PQRST 11 PUZZLE COMPETITION

PUZZLE 01 (10+10 points penalty for wrong answers) 25+25 points

Wild Operations

You're writing mathematical operations, using letters instead of digits to represent numbers. You take two whole numbers (1-100) and an operation in between, which is one of the following: PLUS (+), MINUS (-), TIMES (x), OVER (/). Your goal is to write a mathematical operation so that all letters are different from each other; except that you also have a wild card that you can replace with only one letter, not even two of the same. Result of the operation need not be a whole number or a positive number.

Example: ONE PLUS FI(F)TY = 1 + 50 = 51

A) What is the operation that gives the biggest number as a result?
B) What is the operation that gives the smallest number as a result?

ABCDEFGHIJKLMNOPQRSTUVWXYZ

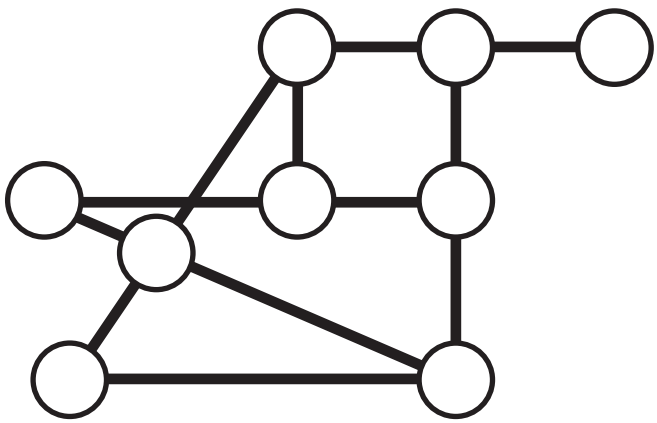
1: ONE	21: TWENTY-ONE	41: FORTY-ONE	61: SIXTY-ONE	81: EIGHTY-ONE
2: TWO	22: TWENTY-TWO	42: FORTY-TWO	62: SIXTY-TWO	82: EIGHTY-TWO
3: THREE	23: TWENTY-THREE	43: FORTY-THREE	63: SIXTY-THREE	83: EIGHTY-THREE
4: FOUR	24: TWENTY-FOUR	44: FORTY-FOUR	64: SIXTY-FOUR	84: EIGHTY-FOUR
5: FIVE	25: TWENTY-FIVE	45: FORTY-FIVE	65: SIXTY-FIVE	85: EIGHTY-FIVE
6: SIX	26: TWENTY-SIX	46: FORTY-SIX	66: SIXTY-SIX	86: EIGHTY-SIX
7: SEVEN	27: TWENTY-SEVEN	47: FORTY-SEVEN	67: SIXTY-SEVEN	87: EIGHTY-SEVEN
8: EIGHT	28: TWENTY-EIGHT	48: FORTY-EIGHT	68: SIXTY-EIGHT	88: EIGHTY-EIGHT
9: NINE	29: TWENTY-NINE	49: FORTY-NINE	69: SIXTY-NINE	89: EIGHTY-NINE
10: TEN	30: THIRTY	50: FIFTY	70: SEVENTY	90: NINETY
11: ELEVEN	31: THIRTY-ONE	51: FIFTY-ONE	71: SEVENTY-ONE	91: NINETY-ONE
12: TWELVE	32: THIRTY-TWO	52: FIFTY-TWO	72: SEVENTY-TWO	92: NINETY-TWO
13: THIRTEEN	33: THIRTY-THREE	53: FIFTY-THREE	73: SEVENTY-THREE	93: NINETY-THREE
14: FOURTEEN	34: THIRTY-FOUR	54: FIFTY-FOUR	74: SEVENTY-FOUR	94: NINETY-FOUR
15: FIFTEEN	35: THIRTY-FIVE	55: FIFTY-FIVE	75: SEVENTY-FIVE	95: NINETY-FIVE
16: SIXTEEN	36: THIRTY-SIX	56: FIFTY-SIX	76: SEVENTY-SIX	96: NINETY-SIX
17: SEVENTEEN	37: THIRTY-SEVEN	57: FIFTY-SEVEN	77: SEVENTY-SEVEN	97: NINETY-SEVEN
18: EIGHTEEN	38: THIRTY-EIGHT	58: FIFTY-EIGHT	78: SEVENTY-EIGHT	98: NINETY-EIGHT
19: NINETEEN	39: THIRTY-NINE	59: FIFTY-NINE	79: SEVENTY-NINE	99: NINETY-NINE
20: TWENTY	40: FORTY	60: SIXTY	80: EIGHTY	100: HUNDRED

Answer key: For each puzzle, enter the result of your operation. The answer key will look like: A)15.8, B)-20

PUZZLE 02 40 points

Sum Lines

Place each of the numbers 1 through 9 into the circles once so that the sum of the numbers in each straight line is the same.



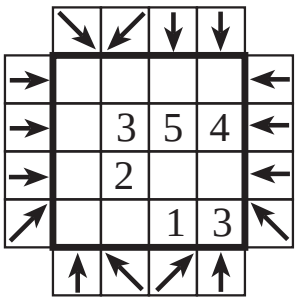
Answer key: Enter the three numbers on the top row, followed by the three numbers on the second row, followed by the number on the third row, followed by the two numbers on the bottom row in order; in the form of 123,456,7,89.

PUZZLE 03 65 points

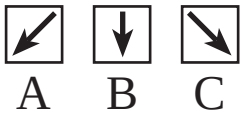
Arrows

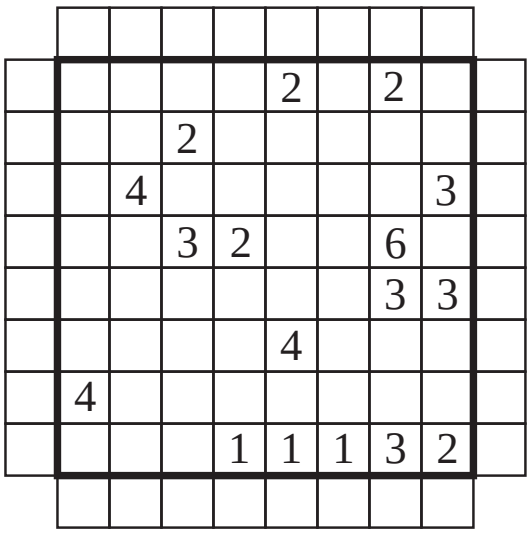
Draw one arrow in each of the cells around the box. Each arrow makes a multiple of 45 degrees with the horizontal and must point to at least one square inside of the box. The numbers show how many arrows point to them.

Example:



Answer key:





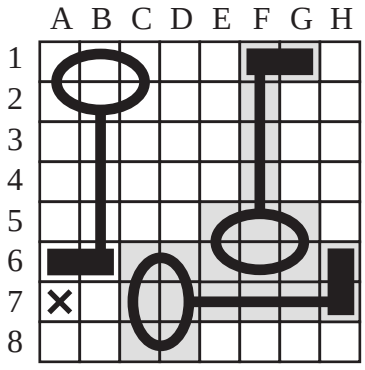
Answer key: Enter the letters representing the arrows on the top row, in order. For the example, the answer key would be: CABB

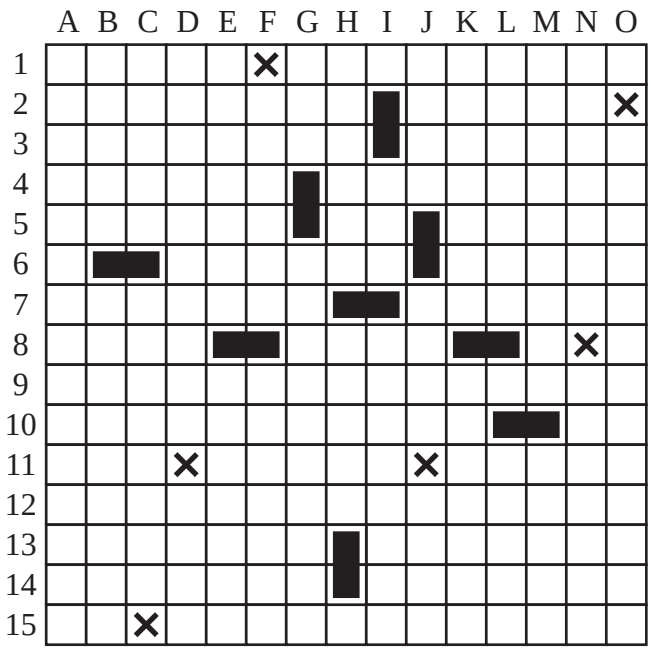
PUZZLE 04 70 points

Lost Keys

There are 12 keys lost in the picture. Only the bits of 9 of them are visible. All keys have the same shape, but they may be rotated and turned over. Keys can not overlap each other and can not be placed on squares with “X”. Find all keys including 3 hidden.

Example with 1 hidden key:





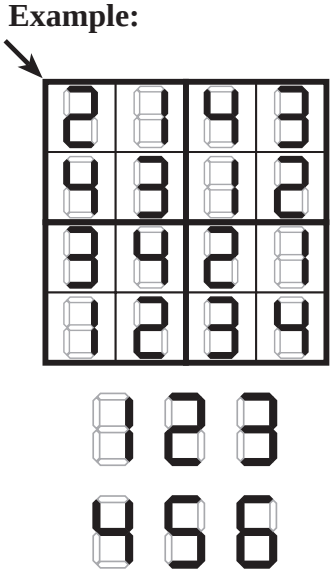
Answer key: Enter the coordinates of the bits of the 3 hidden keys. Each bit is a 1x2 rectangle, so the coordinates should look like A12 or AB1. For the example, the coordinates of the hidden key’s bit is AB6. Separate three coordinates with commas.

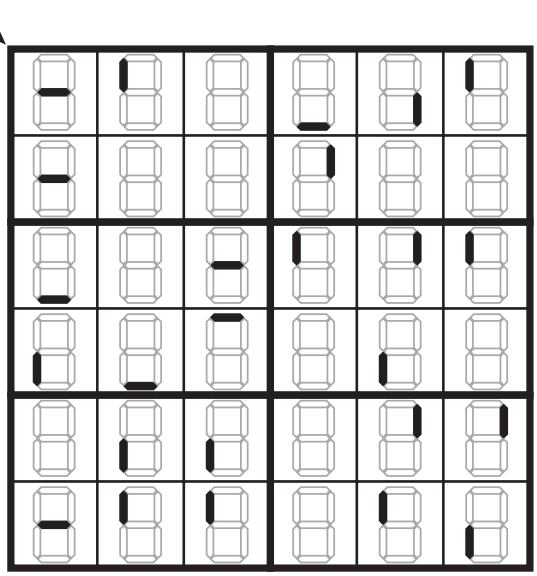
PUZZLE 05 75 points

Digit Place

Fill in the square with digits from 1 to 6 so that in each row, in each column, and in each 2x3 block all six digits are different. Digits are in digital form and some segments have already been filled in.

Example:





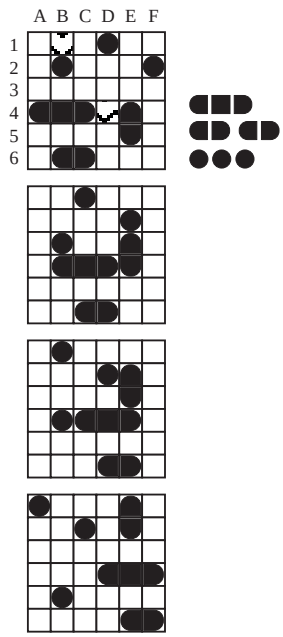
Answer key: Enter the digits on the NW-SE diagonal of the square, in order. The answer key for the example would be: 2324

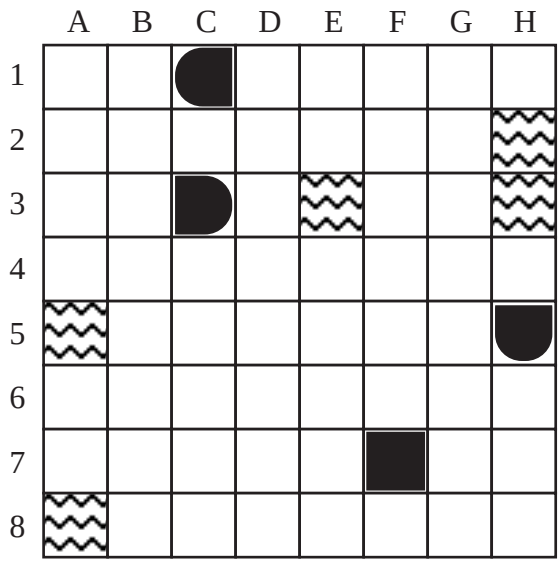
PUZZLE 06 (20 points penalty for a wrong answer) 90 points

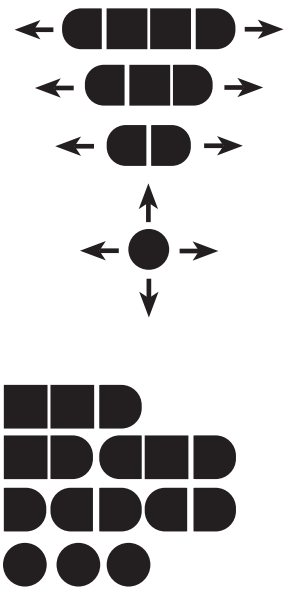
Moving Battleships

Locate the 10-ship fleet into the grid so that they don't touch each other, not even diagonally, and can then perform a simultaneous movement in which each ship moves three squares in a straight line at the same speed, resulting in a final position where again they don't touch each other, not even diagonally. Each ship must move either forward or backward, but four submarines can move in any one of the four directions. Ships may touch each other during the movement, but there can not be two ships occupying the same square after a movement of a single unit while they are moving. Water marks are only considered for the starting position.

Example:







Answer key: Enter the coordinates of the four submarines in the starting position. The answer key for the example would be: D1, B2, F2

PUZZLE 07 140 points

Zeros

Enter digits from 1 to 6 into each row and each column of the grid once. Then add some number of zeros to the right of some of the digits. For every row and column, totals of the numbers have been given.

Example:

40	200	100	3	343
30	100	40	2	172
100	30	20	40	190
20	4	300	100	424
190	334	460	145	

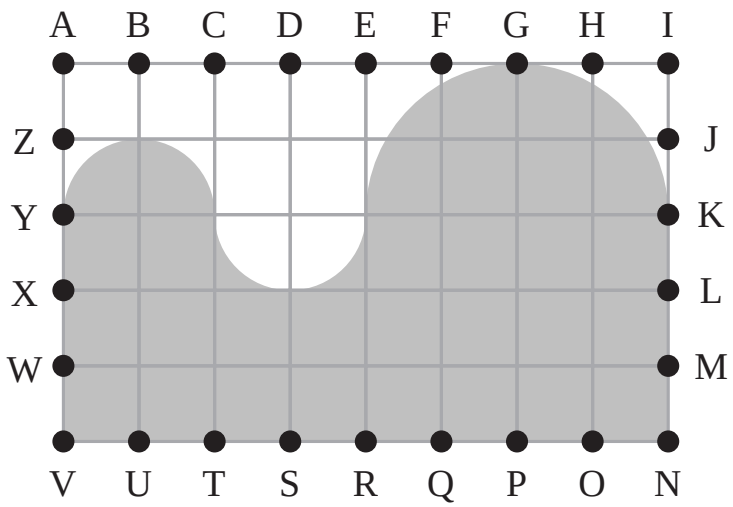
						1443
						237
						930
						273
						1326
						849
1317	615	291	507	984	1344	

Answer key: Enter the numbers on the NW-SE diagonal of the square, in order. The answer key for the example would be: 40,100,20,100

PUZZLE 08 70, 40, 10 points

Fair Cut

Cut the shape into exactly two pieces with a straight line, connecting two black points on the border. Make the areas of the two resulting shapes as close to each other as possible. The closest answer gets 70 points, second one gets 40, third one gets 10 points.



Answer key: Enter the two letters representing the two black points connected, in the form of AB.

PUZZLE 09 160 - (30xU) points

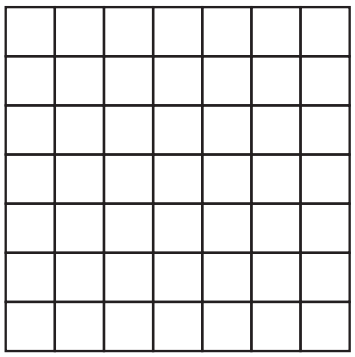
Collision

Locate some or all of the planet names given into the grid so that each can be read in one of the eight directions: Horizontal, vertical, diagonal and either forward or backward. Names need not be connected to each other and there may occur other words that are not on the list. Maximize the total of “number of names entered” + “total of the entered names’ letters” + “number of blank squares on the grid”. Best answer will get 160 points. Other answers will get 30 points penalty for each value under the best answer (No negative points).

Example:

	S			O
E	A	R	T	H
		U	A	
	L			M
P				

Number of names entered: 3
Total letters in these names: 5+5+4=14
Number of blank squares: 13
Total: 3+14+13=30



MERCURY
VENUS
EARTH
MARS
JUPITER
SATURN
URANUS
NEPTUNE
PLUTO

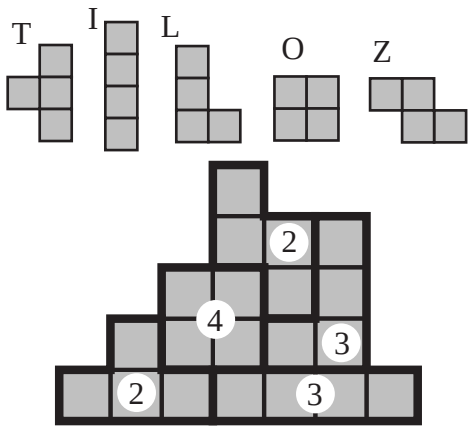
Answer key: Enter your total first. Then enter the contents of the grid row by row, using B for blank squares. The answer key for the example would be: 30: BSBBO, EARTH, BBUAB, BLBBM, PBBBB

PUZZLE 10 Product - 150 points

Pentathlon

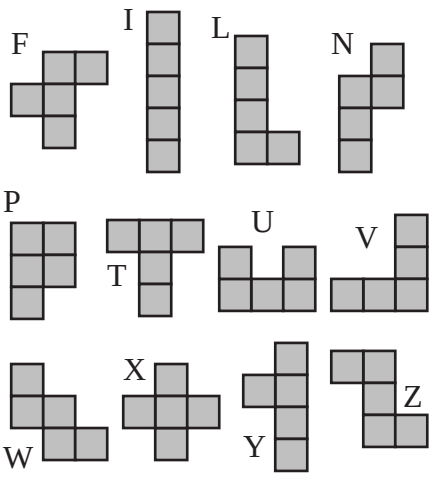
Locate 12 different pentominoes flat without overlapping each other. Pentominoes must be placed edge to edge on an imaginary grid and they can be rotated and reflected. Total figure may have holes and need not be continuous. For each pentomino, write the number of pentominoes it touches at least by a unit side. Maximize the product of “total of the written numbers” x “number of different numbers”.

Example with tetrominoes:



Total of the numbers: 2+4+3+2+3=14
Number of different numbers (2,3,4): 3
Product: 14x3=42

Pentominoes:



Answer key: Enter your product first. Then, put your answer into the smallest rectangle it can fit in and write the contents of this rectangle row by row using the representing letters for the pentominoes and B for blank squares. The answer key for the example would be: 42: BBBZBBB, BBBZZLB, BBOOZLB, BTOOLLB, TTTIIII

Check the errata column on the main page in case of any mistakes or misinformation.
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