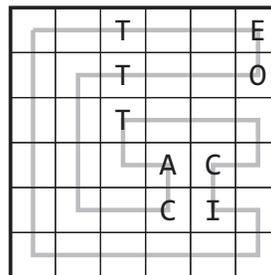
14. Sutuna Loop

70 Points

Draw a closed loop passing through the centres of all cells horizontally and vertically. All words from the given list must be read along the loop only in a single direction.



TIC  
TAC  
TOE



15. Word Division

70 Points

Form the words from the given list by dividing the grid of letters into continuous regions of cells which are connected horizontally or vertically. All the letters in the grid must be used.

A OX  
I UP  
NO AXE  
OF ZOO

|   |   |   |   |
|---|---|---|---|
| F | O | O | N |
| U | Z | O | I |
| P | A | O | A |
| X | E | O | X |

|   |   |   |   |
|---|---|---|---|
| F | O | O | N |
| U | Z | O | I |
| P | A | O | A |
| X | E | O | X |

16. Word Hitori Snail

100 Points

Write each of the names in the word list into its own snail, entering the letters in order starting from the arrow and moving spirally inward. Not all cells will be used, and '\*' indicates those cells that must remain blank. Consecutive cells along the path of the snail cannot be blank. A letter cannot appear more than once in any row or column of the full grid.

|   |  |   |   |  |  |
|---|--|---|---|--|--|
| * |  | ↓ | ↓ |  |  |
|   |  |   |   |  |  |
|   |  |   |   |  |  |

PACK  
CREAK

|   |   |   |   |   |   |
|---|---|---|---|---|---|
| * | K | ↓ | ↓ | * | A |
| C | * | P | * | K | * |
| * | A | * | R | * | E |

17. Word Nurikabe

100 Points

Place the given words in the grid, so that the words can be read in horizontally and vertically connected cells. Different words can't touch each other horizontally or vertically. The remaining cells must form a single connected shape and can't have any 2x2 areas anywhere. Each word has one letter given in the grid.

|   |  |   |   |  |  |
|---|--|---|---|--|--|
| P |  |   | W |  |  |
|   |  |   |   |  |  |
|   |  | Z |   |  |  |
|   |  |   |   |  |  |
|   |  |   |   |  |  |
|   |  |   |   |  |  |

WORD  
PUZZLES  
EXAMPLE

|   |   |   |   |   |   |
|---|---|---|---|---|---|
| P | L |   | W | O | R |
| M | E |   |   |   | D |
| A |   | Z | Z |   |   |
| X |   | U | L | E |   |
| E |   | P |   | S |   |
|   |   |   |   |   |   |

18. Word Search

15 Points

Find all the words from the list in the grid of letters. Each word reads in a straight line in any direction, horizontally, vertically, or diagonally. In the competition puzzle, all words found on the Word Search can be crossed off the list by default.

|   |   |   |   |   |
|---|---|---|---|---|
| D | H | Y | A | N |
| T | J | E | E | T |
| D | E | A | N | A |
| I | L | E | H | A |
| V | E | E | G | N |

DHYAN  
GEET

|   |   |   |   |   |
|---|---|---|---|---|
| D | H | Y | A | N |
| T | J | E | E | T |
| D | E | A | N | A |
| I | L | E | H | A |
| V | E | E | G | N |

Form the words from the given list by splitting the grid of letters, so that each letter is transferred either to the corresponding row or the corresponding column. The letters could be scrambled and need not be in the same order as the words. All letters are used in exactly one word. Each row and column will have exactly one word.

|    |     |
|----|-----|
| A  | OX  |
| I  | UP  |
| NO | AXE |
| OF | ZOO |

|   |   |   |   |  |
|---|---|---|---|--|
| I | Z | O | P |  |
| O | O | X | N |  |
| A | O | E | X |  |
| F | O | A | U |  |
|   |   |   |   |  |
|   |   |   |   |  |

|   |   |   |   |     |
|---|---|---|---|-----|
| I | Z | O | P | I   |
| O | O | X | N | NO  |
| A | O | E | X | AXE |
| F | O | A | U | A   |
| O | Z | O | U |     |
| F | O | X | P |     |

20. Word Transform

Transform the word given at the top to the word given at the bottom using the list of given words. At each step along the transformation one letter is replaced by a different letter and the word can be scrambled.

|      |         |         |
|------|---------|---------|
|      | H E A D | H E A D |
| HEAR | □ □ □ □ | H E A R |
| LIAR | □ □ □ □ | R E A L |
| REAL | □ □ □ □ | L I A R |
|      | T A I L | T A I L |

|                   |   |                   |   |                   |   |                   |   |                   |   |
|-------------------|---|-------------------|---|-------------------|---|-------------------|---|-------------------|---|
| <sup>1</sup><br>A | A | <sup>2</sup><br>A | A | <sup>3</sup><br>B | A | <sup>4</sup><br>A | C | <sup>5</sup><br>C | A |
| A                 | A | B                 | A | B                 | A | B                 | C | B                 | A |
| <sup>6</sup><br>A | B | <sup>7</sup><br>C | B | <sup>8</sup><br>B | A | <sup>9</sup><br>A | C |                   |   |
| C                 | B | C                 | B | A                 | B | B                 | B |                   |   |

This is for cutting purpose.