

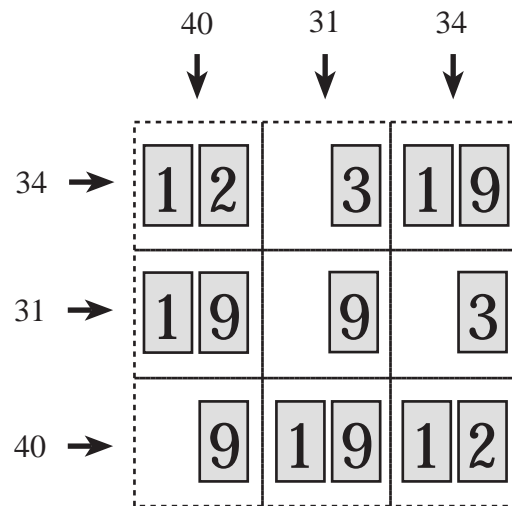
# PQRST 07 PUZZLE COMPETITION

PUZZLE 01 (10 points penalty for a wrong answer)

40 points

## Card Trick

There are some cards with digits on a 3x3 grid. The total of the numbers seen in all rows and columns are given. Move only one card and make all the totals equal.



**Answer key:** Enter the digit written on the card you moved. And enter the final total which is same for all rows and columns. The answer key will look like: 2, 36

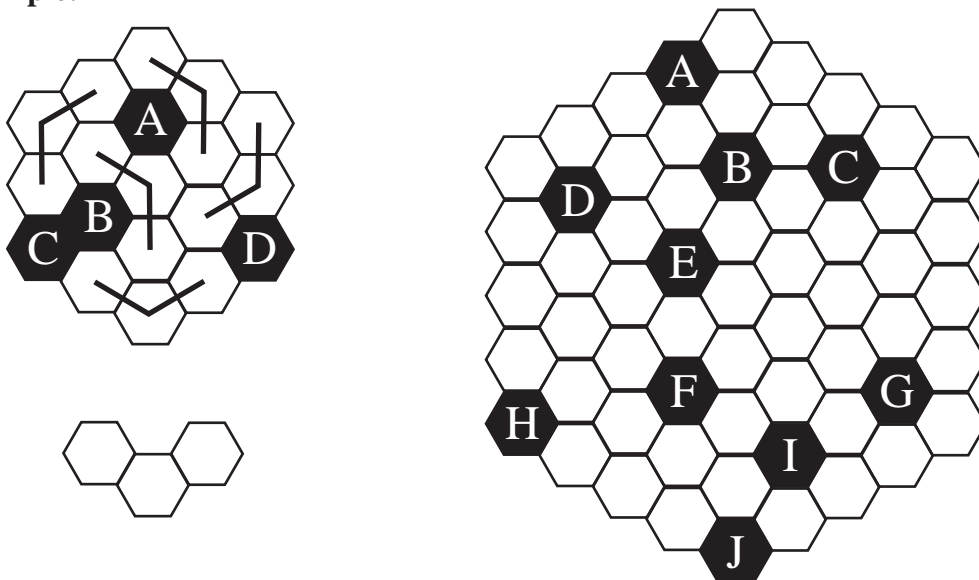
PUZZLE 02

60 points

## V-groups

Divide the hexagonal grid into groups of three cells. All groups must be same and in V-shape shown below.

**Example:**

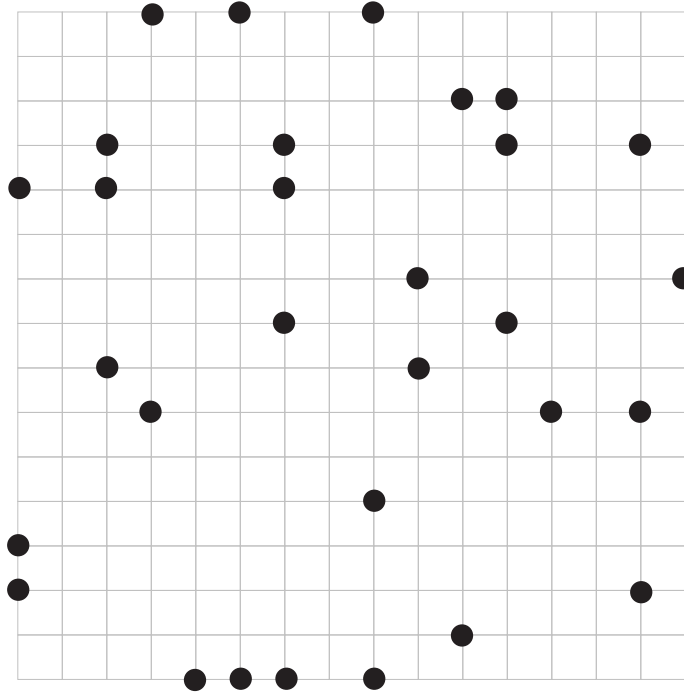
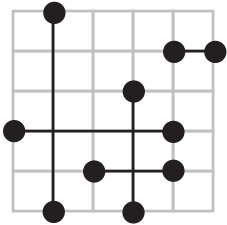


**Answer key:** Enter the number of groups touching to the black cells. Start with A and go alphabetically. The answer key for the example would be: 3, 3, 2, 2

# Point Pairs

Connect the point pairs to form 15 non-overlapping lines. The lengths of the lines must be whole numbers from 1 to 15, and different from each other. Each point can only be part of one line and can not be on another line.

Example with 1-5:

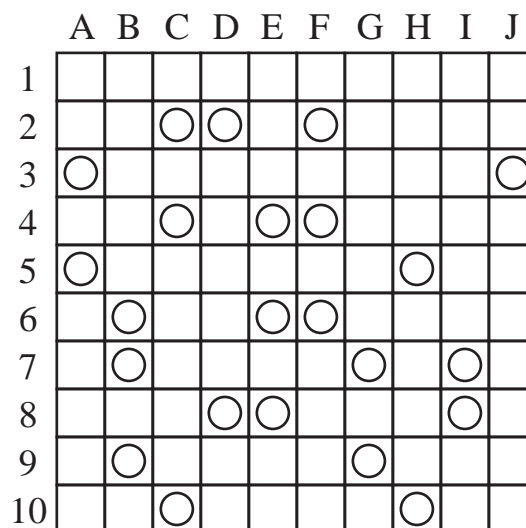
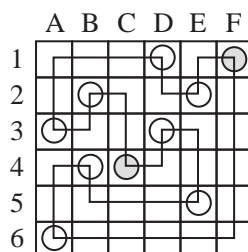
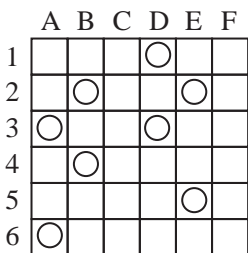


**Answer key:** Enter the number of crossing points on the grid. The answer key for the example would be: 3

# Alternate it

Put five circles into five of the blank cells on the grid. Then draw a loop passing through all cells, travelling only horizontally or vertically. The corners of the loop must be alternating; one on a circle, next on a blank cell, next on a circle and so on. Each circle is a corner of the loop.

Example with two circles:

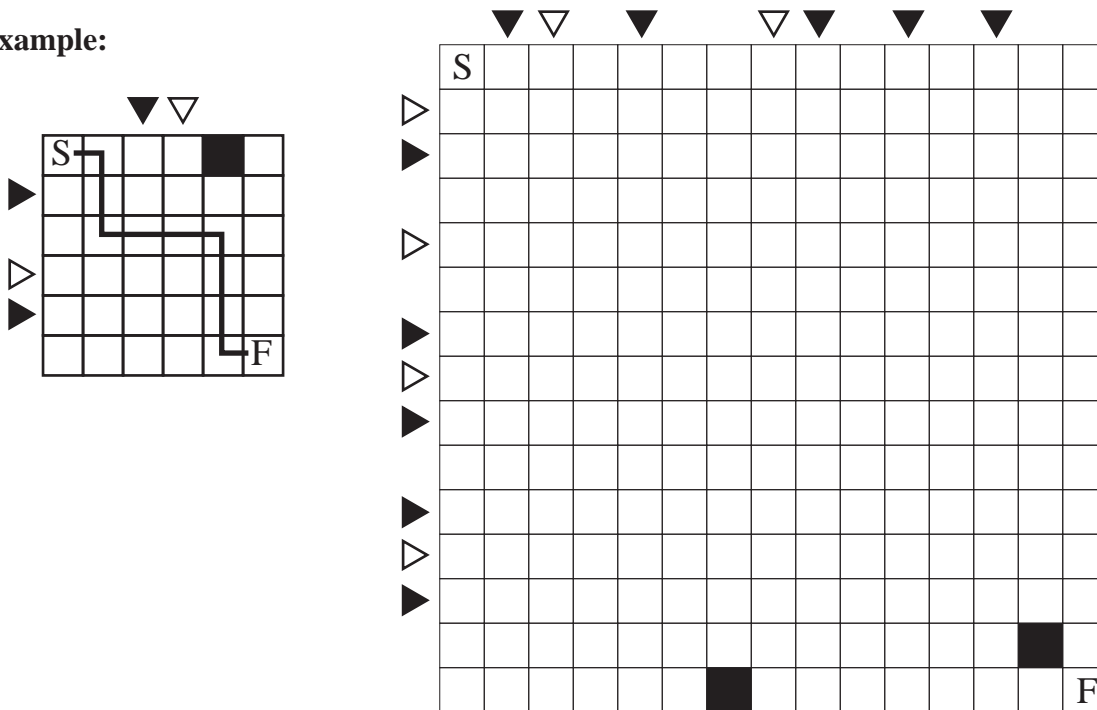


**Answer key:** Enter the coordinates of the circles you put. The answer key for the example would be: F1, C4

# Laser Labyrinth

Start from S and finish on F, travelling horizontally and vertically and never stepping on a black cell. The arrows represent laser pointers that laser through the whole row or column that you should avoid. When you are on S, white pointers are active. When you step on the next cell black pointers become active, and on the next cell whites again and so on, alternating.

Example:



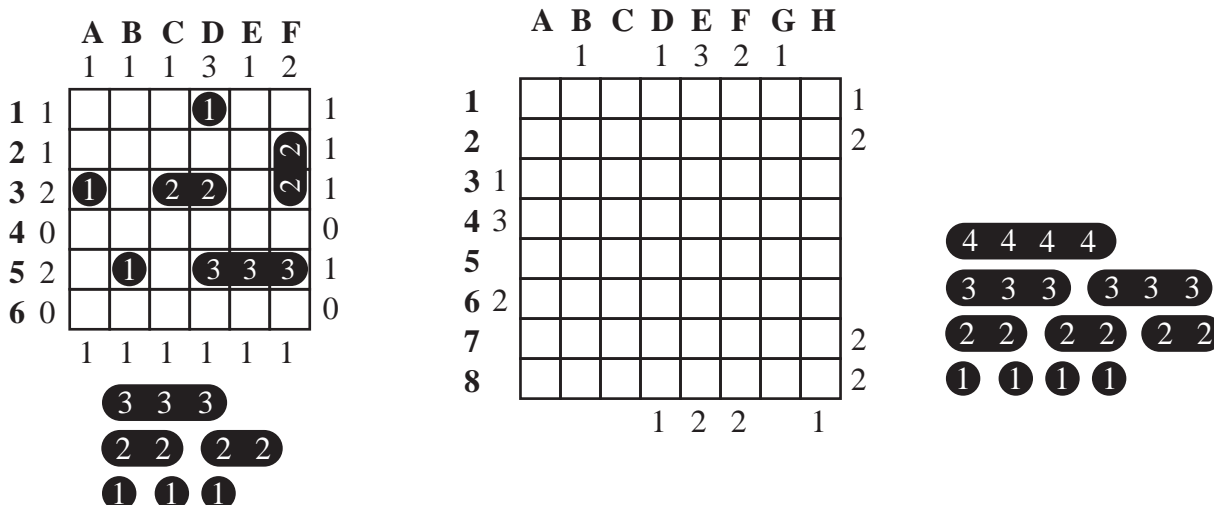
**Answer key:** Enter the length of the path you made, in unit cells. The answer key for the example would be: 11

# PUZZLE 06

# Height Battleships

Position the 10-ship fleet horizontally or vertically into the grid. Ships can not touch each other, not even diagonally. Ship kinds have different heights as written on them. The numbers on the sides of the grid tell the number of ships seen in that row or column from that direction.

Example:



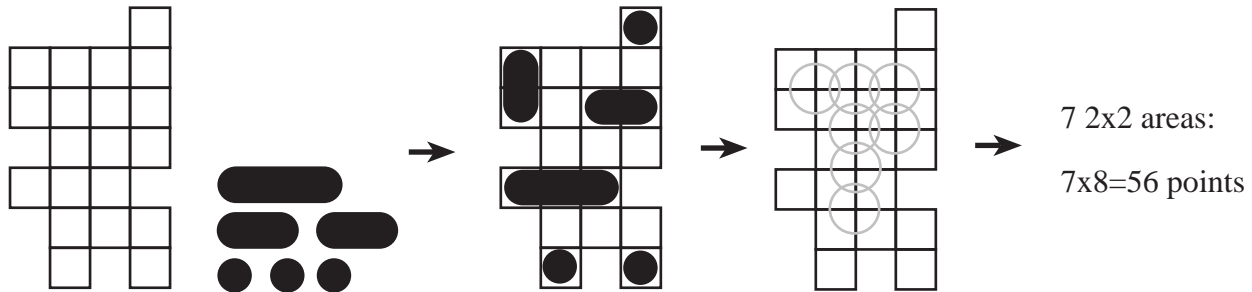
**Answer key:** Enter the coordinates of the four 1-unit submarines. The answer key for the example would be: D1, A3, B5



# Optimum Battleships

Form a continuous diagram without any holes so that the 10-ship fleet shown below can be located in only one way without touching each other, not even diagonally. A hole is an area surrounded by cells of the diagram. Maximize the number of 2x2 areas seen on your diagram. If your diagram doesn't give a unique location you'll be penalized 30 points.

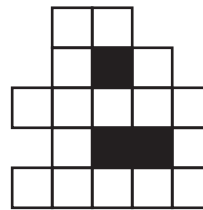
**Example:**



**10-ship fleet:**



**Black areas are holes and are illegal:**



**Answer key:** Enter your score first. Put your diagram into the smallest rectangle it can fit in. Then enter the contents of this rectangle row by row using letter 'O' for cells of the diagram, and letter 'X' for blank cells. The answer key for the example would be: 56: XXXO, OOOO, OOOO, XOOO, OOOX, XOOO, XOXO

# Most Repeated

Pick 20 numbers on the diagram. Then write the total of the picked numbers for each row and column. Take the most repeated total, and the number of times it is written. Maximize the product of these two numbers.

**Example with 10 numbers:**

	10	0	10	10	12	
10	1	4	1	5	9	1
10	2	6	5	3	5	2
8	8	9	7	9	3	3
4	2	3	8	4	6	4
10	2	6	4	3	3	5
	A	B	C	D	E	

10x6=60 points

1	4	1	5	9	2	6	5	1
3	5	8	9	7	9	3	2	2
3	8	4	6	2	6	4	3	3
3	8	3	2	7	9	5	0	4
2	8	8	4	1	9	7	1	5
6	9	3	9	9	3	7	5	6
1	0	5	8	2	0	9	7	7
4	9	4	4	5	9	2	3	8
	A	B	C	D	E	F	G	H

**Answer key:** Enter your score first. Then enter the coordinates of the 20 picked numbers row by row. The answer key for the example would be: 60: C1, E1, A2, C2, D2, A3, D4, C5, D5, E5

END