

PQRST 09 PUZZLE COMPETITION

PUZZLE 01 (10+10 points penalty for wrong answers) 20+40 points

Mini Primes

Make some number of prime numbers using all of the digits 0-9 once each. An example is: 43, 89, 251, 607.

- A) Make prime numbers to minimize their sum. (20 points)
- B) Make prime numbers to minimize their product. (40 points)

Answer key: For A, enter the sum and for B enter the product. For the example, the answer key would be: A)990, B)583070239

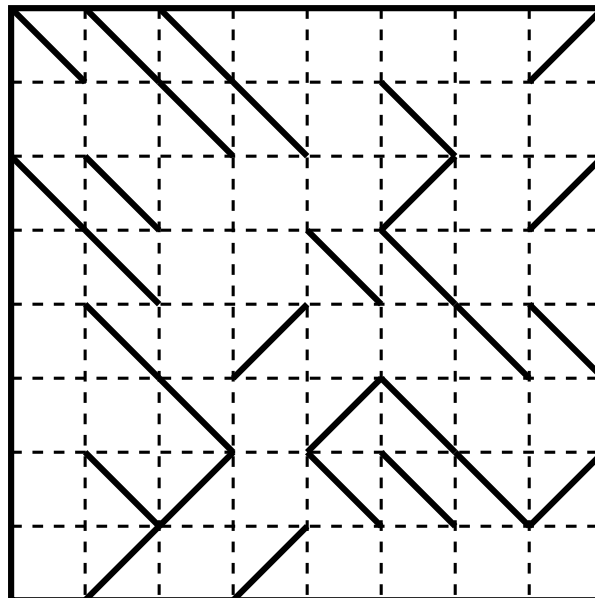
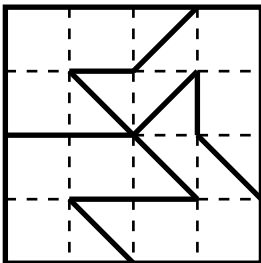
PUZZLE 02 (10 points penalty for a wrong answer)

65 points

Strange Shapes

Divide the grid into 16 pieces of the same area, 4 unit squares. Your lines must follow the grid lines.

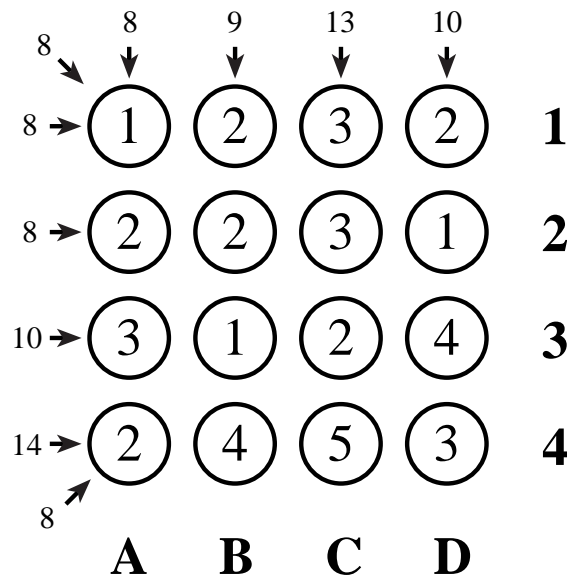
Example:



Answer key: Enter the number of horizontal line segments, followed by the number of vertical line segments you drew. For the example, the answer key would be: 5, 1

Water Work

There are 16 containers of various shapes -but the same capacity of 5 liters- in the 4x4 array below. Each digit represents the amount of water in liters in that container. Numbers on the sides tell the total amount of water in the representing line of containers. Move only one container to make all these totals equal.

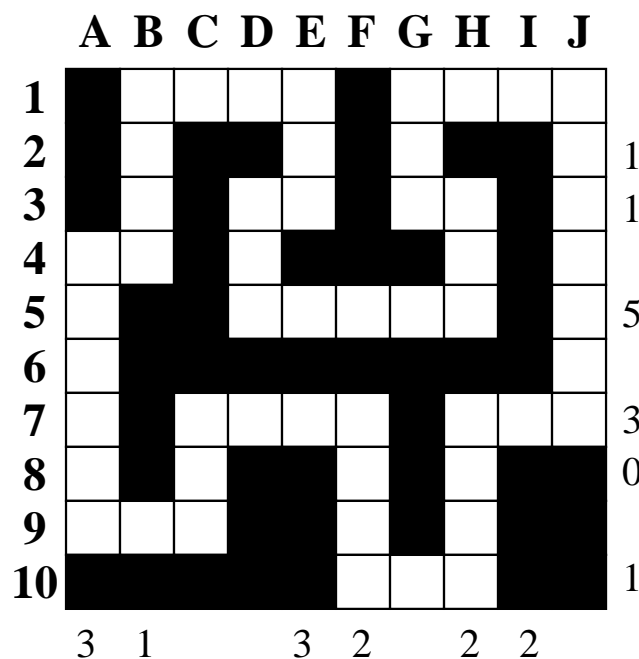
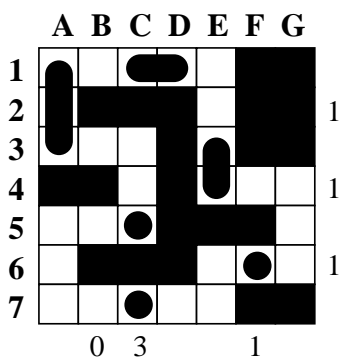


Answer key: First enter the coordinates of the container you moved. Then enter the contents of the final grid by writing the numbers row by row, starting with the first row. The answer will look like: A1, 1232, 2231, 3124, 2453

Parade Battleships

There is a parade of a fleet in a closed path on the ocean. On this path, either clockwise or counter-clockwise, the battleship is followed by two cruisers, three destroyers and four submarines in that order. Numbers on the sides tell the number of ship segments in that row or column. Ships can not touch each other, not even diagonally. Find the locations of the ships.

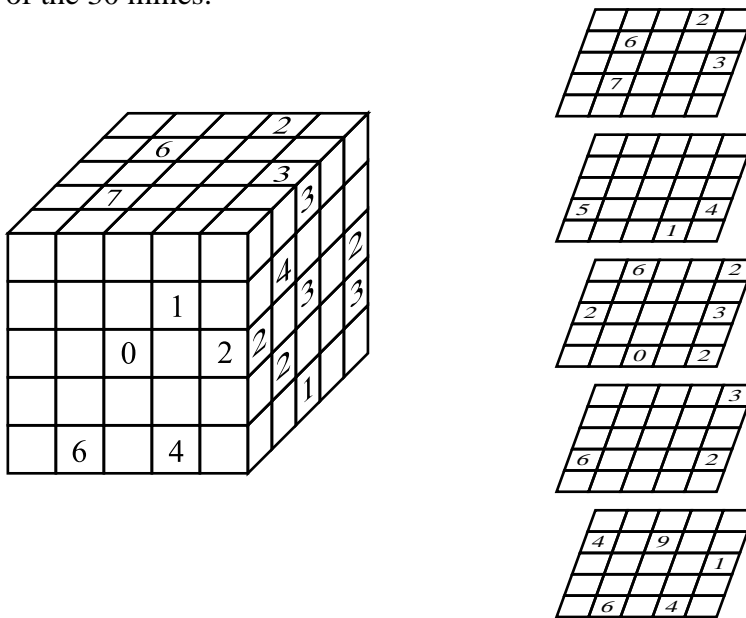
Example:



Answer key: Enter the coordinates of the four submarines. The answer key for the example would be: C5, F6, C7

Mined Cube

Below is a cube made of 125 small cubes. Some small cubes contain numbers, some contain mines and others are empty. Each numbered cube tells the number of mines on the surrounding cubes, including the cubes it shares an edge or a point with. Layers on the right is an open configuration of the 5 cube levels. Find the locations of the 30 mines.



Answer key: Enter the number of mines found on each level, starting with the top. The answer will look like: 6, 6, 6, 6, 6

The Dark Room

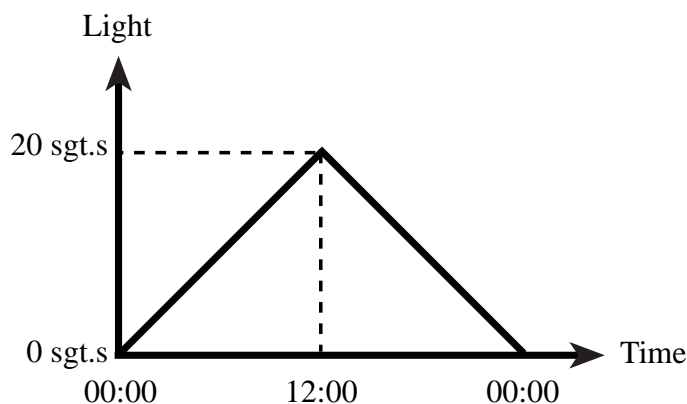
There is a digital watch and a small hole as the only light sources in a dark room. The watch goes from 00:00 to 23:59 and the number of segments lit at any minute gives that much light to the room. On the other hand the hole lightens the room based on the time of the day. At 00:00 there is no light from the hole. At 12:00 the light from the hole gives light equal to the amount 20 segments gives. From 00:00 to 12:00 the amount of light increases linearly, and from 12:00 to 00:00 decreases linearly. What time of the day the room is lightest?

Example:

0123456789

17:39

At 17:39 there are 16 segments lighting and the hole lights in the amount of 10,58 segments.
Total: $16 + 10,58 = 26,58$

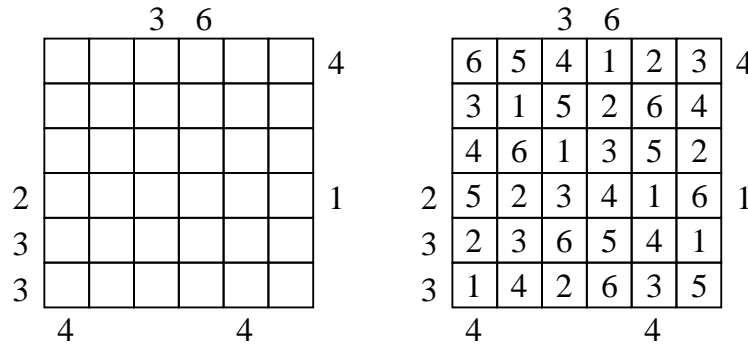


Answer key: Enter the time. The answer key for the example would be: 17:39

Sky Is High

In Skyscrapers Puzzle there is a square grid to be filled with numbers from 1 to 6, each number appearing in each row and column once. Each number represents the height of the building there. The hints outside the grid tells the number of buildings seen from that side. Make a Skyscrapers Puzzle and minimize the total of the hints you give. The puzzle must have a unique (only one) solution. Otherwise you'll get -30 points from this puzzle. Best solution will get 200 points. Other solutions will get 30 points penalty for each value over the best solution.

Example:

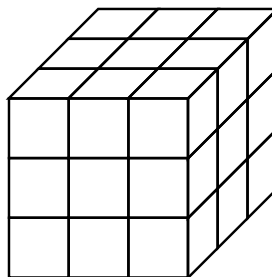


Answer key: Enter your total first. Then enter the hints at the top of the grid from left to right using 0 for no hints. Then enter the hints on the right from top to bottom, then enter hints at the bottom from left to right, finally enter the hints the left from top to bottom. For the example, the answer key would be: 30: 003600, 400100, 400040, 000233

Up Months

Locate letters into the small cubes of the 3x3x3 big cube to read the names of some of the 12 months. Each name must be spelled by going from cube to an adjacent cube. Two cubes are adjacent if they share a face. You may use a letter more than once within a name. Maximize the total number of letters in your list of months that are spelled. Best solution will get 200 points. Other solutions will get 20 points penalty for each value under the best solution.

JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE



JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER

Answer key: Enter your total first. Then enter the contents of each level of 9 cubes according to these rules: Enter X for empty squares. Enter the letters of the first row, then second row, then third row from left to right. The answer will look like: 45: ABCDEFGHI, JKLMNOPQR, STUVWXYZA.

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