

Factors 3-22 Logic Puzzle Walkthrough

First consider 3 and its multiples. 3 divides 6, and 3 and 6 divide 12 and 18 so these must be in a line. Also 3 divides 9, and 3 and 9 divide 18 so **3, 6, 9, 12 and 18 must be in a line in the grid**. Since there are five numbers this must be a whole row. (Note that 15 and 21 must then be in a column with 3).

From the opening clue, the middle column crosses the row of 3 and its multiples at a number > 13, which must be 18. From the odd/even pattern this must be row two or four, but row 4 has 13 in it so **B3 is 18**.

The next clue gives the pattern of odd (blue) and even (green) numbers:

	1	2	3	4	5	
A						
B	3 / 9	9 / 3	18	6 / 12	12 / 6	Also 3, 6, 9 and 12
C						
D	13					
			All > 13			

Consider the number 3. Suppose 3 is in B1. Then 9 must be in B2. Also 15 and 21 must be in column 1. If we assume 15 is in A1 then 21 must be in C1. 5 and 7 must be by them in column 2 (they are too small to be in column 3) and 11 must be in D2. Also 10 and 20 must be in A4 and A5, in some order.

B1=3?	1	2	3	4	5	
A	<u>15</u>	<u>5</u>		<u>5 / 10</u>	<u>10 / 5</u>	
B	<u>3?</u>	<u>9</u>	18	6 / 12	12 / 6	Also 3, 6, 9 and 12
C	<u>21</u>	<u>7</u>				
D	13	<u>11</u>				
			All > 13			

Now consider multiples of 4. 4 divides 8, and 4 and 8 divide 16, so **4, 8 and 16 must be in a line**. There is no space for this to be in a column so they must be in D3, D4 and D5. This leaves no space for 22 to be in a line with 11. So either 3 is not in B1 or 15 is not in A1. The same argument can be made if 15 is in C1 so we can deduce that **B2 is 3 and B1 is 9**.

	1	2	3	4	5	
A						
B	9	3	18	6 / 12	12 / 6	
C						8 is in this row
D	13					
			All > 13			

Now we are told that 8 is in the third row. This means that 4, 8 and 16 cannot be in a row but must be in a column. This has to be the same column as the 12, since 4 divides 12. 20 must then be in a

row with 4, 5 and 10 must also be in a row with 10 (since 5, 10, 20 cannot be in a column). This must be in row 4 so **D3 is 20 and D2 is 5**. Also, now 15 and 21 must be in A2 and C2 in some order.

	1	2	3	4	5	
A		15 / 21		? / 16	16 / ?	
B	9	3	18	6 / 12	12 / 6	
C		21 / 15		? / 8	8 / ?	8 is in this row
D	13	5	20	10 / 4	4 / 10	
			All > 13	The 12 column has 4, 8, 16 in		

We are now told that the columns alternate in whether they are monotonic or not. The second column is not monotonic so the third must be so **A3 is 17 and C3 is 19**. 7 and 11 must be in the first column.

	1	2	3	4	5	
A	7 / 11	15 / 21	17	? / 16	16 / ?	
B	9	3	18	6 / 12	12 / 6	
C	11 / 7	21 / 15	19	? / 8	8 / ?	8 is in this row
D	13	5	20	10 / 4	4 / 10	
				The 12 column has 4, 8, 16 in		

The first column must also be monotonic so **A1 is 7 and C1 is 11**. This then means that **A2 is 21 and hence C2 15**. Now 22 must be in the third row (because of the 11) and 14 must be in the first row (because of the 7).

	1	2	3	4	5	
A	7	21	17	14 / 16	16 / 14	
B	9	3	18	6 / 12	12 / 6	
C	11	15	19	22 / 8	8 / 22	8 is in this row
D	13	5	20	10 / 4	4 / 10	
				The 12 column has 4, 8, 16 in		

Since column 4 is not monotonic and column 5 is **B4 is 6 and B5 is 12**. And the final diagram is:

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