Factors Logic Puzzle 2-26 Walkthrough

[Note: for anyone wishing a hint rather than the full solution, the position of the numbers can be deduced in the following order: (21), 2, 25, 3, 22, 23, 24, 26, 6, 12, 9, 15, 18, 5, 4, 8, 16, 14, 7, 10, 20, 13, 19, 11, 17.]

A1	A2	A3	A4	A5
B1	B2	B3	B4	B5
C1	C2	C3	C4	C5
21	D2	D3	D4	D5
E1	E2	E3	E4	E5

We are told all the prime numbers are in the top 3 rows. There are 9 primes 2, 3, 5, 7, 11, 13, 17, 19, 23 and hence 6 non-primes in the top 3 rows. There are a total of 12 even numbers other than 2 which have to align with 2. Six of these may be in the top 3 rows, so at least six must be in the bottom two rows. To have six in the bottom two rows requires **C3 =2**. Note that **the six squares aligned with 2 in the bottom two rows must be even** and that **the six non-primes in the top three rows must be even**.

		2		
21	even	even	even	
even		even		even

The odd composite numbers 9, 15, 21, 25 must be in the bottom two rows. Three of these must be aligned with the cell containing 3. Given where 21 is and the cells constrained to be even this is only possible if 9 and 15 are in the bottom row and **C2=3**. This requires **D5=25**.

	3	2		
21	even	even	even	25
even	9/15	even	15/9	even

We are told there are 5 consecutive numbers in a line. Trial and error and the positions of 2 & 3 and the odd composite numbers shows that the only possibility is 22-26 in the fifth column, **A5=22, B5=23, C5=24, E5=26**

				22
				23
	3	2		24
21	even	even	even	25
even	9/15	even	15/9	26

24 has many factors, in particular 6 and 12 have to be in C1 and C4 (in some order) to see 2 & 3 also. If E4 were 15, the only available square for 5 would be C4 which is occupied by 6 or 12. We conclude that E4=9 and E2=15. Then 18 must see 2, 3, 6, 9 and so must be at D3. This requires **C4=6, A1=12, D3=18**. This also fixes **A2=5.**

	5			22
				23
12	3	2	6	24
21	even	18	even	25
even	15	even	9	26

There are now four even numbers other than 2 in the top three rows, and there must be precisely two more. Now 4 must be A3 or E3 to see 12 and 24. If A3=4, we can only have one other even number in the top three rows. This would have be 20 to see 4 & 5. But 8 or 16 would also have to be in the top. We conclude **E3=4**, so that 8 must be D4 or A3. A3=8 requires B3=16. But at least one if 10, 20 must be the top rows, which would again be too many even numbers in the top rows. We conclude **D4=8**, which also requires **D2=16**

	5			22
				23
12	3	2	6	24
21	16	18	8	25
even	15	4	9	26

10 & 20 have to be in the top rows, so that the remaining even number, 14, must be E1, **E1=14**. This informs us that column one sums to an exact square. Column one must contain 7, and 14+21+12+7+10=64. So we infer that **A1=10** and **B1=7**. This fixes **A3=20** and **B2=13**, giving

10	5	20		22
7	13			23
12	3	2	6	24
21	16	18	8	25
14	15	4	9	26

Finally, we are told that the sum of row one is divisible by a number in row one. Now 57 + (11, 17, 19) is divisible by a row one number only if **A4=19**. To see 22, **B4=11** and **B3=17**, giving the solution:

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