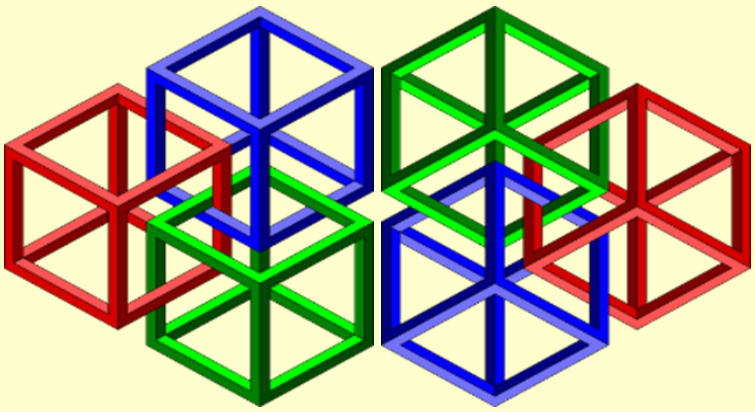
MATHS PUZZLE BOOK VOLUME 9

= for keen puzzlers aged 9 to 105! =

This document is not connected to any organisation and there are no financial implications involved. This is me giving back to Society which has treated me well. This booklet can be printed in black and white or colour and it can be printed page by page if you do not want to print the whole document.



Puzzles created or adapted by Douglas Buchanan

COUNTING DOWN!

Make the total on the right - you do not have to use all the numbers.
You can only use the operations addition, multiplication, subtraction and division.

	100	5	10	3	4	10	480
Ans:							
	75	6	8	9	1	4	234
Ans:							
	50	5	4	10	1	10	475
Ans:							
	50	1	7	6	3	2	381
Ans:							
	25	2	9	10	6	9	185
Ans:							

ADDING PAIRS

From the list of numbers find pairs which add up to the totals as shown

			52		64		37	44	43
19	31	33	34	12	15	20	23	25	29

		44		45		52		35	52		45		50
19	20	24	25	26	27		11	15	17	24	25	27	30	33

		55	37	38	50	60			
13	15	17	20	22	23	25	28	33	45

		52	31	60	48	38			
11	12	14	19	22	25	27	30	34	35

FILL IT IN! Place the list of numbers on the right hand-side into the grid.

1	6								
								9	9

14	92	4295	22135
15	96	5413	24992
17	99	5874	28835
23	334	6159	42122
26	349	7168	44694
42	649	7664	48565
43	2229	8194	49253
44	3241	8499	51247
85	3947	14841	88443
91	4196	18961	91759

ORDERING CARDS

By reading through the instructions put the numbers in the correct order.

Using playing cards or numbered cards will make it easier to solve. *None of the numbers are in their actual positions.* ***1 cannot be the first card, 2 cannot be the second card and so on.***

A: 1 2 3 4

The even cards are in the middle

B: 1 2 3 4 5

The first card is a multiple of the last card
The third and fourth card equals 4 when added together

C: 1 2 3 4 5 6

5 is two places away from the 4 and two places away from the 1
When multiplied together the third and fifth cards equal 6
The first and last cards equal 7 when added together

D: 1 2 3 4 5 6 7

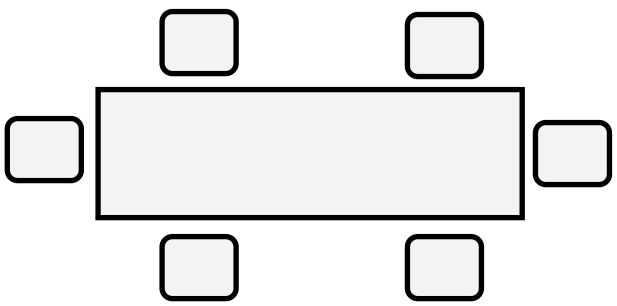
5 is the result of multiplying the first and second cards together
3 is five places away from the 5
4 is 4 places away from the 6
7 is to the right of 1 but left of 6
The fourth card is double the second card

E: 1 2 3 4 5 6 7 8

The fourth and the fifth card add up to 12
7 is six cards away from the 6
The first and fifth cards equal 20 when multiplied together
The 1 is between the 3 and 4
The fourth card minus the first card equals 3

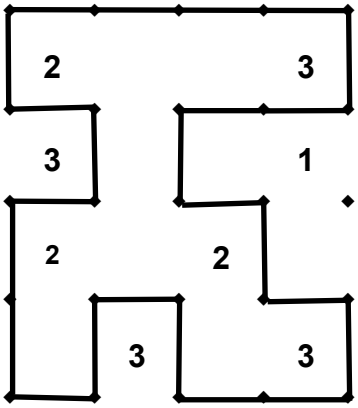
MEAL TIMES

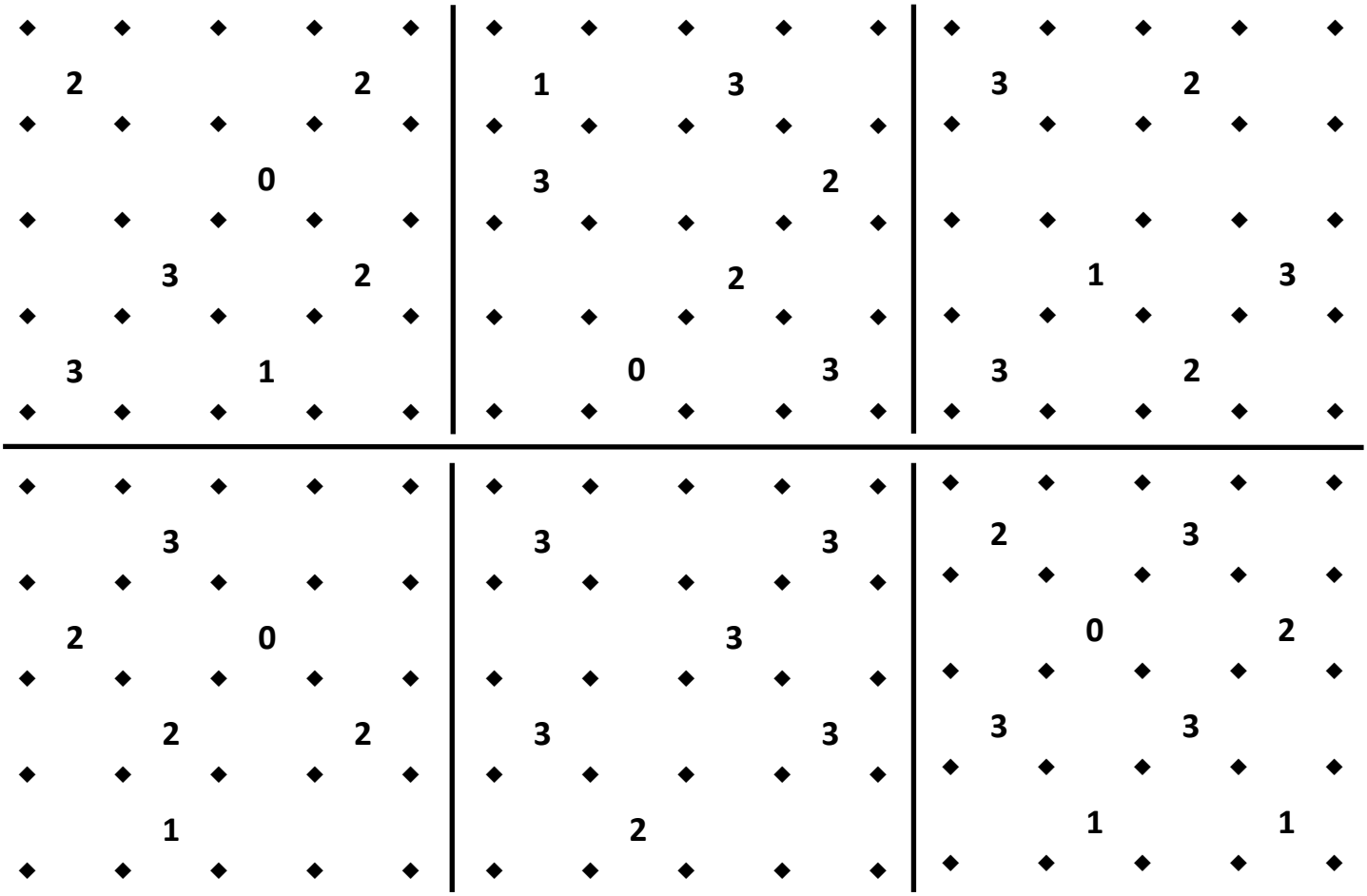
The Oblong family, Mother, Father, two daughters and two sons have odd seating arrangements. The two girls do not sit opposite each other or next to each other. The same rules are followed by the two boys and the two parents. Create a seating plan which follows the rules. Are there different solutions?



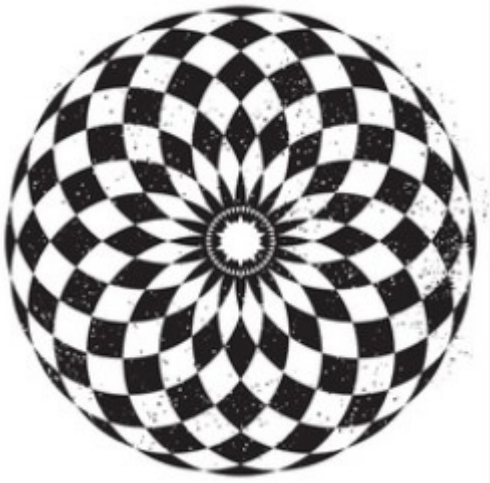
FENCES

A continuous fence has to be built in each field. The numbers indicate how many sides of the fence go around the space



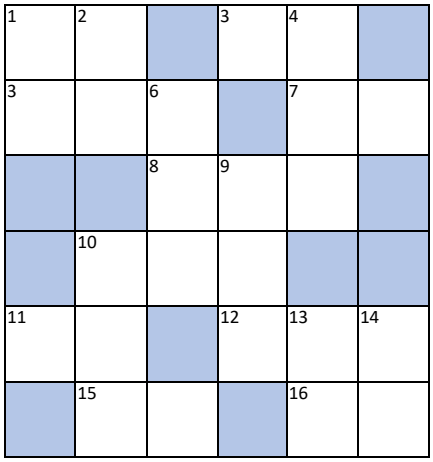


OPTICAL ILLUSIONS



CONSECUTIVE NUMBERS

The clues are the total of the consecutive numbers e.g. 456.
They may not be written in order e.g. 3456 could be written as 5346 or 3645 etc.

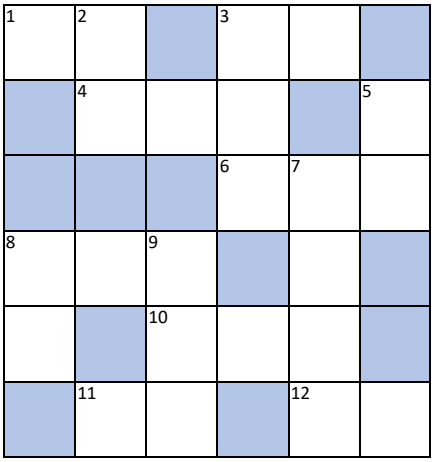


ACROSS

1 9
3 7
5 12
7 5
8 9
10 9
11 5
12 6
15 3
16 7

DOWN

1 7
2 9
4 9
6 12
9 6
10 9
13 5
14 7



ACROSS

1 7
3 11
4 18
6 21
8 15
10 12
11 3
12 7

DOWN

2 9
3 21
5 11
7 22
8 15
9 9

THE HAPPY FARMERS RETURN

Five happy farmers have returned to have a coffee at a street café and one of them saw a Dental Surgery across the road with the following poster. He decided to set a puzzle— work out which pets each farmer has

HOW MANY TEETH DOES YOUR PET HAVE?

Guinea Pig 20 Dogs 42 Mouse 18 Rabbit 28 Sheep 32

Farmer Tractor	2 pets	38	Farmer Plough	2 pets	50
Farmer Baler	2 pets	62	Farmer Trailer	3 pets	90
Farmer Harrow	3 pets	102			

BOBBLE MAZES

These type of mazes were created by a Russian mathematician about 60 years ago but they did not become popular. In my version you have to travel vertically and / or vertically from 1 to 10. On your route you have to include all the values between 1 and 10.

5	2	4	3
8	4	7	9
5	9	6	3
6	2	1	10

8	3	1	7
10	9	2	8
3	7	4	5
9	6	2	8

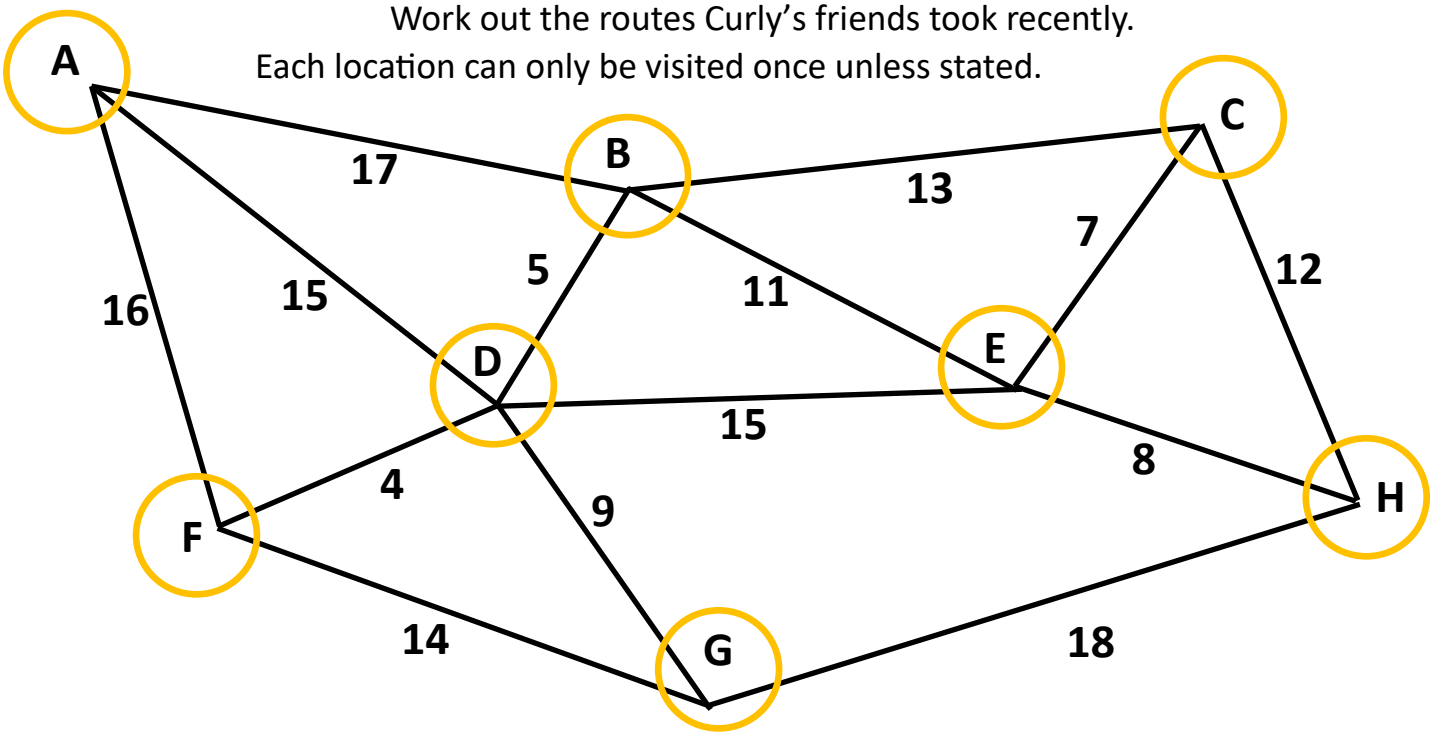
10	6	4	9
3	2	7	5
8	6	3	9
1	2	8	5

9	2	10	8
4	7	3	5
9	2	7	6
6	5	2	8

2	5	4	7
10	6	3	2
9	8	1	8
6	7	5	1

CURLY'S CYCLING FRIENDS

Work out the routes Curly's friends took recently.
Each location can only be visited once unless stated.



Alice	A			H			48km
Ben	B				C		40km
Carol	C					G	41km
Dave	D					E	55km
Enid	E				D		52km
Fred	F					B	58km
Gail	G					C	65km
Harry	H					F	47km

CLIMB THE LADDERS

Without calculators , start from the bottom and
find the values at the top by doing the calculations

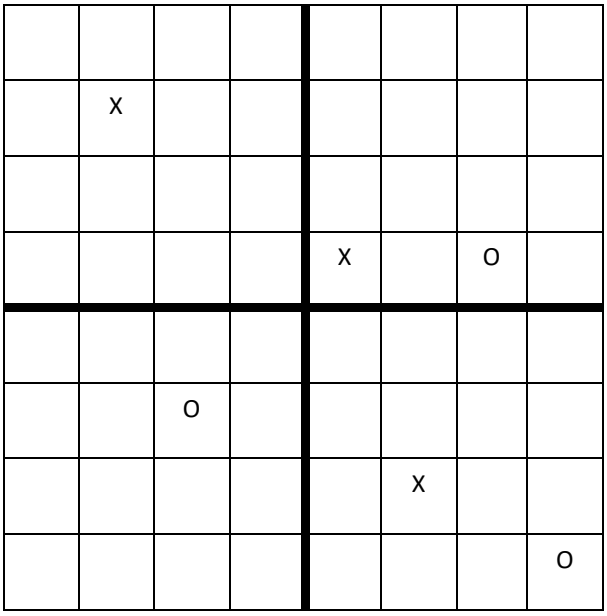
A	B	C	D	E	F
×3	+27	-21	×6	÷8	×3
÷10	×5	÷2	+99	×4	-43
+45	-23	×12	÷80	×4	+66
×5	+45	÷4	×6	+36	÷4
25	**14**	**32**	**40**	**18**	**52**
A	B	C	D	E	F

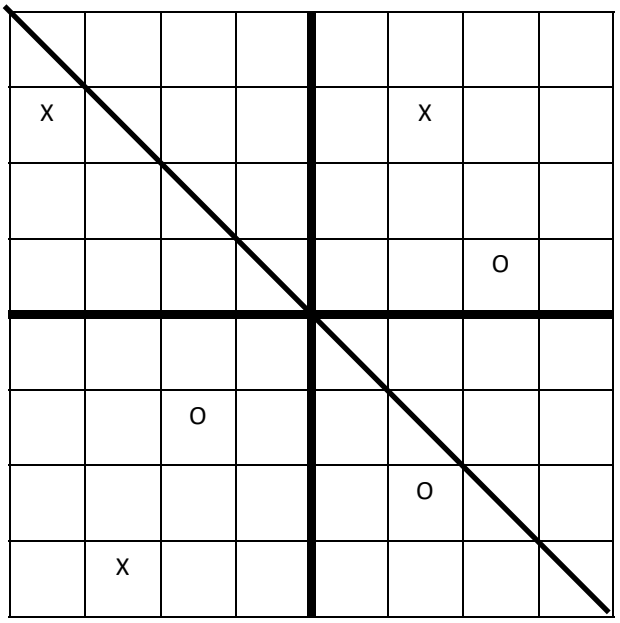
QUESTION TIME

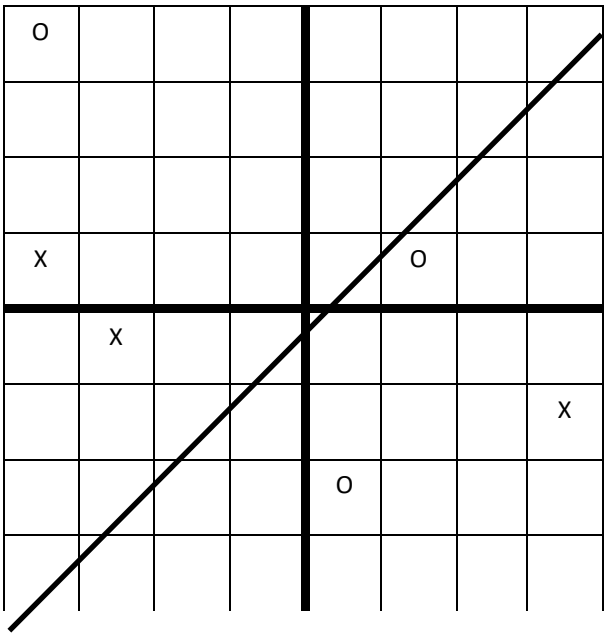
1. Find the value of the letters A, B and C A26 + 98B + 6C9 = 2368
2. 4! means 1 x 2 x 3 x 4 = 24 What is the value of 7!
3. There is 300ml of oil in the small bottle. There is six and a quarter times as much in the big bottle. How much oil is in the big bottle?
4. Mathsie builds a square pen for a dog with each side measuring 4m. Posts are placed 1 metre apart for the fence. How many posts are required?
5. Write in figures the number thirteen million, thirteen thousand, thirteen hundred and thirteen.
6. A piece of wire 36cm long is bent into the shape of a rectangle. If the rectangle is twice as long as it is wide, what is the area?

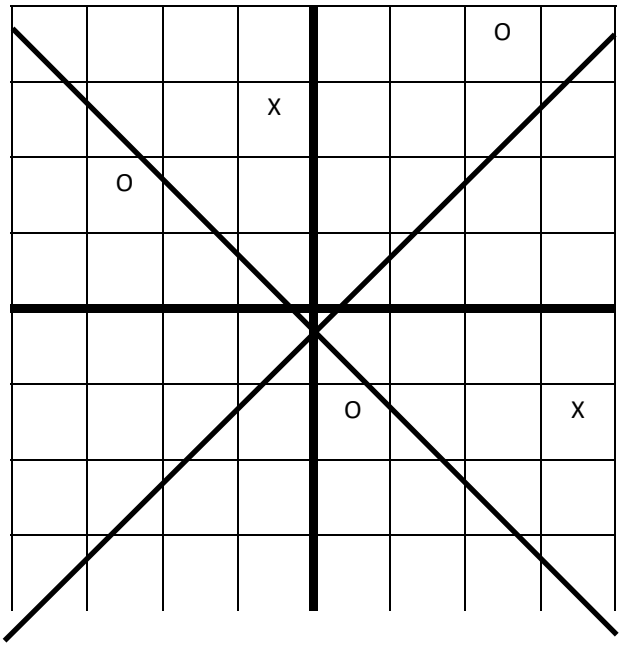
REFLECTIONS

The dark lines are double-sided mirrors. Colour in the reflections.









FIND THE VALUES

The letters A, B, C, D, E, F can have one these values: 1, 2, 3, 4, 5, or 6. From the statements below work out the value of each letter.

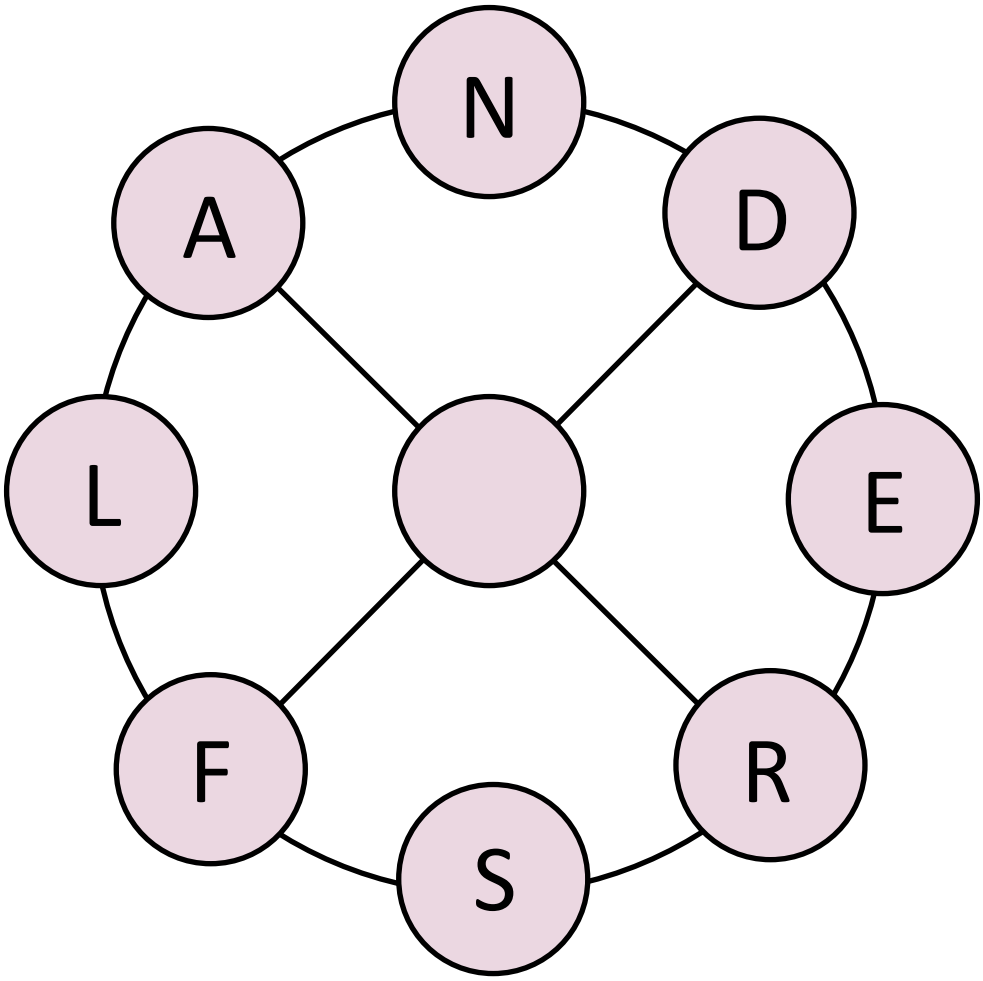
I	Ii	Iii	Iv	v
D + B = 10	E x C = D	A + F = 11	A—D = C	12 ÷ B = F
B + E = 11	F + A = 9	D x B = F	B + E = 6	F x C = D
C + D + A = E	B + D = 7	C + B = E	D x F = 12	E - A = B
F—C =A	A ÷ E = E	A—E = C		C < F

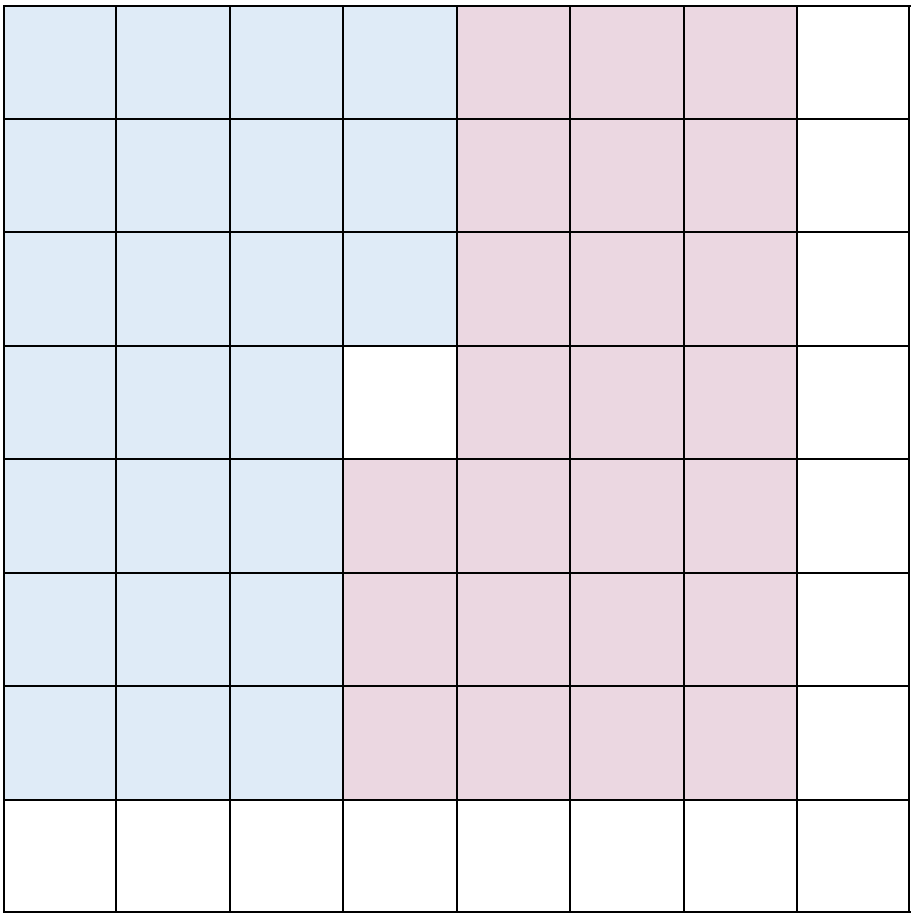
THE FLANDERS WHEEL

Place eight lettered counters on the wheel as shown. Now move them one at a time along the lines from circle to circle until the word FLANDERS can be correctly read round the rim of the
wheel as at present, only that the F is in the upper circle now occupied by the N.

Of course two counters cannot be in a circle at the same time. Find the fewest possible moves.

Two puzzles created by Henry Ernest Dudeney (1857—1930)





GRASSHOPPERS QUADRILLE

The counters you place on the blue squares must change places with the different coloured counters on the pink squares in the least number of moves.

Moves are only horizontal or vertical.

The blue counters can only move RIGHT or DOWNWARDS and the pink counters can only move LEFT or UPWARDS.

Counters can jump over an opposition counter but there is no capture.

SOLUTIONS

COUNTING DOWN: there are many combinations. Ask somebody to check them or use a calculator. ADDING PAIRS: 19 33; 31 34 / 12 25; 15 26; 23 20 / 20 24; 19 26; 25 27 / 11 24; 25 27; 15 30; 17 33 / 30 22; 12 19; 25 35; 14 34; 11 27 ORDERING CARDS: Four 3421 Five 45132 Six 642531 Seven 5142736 Eight 56284137 HAPPY FARMERS Tractor: m gp Baler: gp d Plough: m s Trailer: gp d r Harrow: d s r CYCLING CURLY afgh; bdehc; cebdfg; dfghce; ecbad; fgdecb; gdabec; hebdgf CLIMB THE LADDERS A: 51 B: 207 C: 3 D: 612 E: 108 F: 108 QUESTION TIME 1. A=7 B=3 C=5 2. 5040 3. 1875 4. 16 5. 13014313 6. 72cm^2 FIND THE VALUES: i. A 1 B 6 C 2 D 4 E 5 F 3 ii. A 4 B 1 C 3 D 6 E 2 F 5 iii. A 5 B 3 C 1 D 2 E 4 F 6 iv. A 6 B 5 C 2 D 4 E 1 F v. A 1 B 4 C 2 D 6 E 5 F 3

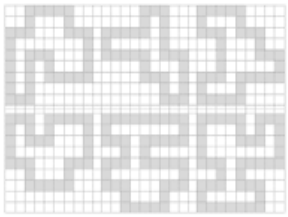
FILL IT IN

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

MEAL TIMES

	D		M	
F				S
	S		D	

FENCES



CONSECUTIVE NUMBERS

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

BOBBLE MAZES

8	3	1	7
10	9	2	8
3	7	4	5
9	6	2	8

10	6	4	9
3	2	7	5
8	6	3	9
1	2	8	5

9	2	10	8
4	7	3	5
9	2	7	6
6	5	2	8

2	5	4	7
10	6	3	2
9	8	1	8
6	7	5	1