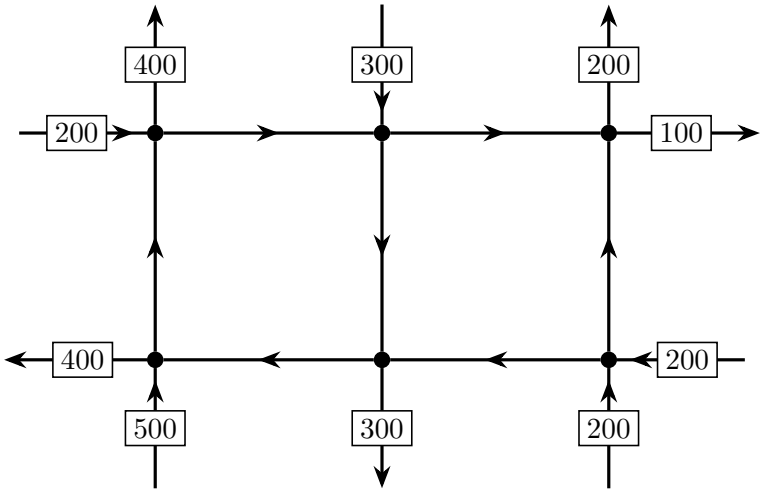
Shown below are some traffic patterns in the downtown area of a large city. The Traffic Control Bureau for the city has installed sensors to count the number of vehicles passing through specific points in the city. The boxed numbers tell you the average number of cars per hour that pass through that point. The arrows represent the direction of each street (all one way streets). Cars are not allowed to park on the streets. At each intersection there are roundabouts that allow for a continuous flow of traffic through the entire system.



The Traffic Control Bureau is interested in analyzing possible traffic diversion policies for when road work is necessary. The traffic flow should be allowed to follow its usual course at the sensor points.

1. For each segment of road without a sensor, consider what the minimum amount of traffic is needed to maintain the flow of the system. Is it possible to close any of the roads? If so, which ones can or cannot be closed?

2. The Traffic Control Bureau can divert traffic by putting up road blocks at the entrances of some roads. How many such blocks are needed? Is there a particular selection of road blocks that would make it easier to perform the flow evaluation?