# University of Washington Math Olympiad, 2025

## Grades 6–7

**Problem #6**  A jeweler has six golden rings. He knows they weigh 22, 23, 24, 32, 34, and 36 grams. The rings look identical. The jeweler's apprentice labeled each ring with one of these weights. By using a balance scale twice, can the jeweler check if his apprentice labeled all the rings correctly?



**Problem #7**  In the faraway land of Artinia, all roads are one-way roads. According to the law of the land, for any two cities A and B, if there is a one-way road from A to B, then a one-way road from B to A is not allowed.

   The Ministry of Transport wants a budget to build one more road. They notice that no matter where the road is built, it will be possible to drive from any city to any other city. Prove that it is already possible to drive between any pair of cities in Artinia without adding the new road.