

Word Crypto

Consider an addition:

$$\begin{array}{r} \text{S E N D} \\ + \text{M O R E} \\ \hline \text{M O N E Y} \end{array}$$

Where each letter represents a number. Find a number for each letter which would satisfy the addition. Each letter represents a different number.

Scheduling

Given a working week and a set of meetings with a list of attendees and their free/busy times, schedule the meetings so that all of the attendees can attend. Each meeting takes up half the day.

Meeting 1: Person 1, Person 2, Person 3

Meeting 2: Person 1, Person 2

Meeting 3: Person 1, Person 3

Person 1: Busy Monday all day, Wednesday all day and Friday mornings.

Person 2: Busy Tuesday all day and Thursday afternoons.

Person 3: Busy Wednesday all day and Friday all day.

Sudoku

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

Given a partially filled grid, solve the grid so that the rows, columns and thick bordered squares all contain the numbers 1 to 9 exactly once.

Magic Square

Fill in the squares in the 3 x 3 grid using the numbers 1 to 9 each exactly once so that the sum of the columns, rows and diagonals are equal.

Subset Sum

Given a set of numbers, find a subset of those numbers which sums up to zero. Find as many sets as possible.

Set: 1, -3, 5, 6, -2, 5, -7

Knapsack

Given a knapsack of quantity x and objects, each with a specified volume and price, fill the knapsack with as many items as possible without exceeding the quantity but yet maximising the value.

Quantity: 30

Objects:

1 → Weight: 3, Value: 7

2 → Weight: 7, Value: 10

3 → Weight: 8, Value: 6

4 → Weight: 3, Value: 1

5 → Weight: 2, Value: 3

6 → Weight: 9, Value: 4

7 → Weight: 12, Value: 6

8 → Weight: 6, Value: 9

9 → Weight: 4, Value: 8

10 → Weight: 9, Value: 10