

# Locker Problem

There are 50 closed lockers in the hallway. A group of 50 people comes along opening and closing lockers using the following pattern.



- Person 1 OPENS all 50 lockers.
- Person 2 CLOSES every other locker.  
The lockers touched are 2, 4, 6, 8, ...
- Person 3 REVERSES every third locker. If it was open it will be closed, if it was closed it will be opened. The lockers touched are 3, 6, 9, 12, ...
- Person 4 REVERSES every fourth locker. If it was open it will be closed, if it was closed it will be opened. The lockers touched are 4, 8, 12, 16, ...
- Person 5 REVERSES every fifth locker. If it was open it will be closed, if it was closed it will be opened. The lockers touched are 5, 10, 15, 20, ...
- This pattern continues until Person 50 REVERSES the fiftieth locker.

Use a chart to help you model the problem.

**Question:** Which lockers are OPEN?

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1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50