

Walkthrough for Number Factors 2 to 26 again

"Only two primes are not on the edge", these are 19 and 23, the remaining seven primes (2, 3, 5, 7, 11, 13, 17) must be on the edge.

2 has 12 multiples in the quiz (not counting itself). Since 2 is on the edge then there must be 4 in its row, 4 in its column and 4 in its diagonal(s). So the lines from 2 must all be multiples of 2. With 19 and 23 in place the only positions for 2 are shown in grey:

	1	2	3	4	5
A					
B		19			
C					
D			23		
E					

"In the last column, only the corner squares are even", so B5 is odd and the only possibility is

E1 is 2

With 2 in a corner the squares on the edge are either multiples of 2 (**orange**) or are primes (**green**). The missing odd composite numbers are 9, 15, 21, 25 (**blue**).

"Maybe think about 3 next?" As a prime, 3 must be on a green square. It must be in line with at least 4 orange squares (the even multiples of 3 – 6, 12, 18, 24) and at least 3 blue squares (the odd multiples of 3 – 9, 15, 21). So there are 4 possible positions:

	1	2	3	4	5
A		3?		3?	
B		19			
C					3?
D			23		3?
E	2				

Consider the even numbers that 3 is in line with: 6, 12, 18, 24. 6 must be in line with 12, 18 and 24, but except for C5, none of the possible locations for 6 can be in line with 3 of the others so:

C5 is 3

And, since 3 must be in line with the 3 blue squares that are multiples of 3,

B3 is 25

"18 is in the middle row", there are only 2 possible places (C1 and C3). Suppose 18 is in C3, there are 3 squares where 6 could be, since 6 has to be in line with 12, 18 and 24 (using **yellow** for even squares that could be divisible by 6):

	1	2	3	4	5
A					6?
B		19	25		
C			18?		3
D			23		
E	2		6?		6?

But also 12 has to be in line with 24, which is not possible for any of these, so

C1 is 18

There are now only 2 places where 6 could be (C3 or E3). Suppose 6 is E3 then 12 and 24 have to be in C3 and E5, in some order:

	1	2	3	4	5
A					
B		19	25		
C	18		24/12		3
D			23		
E	2		6?		12/24

"4 is not in a corner", but 4 has to be in line with both 12 and 24, and the only place it could do this is the corners A1 or A5 so

C3 is 6

Consider where 12 and 24 are:

	1	2	3	4	5
A					?
B		19	25	?	
C	18		6		3
D			23		
E	2		?		?

If either 12 or 24 is in A5 then either

- a) The other is in E5, and the only place 4 can be is in the corner, A1, which is not allowed, or
- b) the other is in B4, 4 has to be in D2 and there is nowhere for 8 to be in line with both 4 and 24

So the only option is for 12 and 24 to be in E3 and E5 in some order:

	1	2	3	4	5
A					
B		19	25		
C	18		6		3
D			23		
E	2		12/24		24/12

If 24 is in E5 and 12 in E3 then 4 and 8 would need to be in the bottom row, but then 16 could not be placed in line with 4 and 8 so

E3 is 24 and E5 is 12, and then E2 is 4, D2 is 8 and D1 is 16

	1	2	3	4	5
A					
B		19	25		
C	18		6		3
D	16	8	23		
E	2	4	24		12

4 has one more multiple so

E4 is 20

Then there is only one place 5 can be which allows 10 to be in line with 20 so

A4 is 5 and B4 is 10

	1	2	3	4	5
A				5	
B		19	25	10	
C	18		6		3
D	16	8	23		
E	2	4	24	20	12

"One column is monotonic", this can only be column 1 (columns 3 and 5 clearly are not, there is no prime > 19 to go at the top of column 2 and column 4 has either 9 or 21 between 10 and 20) so

A1 is 26 and B1 is 22, and then A5 is 14

	1	2	3	4	5
A	26			5	14
B	22	19	25	10	
C	18		6		3
D	16	8	23		
E	2	4	24	20	12

"7 is not in the last column" so

A2 is 7, A3 is 13, B5 is 11 and D5 is 17

	1	2	3	4	5
A	26	7	13	5	14
B	22	19	25	10	11
C	18		6		3
D	16	8	23		17
E	2	4	24	20	12

Also both 21 and 9 have to go in one of C2 and C4 so

D4 is 15

"A number is adjacent to its square" so

C4 is 9 and C2 is 21

	1	2	3	4	5
A	26	7	13	5	14
B	22	19	25	10	11
C	18	21	6	9	3
D	16	8	23	15	17
E	2	4	24	20	12