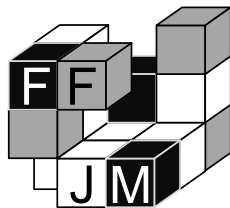


**Part
III**

Name

Mirrors	10 points
Cuts	10 points
Triangles	15 points
Hex Paint	15 points
Crossword Substitution	25 points
Arrow Maze	35 points
Alignments	40 points



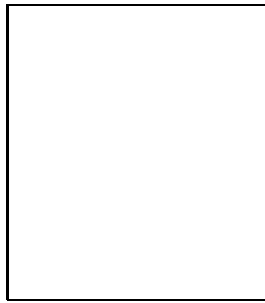
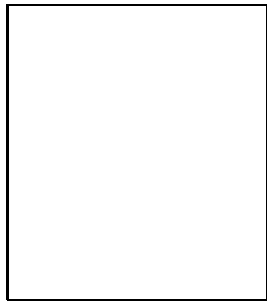
**Part
III**

1. Mirrors – 10 points

Place some diagonal two-faced mirrors (each the size of a square) in the grid, in such a way that the trajectory of a ray of light emitted straight into the diagram from anywhere on its boundary passes through a number of squares equal to the given value.

	8	6	3	5	12	10	
3							6
5							8
6							6
2							10
2							8
4							2
	12	6	8	4	2	6	

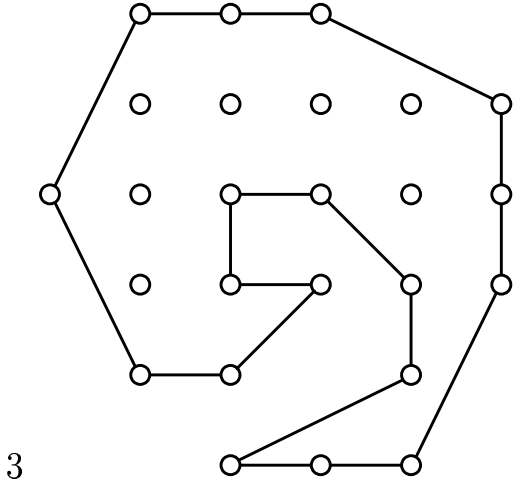
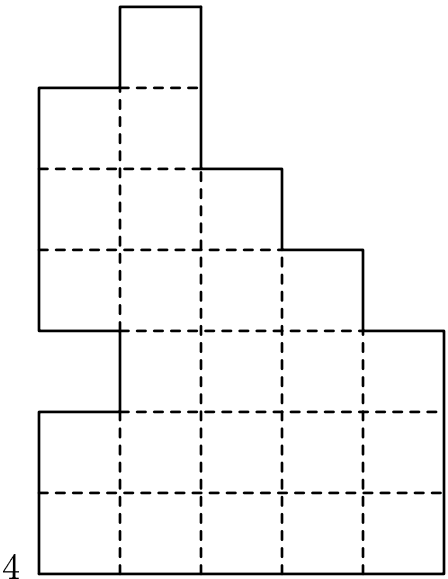
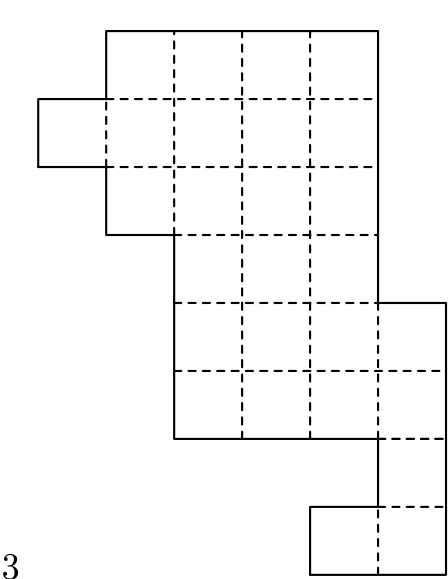
**Part
III**



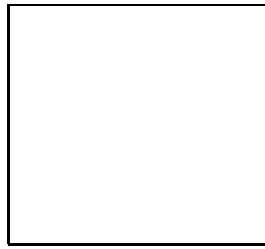
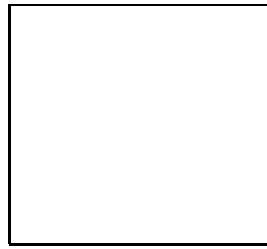
2. Cuts – 10 points

(0 points for one solved puzzle ; 5 points for two solved puzzles)

Cut the given shapes into three (four in the second puzzle) identical pieces. The pieces may be rotated and/or reflected. In the first two puzzles, all cuts must be made along the dotted lines whereas in the third one, they should join lattice points.

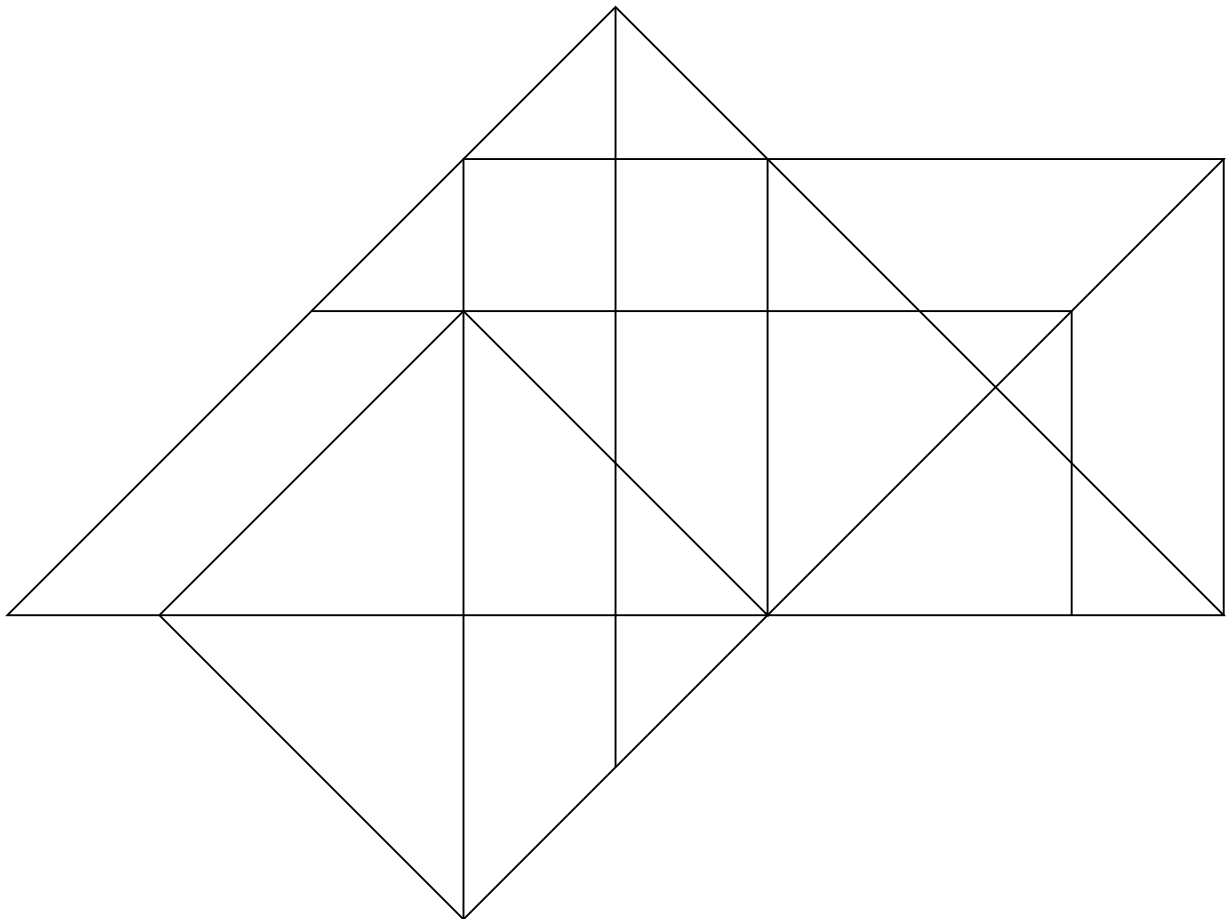


**Part
III**



3. Triangles – 15 points

How many triangles are drawn in the figure?

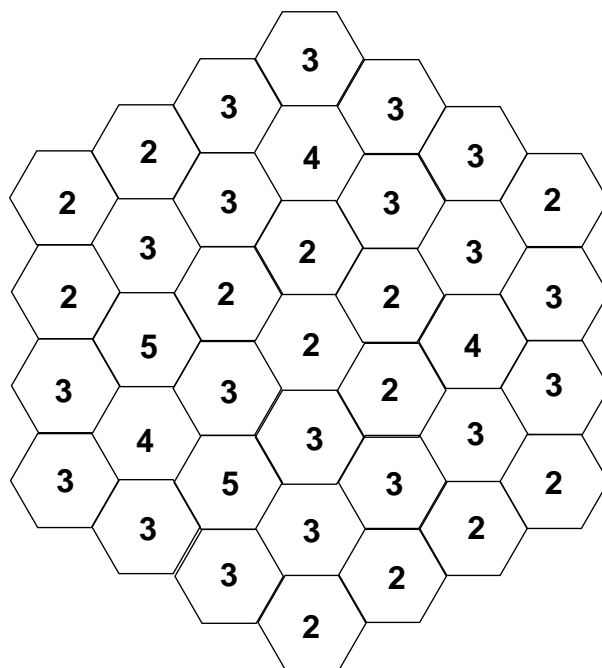
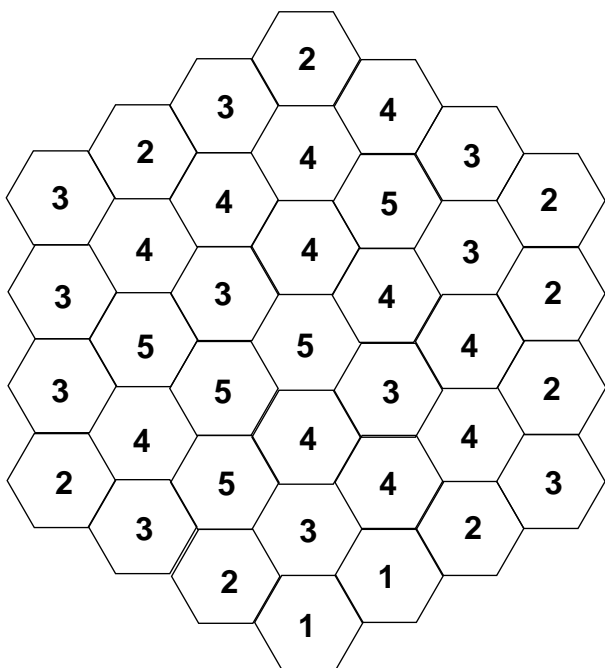


**Part
III**

4. Hex Paint – 15 points

(5 points if you solve one puzzle)

Paint some of the cells in the diagram in black so that the number in each cell indicates how many black cells can be found among that cell and its immediate neighbors.



**Part
III**

5. Crossword Substitution – 25 points

Each letter of the alphabet has been replaced by a different value between 1 and 26. The total values of the words in the grid are indicated next to them. What is the total value of “A WPC PUZZLE” ?

												61	
	35	24	85						31>	W	P	C	
								65					
57>	T	H	I	S	40		61		U		A		
39>	H	I	S		E	71>	V	I	S	O	N		
	E	81>	O	L	I	V	E	29	I		E		
			L		S	101>	T	O	T	A	L		
			E		51>	Z	O	N	E				

**Part
III**

6. Arrow Maze – 35 points

Find a path through the diagram, starting in the upper-left corner (1) and ending in the lower-right corner (36), passing through each square exactly once. The positions of steps 9 and 17 are already given. At every step you must jump in the direction indicated by the arrow, but you may jump over as many squares as you wish (for example 18 may be entered anywhere in the left-most column).

→ 1	↓	←	↓	←	↓
↓	→	↑	←	↑	←
→	←	↓	→	↓ 9	↑
→	↑	↓	←	↓	↓
→	↑	←	↓	→	←
↑ 17	←	↑	↑	←	36

**Part
III**

7. Alignments – 40 points

Fill the circles with the numbers from 1 to 15 in such a way that the sum of the values appearing in each alignment is always the same. One number has already been entered.

