

**Mathematical Seminar**  
**Spring 2003**

- 37.** (10) In each box of a  $15 \times 15$  square table one of the numbers  $1, 2, 3, \dots, 15$  is written. Boxes which are symmetric with respect to the main diagonal contain equal numbers, and no row or column contains two copies of the same number. Show that no two of the numbers along the main diagonal are the same.
- 38.** (15) Find all  $n$  between 1 and 100 and such that  $(n - 1)!$  is not divisible by  $n$ .
- 39.** (10) The first train is going with velocity 45 kilometers per hour. The second train is going with velocity 36 kilometers per hour in the opposite direction. For a passenger in the first train it takes for the the second train 6 seconds to pass him. How long in the second train?
- 40.** (15) A boy has as many sisters as brothers, but each sister in his family has twice as many brothers as sisters. How many brothers and sisters are there in the family?