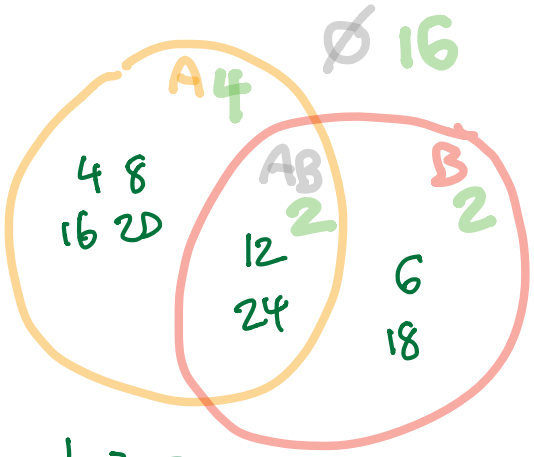
Office Hours

A: divisible by 4
B: divisible by 6

$\{1,..,24\}$

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24



1 2 3 5 7
9 10 11 13 14 15
17 19 21 22 23

$\geq\emptyset = \emptyset + A + B + AB = 24$
$\geq A = A + AB = 6 = 24/4$
$\geq B = B + AB = 4 = 24/6$
$\geq AB = AB = 2 = 24/12$ $\quad 12 = \text{lcm}(4,6)$

$$\emptyset = \underset{+}{\geq\emptyset} - \underset{-}{\geq A} - \underset{-}{\geq B} + \underset{+}{\geq AB}$$

	Ø	A	B	AB	
≥Ø	1	1	1	1	+
≥A		1		1	−
≥B			1	1	−
≥AB				1	+
	1	0	0	0	

	Ø	A	B	AB	
≥Ø	1	1	1	1	
≥A		1		1	+
≥B			1	1	
≥AB				1	−
	0	1	0	0	

$$A = \geq A - \geq AB$$

$\{1,..,30\}$

A: divisible by 2
B: divisible by 3
C: divisible by 5

$$A = \underset{30/2}{\geq A} - \underset{30/6}{\geq AB} - \underset{30/10}{\geq AC} + \underset{30/30}{\geq ABC}$$
$$15 - 5 - 3 + 1 = 8$$

$$\begin{pmatrix} 2 & 16 \\ 4 & 22 \\ 8 & 26 \\ 14 & 28 \end{pmatrix}$$

$$AB = \Sigma AB - \Sigma ABC = 4$$

$30/6 = 5$ $(6,12,18,24,30)$

$30/30 = 1$ (30)

$(6,12,18,24)$

Hat check problem

n=1: 1

n=2: 12, 21

n=3:

123	ABC
132	A
213	C
231	∅
312	∅
321	B

ABC

2134 ⇔ 2

Fixed point:

1 in position 1
or 2 in position 2
or 3 in position 3

123
132
213
231
312
321

123
132
213
231
312
321

1 in position 1

123
132
213
231
312
321

2 in position 2

123
132
213
231
312
321

3 in position 3

123
132
213
231
312
321