

## The Locker Problem

At Southeast Middle School, there are 500 students and 500 lockers, numbered 1 through 500. Suppose the first student opens every locker. Then the second student closes every second locker. The third student closes every third locker if it is open or opens the locker if it is closed. Similarly, the fourth student changes the state of every fourth locker. This process continues until the five-hundredth student changes the state of the five hundredth locker.

After this process is completed, state which lockers are open. Explain your reasoning.



Adapted originally from *Algebra Two with Trigonometry*. Foster, Wrath, and Winters. Merrill Publishing Company: 1983.