



The Locker Problem

Imagine High Tech Middle decided to install lockers for each of the 300 middle school students. The lockers are numbered from 1 to 300. When the High Tech Middle students return from summer vacation, they decide to celebrate the lockers by working off some energy.

- The first student goes to all of the lockers and *opens every locker*
- The second student then goes along and *shuts every other locker*.
- The third student *changes the state* of every third locker. (if it's closed, they open it, if it is open, they close it)
- The fourth student *changes the state* of every fourth locker.
- The fifth student changes the state of every fifth locker, the sixth every sixth locker, and the pattern continues until all students have marched.

After all the students have marched, which lockers remain open, and which ones are closed?