

13. Sums in right angles

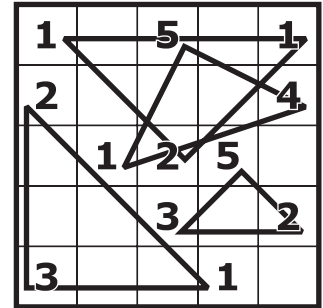
7

	1	3			3		
4		1	4	1	2	1	1
2	3	2			1	1	5
	6	5	1	1	3		
	4		4	2	2	3	
5	2	4		6	2	3	5
	3	3	2	1	5	1	
1		2	4	2	4	3	

Centre of each cell with a digit is a vertex of an isosceles right triangle. Digit in the right angle equals the sum of the digits representing the other two vertices. All 15 triangles have different areas. Find them all.

Answer key: write down the digits from the right angles of all triangles that have at least one side parallel to grid lines in order of their increasing areas. For the example the answer would be: 5,2,3.

Example:



14. Math spiral

8

	/	5		2	x	
+		x	9		8	+
8	+		/	4		9
	7	-		-	3	
5		6	+		+	6
+	4		6	+		+
	/	4		8	/	

Fill the empty grey cells with digits (1-9) or arithmetic operators (+,-,x,/) so that by beginning in one of the four corners, and spiralling in required direction, the arithmetic chain produces all integers from 1 to 24 somewhere along its length. All operators are calculated sequentially.

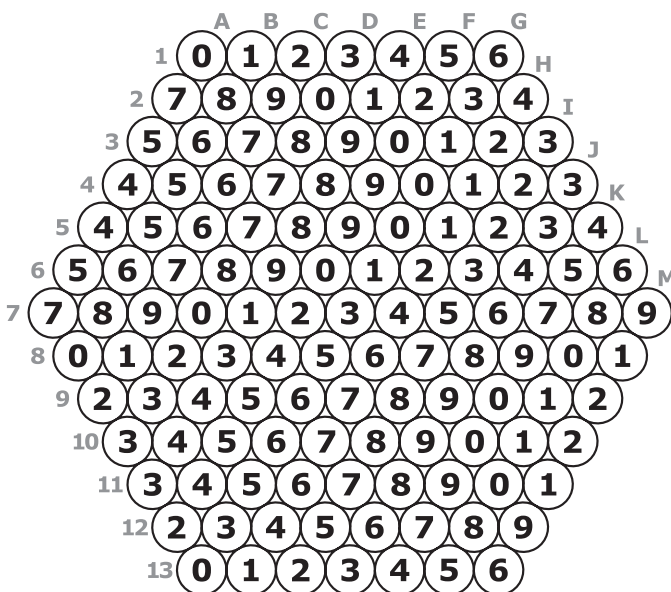
Answer key: write down the content of main diagonal, going from top left corner to bottom right corner. In the example the arithmetic chain produces integers from 1 to 12: 8-5=3; 3x2=6; 6+5=11; 11-4=7 and so on. For the example the answer would be: 86214.

Example:

8	-	5	x	2
/	6	x	4	+
3	x	2	+	5
x	4	-	1	-
4	x	6	-	4

15. Rising race

≤ 8



Starting from any cell, make the longest route, so that sums of digits along the straight lines are constantly increasing. Digits in the turning points count both times. Route must go through the neighbouring cells and cannot cross or touch itself.

Answer key: first write down the length of the route (number of visited cells); then the coordinates of starting cell; and finally all the sums of digits along the straight lines. For the example the answer would be: 13; F4; 1, 5, 7, 11, 15, 17, 21, 22. Best answer brings 8 points; each next answer will bring two points less.

Example:

